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Evaluation of Distance Learning Practices (From the Instructors Perspective): Planning, Implementation and Evaluation

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Abstract

This research aims to examine distance education practices from the perspective of instructors in terms of Planning, implementation and evaluation. It is aimed to reveal the current situation regarding the planning, implementation and evaluation of distance education practices by ensuring that the distance education practices related to the teaching methods and techniques used in the courses, content and process are evaluated from the perspective of the instructors. The study group of the research consists of 20 instructors. In the research, qualitative data were obtained by the case study method. In the study, the data were collected using the semi-structured interview technique developed in consideration of the purpose of the research. Qualitative content analysis was used in the analysis of the data obtained. The results of the research reveal the positive and negative opinions of the instructors in terms of planning, implementation and evaluation. Considering the findings by institutions, practitioners, and the Council of Higher Education that implement distance education may contribute to increasing the quality of education.

Keywords: COVID-19 Pandemic, Distance Education, Planning, Implementing, Evaluation, Curriculum

1. Introduction

1.1 Introduce the Problem

With the gradual differentiation of societies and the rapid development of technology, there are also differences in the wishes and needs of individuals. The constant change of tools does not allow us to predict the situations we may encounter. Every change and differentiation requires individuals to adapt to the new world order.

Adapting to any change in societies is thanks to education (Akpınar, 2003). Educational systems are the economic, political, social and cultural basis of society. Education systems should be organized in a way that is open to developments and flexible, and the needs of individuals should be taken into consideration. The change of education systems and their renewal in line with the needs are very important in terms of creating qualified individuals who can realize themselves.

In this context, the aims of the higher education system are to train qualified individuals who will contribute to the scientific, technological, economic, cultural and social development of countries. Universities support and implement new student-centered methods, adapting to new lifestyles, social and lifelong learning in the new world order. With distance education, which has recently been implemented all over the world, the needs of individuals are tried to be met.

There are many studies in the world regarding the integration of technology into education (Goktas, Yildirim & Yildirim, 2008). One of these studies is the practicality of distance education. Factors such as the rapid proliferation of information technology, rapid access to information, and the practicing of many web designs to the educational environment have increased the practicality of distance education. Organizing, evaluating and using information is also important (Karahana & Izci, 2001). For this reason, it is inevitable to constantly develop new technological tools. Distance education enables individuals to benefit from educational opportunities from their environment without time and place restrictions. It is a form of education where the instructor and the learners are in different places, in a planned learning environment, using web tools. It is necessary to know how to organize learning and learning activities, which techniques, methods, materials, and how to adapt the content. In this context, it is seen that distance education needs specific theories. Independent work, autonomy, communication and interaction, cooperation, community, etc. This is taken into account when designing distance education. With distance education, education has become more individual, accessible and economical (Isman & Dabaj, 2005). Distance education is preferred because it has a flexible structure and information can be accessed 24/7.

The roles of teachers and students have also changed with distance education. The teacher has taken on the role of resource provider, guide, observer, communication reinforcer from the role of material distributor. While the student was a passive receiver, over time, s/he started to take place in the center of learning, became responsible for his/her own learning, producing, sharing, determining the content and communicating (Gokmen, Duman & Horzum, 2016). As a result of the literature review, it has been observed that distance education has become widespread in an increasing momentum and it has been observed that it will maintain its importance in the future (Aydin, 2020).

Not only technological developments, but also situations affecting countries may require the use of distance education in educational environments. Due to the Covid-19 pandemic that we are experiencing today, distance education has taken place rapidly in the world. Countries were caught unprepared for this transition, and there were discussions about the differences in opportunities among students (Ozer, 2020). Many scientists are of the opinion that the teaching converted to distance education in these emergency situations is not real distance education classrooms because instructional designs, content and assessment cannot be carried out within a well-planned/designed plan (Gardner, 2020).

In the literature review, the problems experienced in the planning/design of distance education, the implementation process and assessment and evaluation were compiled. According to the report prepared by Bonk (2001) for teaching staff, time problem in planning and developing distance education, lack of experience and training, technical/infrastructure problems and lack of technical support, lack of administrative support, motivation, lack of interest, pedagogical deficiency, cost, trust is in the form. Another problem experienced in distance education is that there is not face-to-face communication (Telli & Altun, 2020). In the research conducted, faculty members expressed similar views. Interaction and communication in distance education are the general problems encountered during the practicing.

According to Falowo (2007), teacher-student and student-student interaction are not sufficient, materials are not prepared in accordance with students, technology is not used efficiently, students do not show enough interest in distance education courses (Saritas & Barutcu, 2020). The other mentioned problems are that the programs are not suitable for distance education (Li, 2009; Zan & Zan 2020) and that effective methods are not used in the course design phase (Cronje, 2001; Zan & Zan 2020). The less active participation of students in the courses given by distance education is also supported by a study.

Regarding the problems encountered, the deficiencies are tried to be eliminated in the process and the structuring continues. It is also possible to enrich face-to-face education with distance education. The flipped classroom model, blended learning etc. which are used today, can be an example of these. In these models, the aim is to enrich the content, contribute to the effective learning of the students and to take an active role in learning.

The perspectives of the instructors are very important for the effective and efficient implementation of distance education practices in higher education (Dooley & Murphey, 2000). Considering the situations that motivate the instructors, it is said that making practicing with new teaching methods and techniques, technological adaptation, sharing knowledge, professional development (Green, Alejandro & Brown, 2009). In addition, the availability of support and guidance on financial and necessary practices is one of the most important factors (Moore & Anderson, 2003).

It has been concluded that distance education has as much effect as face-to-face education on student performance and interaction of instructors with distance education teaching experience (Ulmer, Watson & Derby, 2007). According to Lloyd, Byrne, and McCoy (2012), the situations that cause problems in distance education in general are low student participation, lack of feedback from students, lack of interaction, problems in preparing materials, inexperience, inaccessibility to the material and the course, increased workload, technical problems (as cited in Gurer, Tekinarsan & Yavuzalp, 2016).

When the literature was searched, many studies on distance education were found (Ozgol et al. 2017), but the studies on distance education, which started abruptly due to the recent pandemic, are still limited and new. Because the practicing is new and sudden, many problems may occur. This study is also important in terms of increasing the efficiency and quality of the practicing in distance education.

For these reasons, it is important to get the opinions of the instructors in terms of the practicality of the distance education practicing in universities. While this research is being conducted, the effects of the Covid-19 pandemic continue, and it is not known how long the process will last. For this reason, this study can be considered among the first studies conducted in Turkey regarding distance education in this period. This study will also shed light on future studies in terms of eliminating and strengthening the deficiencies of the distance education practices.

In this context, the problem statement of the research is; What are the opinions of the instructors on distance education practices?

2. Method

In this study, case study, one of the qualitative research approaches, was used. The case study is a research method in which the exact boundaries of the situations that occur in a certain time period are in a whole with their own context and it is difficult to draw and are examined in depth (Yin, 1984, Creswell 2007 cited in Yildirim & Simsek, 2013). The most distinctive feature of this method is to examine the person to be examined in its own context due to its unique characteristics (Yin, 1984). Case studies are based on the questions of "what," "how" and "why" and allow a detailed examination of a phenomenon or event that the researcher cannot control (Yildirim & Simsek, 2013). Situations are limited by time and events, and extensive data is collected and analyzed in depth using various data collection methods. With the holistic multi-state design, there is more than one situation that can be perceived as holistic on its own. Each situation is handled holistically in itself and then compared with each other (Yildirim & Simsek, 2013). For these reasons, the purpose of the research is not to

generalize on the universe, but to understand and explain the distinctive features of the person, community or situation. With these results, case study is seen as an appropriate method for this research to achieve its purpose.

2.1 Participant Characteristics

The data of this research was carried out with 20 instructors working at Mersin University in 2020, carrying out distance education activities. The selection of the participants was based on ensuring maximum diversity. The aim of maximum diversity is to create a small sample and reflect the diversity of individuals to the maximum extent (Yildirim & Simsek, 2013). 8 of the instructors are women and 12 are men. The ages of the instructors vary between 30-49. Their academic experience varies between 2 and 25 years, and their academic levels are Master's and Doctorate. 15 of the instructors did not participate in any course/activity related to distance education and 13 of them did not give any distance education before the Covid-19 outbreak. Instructors conduct distance education courses simultaneously or mixed (Table 1).

Table 1: Characteristics of the Instructors Participating in the Interview

Participants		
Characteristics	Number	Frequency
Gender		
Man	12	60
Woman	8	40
Total	20	100
Age		
30-35	11	55
36-40	7	35
41 and above	2	10
Total	20	100
Education Level		
Master	4	20
Doctorate	16	80
Total	20	100
Title		
Dr. Research Assistant	2	10
Instructor	7	35
Dr. Instructor	4	20
Asst. Prof.	5	25
Assoc. Prof.	2	10
Total	20	100
Academic Experience		
1 - 5 years/years	10	50
6-10 years	3	15
11-15 years	6	30
15 years and above	1	5
Total	20	100

2.3 Data Collection Tool

When the literature is examined, there are various types of interviews and they are generally grouped under 3 categories. These; structured, semi-structured and unstructured (Merriam, 2009). In this study, data were collected by semi-structured interview technique. With this method, previously determined interview questions were asked to the instructors in the determined order, and new questions were added according to the progress of the interview in order to get more in-depth and detailed information in line with the answers from the instructors (Merriam, 2009).

Interviews were conducted over the web-based video conference system with the "Instructor Interview Form" created for the purpose. An appointment was made before the interview from the instructors selected for the interview.

These are the questions that the researchers themselves produced as a result of the literature review while creating the interview form. In line with the purpose of the study, the main themes of the interview questions were determined as planning, implementation and evaluation. The prepared questions were examined by 5 field experts (2 experts in the field of distance education), necessary changes were made on the questions and they were finalized. During the data collection process, an average of 20 minutes with each participant. The ongoing conversations were recorded electronically and converted into written form.

2.4. Validity and Reliability

In order to increase the validity of the research, the interview questions prepared were evaluated by 5 researchers who were experts in the subject before they were applied, and they were applied after the necessary improvements were made according to the suggestions made. Another title that was forgotten to be added to the academic level section was added, corrections were made in punctuation marks, and some words that created confusion were removed. Some questions are divided into two because they are long. In order to increase the reliability in the analysis of the data, the codes were checked by different researchers and a code list was created by reaching a consensus.

2.4.1. Research Ethics

The data in the study were collected on a voluntary basis. Instructors were reminded that they could terminate the research process at any time. In addition, no information that would disclose the identity of the participants was included. In addition, since the research is not an applied study, it does not have a dimension that will negatively affect the participants physically or psychologically.

2.5. Analysis of Data

Content analysis technique was used in the analysis of the data obtained from the interview forms. The basic process in content analysis is to gather similar data within the framework of certain concepts and themes, and to interpret them by arranging them in a way that the reader can understand (Yildirim & Simsek, 2013, p. 259). In content analysis, the stages of coding and categorizing the data, finding the themes, organizing and defining the data according to the codes and themes, and interpreting the findings follow each other (Yildirim & Simsek, 2013).

In the analysis of the data obtained, the process started with the transcription of the interview records. Themes were created by grouping codes from the ideas given by each instructor to a question, sub-themes from these codes with similar content, and sub-themes with similar content. Tables showing the codes, sub-themes and themes for each question in the interview forms were arranged and a coding table was created. Each participant was given a letter before analyzing the data.

Two researchers coded the data separately using the coding table. At the end of this process, 90% coding compatibility was achieved (Miles & Huberman, 1994). The reliability formula ($\text{Reliability} = \frac{\text{Consensus}}{\text{Agreement} + \text{Disagreement}} \times 100$) suggested by Miles and Huberman (1994) was used to calculate the reliability of the study. By discussing the non-common codes, the inter-research agreement was increased to 100%. Afterwards, all of the data were coded by a researcher and the process continued. In addition, "direct quotations," which is another reliability criterion, are included.

3. Results

The findings regarding the planning/design, implementation process and measurement and evaluation parts of distance education practices are evaluated under the categories as in Tables 2, 3 and 4.

Table 2: Codes, Sub-Categories and Frequency Table Created in Terms of Design/Planning

Themes and Subthemes	Codes	Frequency
A. EXPERIENCE		
a. Experience-Aim	Planning	5
	Target Audience Needs	6
	Compliance With The Electronic System	4
	Benefitting Different Sources	3
b. Experience -Content	Few Topics	2
	Being Functional	4
c. Experience-Learning Experiences	Communication	5
	Interaction	5
	Trust	2
	Keeping the Student Active	8
	Intelligibility	7
	Fun and Eye-Catching	4
	Material	
	Using Case Studies	3
d. Experience -Evaluation Approaches	Information	5
	Process evaluation	4
	B. PROBLEMS	
	Motivation	4
	Material preparation	4
	Relapse	4
C. SUGGESTIONS		
	Providing Active Participation	9
	Focusing	6
	Motivation	3
	Prepare A Guide	2
	Careful Planning	4
	Interesting Material	5
	Designing Functional Content	3
	Ensuring Equal Opportunity	4
	Suitability For Target	7

As seen in Table 2, how are the views/evaluations of the instructors regarding the design/planning of the distance education practices of the research? In line with the answers and coding given by the participants to their questions, sub-themes were formed under the experiences, problems and suggestions and the frequencies related to them were included.

Codes related to experiences were created over the elements of the curriculum. It was mentioned that the experience of the instructors was analyzed in terms of the target, and the needs of the target audience, the achievements and the content of the program were taken into account while planning. The necessity of preparing a guide in accordance with the electronic system and the use of different sources were mentioned, and the planning of the content with a few subjects in order not to lose the focus of the student and to ensure permanence was mentioned. Below are examples of the answers given by the instructors.

Planning: *“First of all, it is necessary to make a planning for each lesson. In other words, what are the behavioral changes of students week by week, first of all, the gains need to be determined. Since the content comes to us ready-made from YOK, the knowledge, skills and attitudes that we want to see in students actually come ready-made. We plan our lessons accordingly. ...Moreover, I design and prepare a course material in my mind within the framework of the content that I have to present, considering the knowledge, skills and attitudes that I want to see from the student within the framework of the course” (F).*

“To begin with, I helped students to form an academic and professional knowledge about the course by making explanations about the course, what their achievements, experience and professional knowledge will be” (B).

“I stick to the curriculum more in terms of the preparation process. First of all, my limitation is the curriculum” (S).

Target audience needs: *“...it is important to be able to determine what the student wants” (L).*

Compliance with the electronic system: *“We are trying to bring the materials into a format suitable for the online system” (R).*

“I adjusted my course materials according to the distance education format” (T).

Benefitting different sources: *“In order to make the trainings more understandable, care should be taken to use slides, videos, materials and other sources as much as possible” (B).*

“... I suggested to students the main sources to be used, reference sources if any, and intellectual sources that they can follow depending on their personal preferences” (Y).

Few topics: *“When planning, it is important to have few topics, it is necessary to ensure the permanence of the knowledge without tiring the student” (M).*

In distance education, I always advocate that few subjects are presented to students in an efficient way. I'm trying to do the same myself. Trying to teach many subjects to students can be tiring for both students and us (C).

“Do not engage in exaggerated curriculum loads, it is not efficient anyway” (B).

It was mentioned that the content should be suitable for daily life/functional, case studies, and fun and attention-grabbing in order to ensure the permanence and focus of the student. Regarding the practicing part, the importance of communication, interaction, trust in the instructor, trying to keep the student active in the process, making the content understandable and supporting with examples were emphasized. Below are examples of the answers given by the instructors.

Being Functional: “It is necessary to give examples from life and human resources issues that will arouse curiosity in students” (F).

“...it is necessary to give practical lessons” (F)

Fun and eye catching material: *“While preparing the material, it is necessary to use video-supported materials with plenty of visuals that will enable the participation of the student. Because we cannot ensure participation or we lose focus very quickly” (M).*

“If there are videos that I can use online, I try to use them. If not, I go to the lab and shoot a video myself. For the sake of adding visuality” (N).

“... I try to present interesting presentations by adding visuals” (E)

Using case studies: *“I prepare presentations and case studies. I am definitely preparing two case studies on each subject. After explaining the subject, I am talking about these case studies. And I present them separately to the students” (R)*

“... while explaining the subject as much as possible, I say that you can write about the case studies if there is something that happened to them. Somehow I want someone to post a note there on the message board. I try to include such students as much as possible” (F).

Regarding planning in distance education before the practicing, the instructors emphasized the importance of communication, interaction, clarity and trust, and stated that they kept the course duration short in order to keep the students active. Below are examples of the answers given by the instructors.

Interaction: *“Adding more interactive videos, uploading more attractive teaching materials, using different interactive and different platforms that appeal to more sense organs and are suitable for their development levels will motivate them” (F).*

“However, I believe that it is more beneficial to teach interactive lessons rather than a monotonous instructor. Thus, you can keep the distracted attention on the lesson all the time” (A)

Trust: *“The biggest disadvantage of distance education is social isolation, so it is very important for students/trainees to trust the trainer” (A).*

Keeping the student active: *“It is important to involve the student in this process” (F).*

"We try to keep students in class by preparing quizzes, quizzes, forum discussion questions" (T).

"In order to keep the student active, we have shortened the lesson times (T).

"Since it is not like face-to-face training, I think that the lessons should not be more than half an hour in order not to decrease the efficiency" (B).

Intelligibility: "We are trying to prevent problems in both expression and perception in the online system" (R).

Regarding assessment and evaluation, it was stated that they informed the student from the beginning of the process and they made a plan to evaluate the process. Below are examples of the answers given by the instructors.

Process evaluation: "We removed our midterm week, instead of quizzes, our forum discussion questions, homework project etc. we prepare, spread the process over 14 weeks, average at least 7 quizzes, forums, etc. We determined it to be" (T).

"Can I make a process-based assessment or on which subjects should I specifically take an exam? I definitely determine beforehand" (F).

"I have preparations in the form of a quiz in 3-4 weeks. On behalf of whether they understand the lesson or not" (S).

Information: "At this stage, I gave detailed information about the system to the students, both verbally in the course and in written form over the system, both in exams and in homework" (B).

"I always informed the student beforehand during the exam process; I have clearly informed the students about the subjects and resources that the student will be held responsible for in the exams. I have always tried to make a fair scoring and assessment and evaluation according to the level of the students" (Y).

"I warn students from the beginning about copying. I state that I want them to be original" (E).

Another theme that emerged in the planning phase of distance education is on problems. Instructors stated that both they and the student experienced a loss of motivation from the beginning of the process. They stated that the loss of motivation caused them to fall into repetition while planning the lessons, they had difficulty in preparing materials in accordance with the online system and they wanted to receive support in this regard. Since they cannot see the body language of the students, the instructors, who do not know whether the student participates actively or not, are worried about whether the lessons will be understandable even at the planning stage. Below are examples of the answers given by the instructors.

Repetition, loss of intrinsic motivation: "The courses I conducted were generally management courses, in this sense, there were presentations I gave in the course, PowerPoint presentations. I used to update them every year, frankly, distance education killed my desire to renew myself. For the first time, I am teaching the previous year's course without renewing my career" (F).

"I can say that there is a loss of motivation of both students and instructors" (H).

"Students have very low motivation in the lessons. I see that they are not prepared enough or not willingly for the assignments and presentations I have given before. (P).

Material preparation: "Preparing materials suitable for the distance education system can be tiring. Sometimes I realize that I am repetitive. Trying to support continuous motivation or thinking about active participation is exhausting. Materials should be effective and support should be provided for systemic situations" (P).

"The biggest problem is in preparing material. In distance education, the teaching materials we prepare can be mostly in the form of preparing ppt presentations. But I know that these are not effective and efficient. These trainings should be given on more interactive platforms. We may not have enough technological knowledge or time" (F).

"I had problems in preparing and uploading material systematically. I solved them by converting them to other formats" (T).

"Some lessons need equipment to be taught/designed, but if you can get them yourself, you can get them or not if you don't. I would not have been able to do the accounting course without the tablet pen my wife bought for her own institution. I wouldn't be able to do it efficiently. There are lessons to be told on the slide, there are lessons that cannot be told. Institutional support is important. We bought the camera and microphone ourselves. We also choose which program we will tell. These are the big obstacles in planning" (O).

As a suggestion, they mentioned that in order to ensure active participation, focus and motivation of the students, they should plan well, use interesting materials and share content suitable for daily life, ensure equality of opportunity, and plan with assessment and evaluation in accordance with the target, and thus the practices will be more accurate and effective. and made recommendations.

To actively participate: *".... to be able to teach fluently and sustainably in front of the screen, to keep the student's attention in the lesson and to make it possible to participate in the lessons, etc. I can recommend them to take them into account and if they believe that they have deficiencies, they should correct these deficiencies"* (Y).

It is interesting and useful in daily life: *"Human resources issues that will arouse curiosity in students, examples from life should be given"* (F).

"It is important to enrich the content visually. After all, laboratory lessons were the lessons that the students came and studied, they should be more interactive, the student should attend the lesson" (N).

"I make it interesting for them by including up-to-date information on every subject and techniques, not just relying on books, I recommend it" (P).

"Since it is not face-to-face, they will grab whatever they see in the visual, it is necessary for the materials to be interesting so that they are not too distracted" (E).

Guide preparation: *"The process of determining the goals and achievements of the course, and generally the course planning process takes place very quickly, but this is an experimentation process. Sample guides should be prepared for each course code"* (A).

Careful planning: *"I prepare my 14-week plan before the semesters begin, and I determine my presentations and textbooks accordingly. I prepared the same way in distance education, I had data and resources, good planning is important"* (H).

"When we come together with students synchronously, we need to spend our time productively. We need to make a plan regarding the practicing of the theoretical knowledge we want to give when it is asynchronous, and when we are synchronous, we also transfer the subject in the courses we conduct synchronously, as a suggestion, they should focus on the practicing in the synchronous courses" (F).

"The subject selection specific to distance education should be made. If the subject that will normally be taught in the classroom in 14 weeks includes 6 units, it should be halved in distance education. You have to choose the most important ones. It is necessary to choose the subjects that need to be focused on, it is necessary to explain few things well" (O).

Ensuring equal opportunity: *"All students who are subject to formal education in Turkey should have the same equal conditions. When this doesn't happen, it reduces our productivity for distance education, both for us and for the students."*

Suitability for target: *"It's important to be careful to ask questions that parallel what we taught about"* (H).

Table 3: Codes, Sub-Categories and Frequency Table Created in Terms of Practicing

Themes and Subthemes	Codes	Frequency
A. EXPERIENCE		
Experience- Method/Technic/Material	Appropriate Material (Video, Lecture Notes, Presentations, Case Study, Article)	9
	Relative To The Student	4
	Visuality	6
	Involving The Student In The Process	6
	Interaction	5
	Daily Topics	4
	Motivation	4
	Permanence	3
B. PROBLEMS		
	Infrastructure	9
	Interaction	4

Crowded classroom	3
Classroom Management	5
Inability To Focus	3
Participation	11
Course Access	5
Student Perception	2
Applied Lessons	2
Intelligibility	5
C. SUGGESTIONS	
Careful Preparation	5
To Adapt	4
Lesson Planning	5
Interesting	7
Visuality	9
Not To Repeat	4
Ensuring Participation	10
Technical Infrastructure	12
Preparing For The Hybrid System	2
Be Original	3
Transferability	3

What are the opinions/evaluations of the instructors regarding the distance education implementing process, which is the second sub-problem? In line with the answers and coding given by the participants to their questions, sub-themes were formed under the experiences, problems and suggestions, and the frequencies related to these were included (Table 3).

Experiences were evaluated as methods, techniques and materials. Regarding the implementation process, the instructors mentioned that the appropriate materials should be presented to the students in an appropriate way, including the planning phase of the course, and they mentioned that distance education provides flexibility in time and space, thus increasing the possibilities of sustainability and repetition. They also stated the importance of the student being involved and active in the process. The activeness of the student can also be ensured by the content and motivation presented in accordance with them. In addition, the instructors also underlined that permanence can be achieved in distance education by learning the content that is presented appropriately after providing the necessary motivation. Below are examples of the answers given by the instructors.

Appropriate material (video, lecture notes, presentations, case study, article): *"I upload my weekly materials to the system. I am also uploading all my resources. In order for my students to benefit easily" (T),*

"I have prepared personal lesson documents that mainly use animations and visual effects. From time to time, I made students watch videos that could be related to their lessons" (Y).

"...I use channels on the internet. I give the lecture notes to the students as pdf by adding videos to them" (N).

"I give articles to students every week in my graduate classes. We are examining these. I also take notes from 4 or 5 different sources for my undergraduate students. I give them to students" (H).

"...I share my own notes from the system and I tell the students live, we teach the things that we cannot express verbally through videos, and we teach our lessons in mutual communication" (S).

"I use different methods for different courses. For the course that students choose according to their own fields, I mostly use articles and techniques that can develop this area of interest. By finding compilations of different articles and discussing them with the students, I try to advance them by sending them all before the lesson, reading and discussing them and taking the floor in turn" (P).

"PowerPoint presentations, Word and pdf documents, I share. I try to use online platforms from time to time. I do screen shares" (F).

Relative to the student: *"I believe that it would be beneficial to develop the teaching methods according to the student's profile and capacity and turn them into a variable structure" (B).*

Visuality: *".... just sticking to the book also bores the students a little more, I support them with shapes and graphics" (T).*

Permanence: *"I never used ready-made resources, I prepared all the course materials myself. Thus, the lessons were handled much more authentically and their retention in mind increased"* (Y)

"I took care to describe the subjects and explain them in a way that would attract the attention of the students. I think that educators should develop and apply examples and methods of expression that will be permanent in the minds of students with their originality and intellectual background in the transfer process" (B).

When it is looked at the problems encountered in the implementation phase of distance education, it is mentioned that the interaction is not sufficient and the participation is low due to the high number of students in the classrooms. The high number of students in the classrooms also brings problems in classroom management. It is seen that the perception of the students also affects the instructors negatively. Instructors also mentioned that they encountered technical/infrastructure problems and that adequate solutions were not produced. They also complained that they could not receive sufficient systematic support in distance education.

Technical Infrastructure: *"Sometimes I see things that need to be run through one system split up over many systems. We teach the course on another platform, and we enter the grade announcements on a completely different platform"* (A).

"There were great difficulties in the transition period to the first distance education. We were almost doing distance education via chat. So we were writing. In the next period, this was exceeded a little more" (R).

"We may experience interruptions when the internet is sometimes heavily loaded" (D).

"Distance education is a difficult process, we are constantly checking whether my voice is sounding or not, these are major setbacks" (N).

"There may be connection problems. Sometimes there are audio and video problems. Infrastructure should be created very well, there should be a consultancy unit that provides 24/7 consultancy. There is such a system, but we cannot always reach it when we want. Most of the time I could not reach at all" (F).

"I am having problems with the infrastructure of the university. Internet disconnection during class. Insufficient infrastructure of platforms used by universities. The crash of the system you are going to teach at once. We couldn't log into the system for 2-3 weeks anyway. Sometimes you start classes late, sometimes you don't start at all. These also hinder your lesson planning" (O).

"If there is a mathematical expression on the board, I have difficulty in writing and conveying it, but I tried to solve this problem with writable tablets" (N).

Interaction: *"There is almost no student-instructor communication outside of the classroom. This is the biggest problem."* (A).

"There is no dialogue, we are constantly teaching monologue with the student, and this monologue gets really tiring after a while" (K).

"The efficiency in face-to-face education and distance education is not the same. There is very little interaction, there is no mutual conversation and dialogue, when one of them speaks, the other has to wait. Sounds intermingle" (S).

"The lessons become one-sided monologues. Therefore, it is necessary to keep the course duration short, to reduce the course content as much as possible, to share the materials by mentioning what the important parts are while teaching in the course, and to ensure that the students stay relevant to the subject" (O).

Crowded classroom: *"The materials in distance education are not very effective because it is too crowded. Normally, we can conduct the lesson with more participation in face-to-face education"* (G).

Classroom management: *"The crowded classrooms gave me great difficulties in managing the distance education process. Sometimes I can't even get an answer to a simple question in 75-person classes"* (G).

Inability to focus: *"You can teach in the classroom for 2 hours without a break, the student has to listen at that moment, but it is very difficult to listen to the lecture on the computer. A lot of separate lessons and separate motivation are not possible during the day"* (O)

Participation: *It has been stated by the instructors that the students' perceptions about distance education think that "we can pass the lessons anyway, there is no need to attend the lesson, it is not compulsory anyway, it is recorded and then I watch it." For these reasons, the result is that the attendance to the courses is low.*

"The biggest problem is that the student does not attend the lesson. The nature of distance education cannot force anyone to participate, it is against the nature of distance education. Participation is always good for the student, for this reason, the student should be motivated very well, by uploading more interactive videos, more attractive teaching materials, appealing to more sense organs, using different interactive platforms suitable for their development level, teaching the lessons in a life-oriented and practical way. will motivate them" (F).

“The biggest problem is the participation of the students in the course, the other biggest problem we experience is that the students see distance education very differently from face-to-face education, and the biggest reason for this is the privileges given to the students. For example, there is a feeling that there is no obligation to attend or you cannot give a low grade to the student” (R)

“The biggest problem is that we can't take attendance. The student does not show interest in the lesson, or rather, he does not attend the lesson at all. For example, I have students who have not come to my class since the semester started, and there are students who do not come to my class and do not listen to the registered lessons” (R).

“We don't know if the student is listening or not, we can't see if the program is open or not. We don't know if he was concentrating on it at that moment. There are various restrictions, he does not have to open his camera. He doesn't have to turn on his microphone. This reduces the trainer's motivation. Not so in the classroom. We could understand whether the student understood or not from their attitudes and actions. By telling it over and over, we were actually developing something specific to the person, but unfortunately that is not the case here” (S).

“Not being able to get feedback from students, instead of asking general questions to students, it is necessary to address students by their names and ask questions. Students are reluctant to participate or I direct instant surveys like “Do you agree with this” (T).

“Since the students are not obliged to attend, it negatively affects the perceptions of the students towards the course, and the students should be made to apply the attendance obligation” (H).

“It is a great loss of motivation to see 2-3 students in a class of 80 people. Therefore, it may not go as you planned... It is a big problem that students have unlimited absenteeism rights” (O).

Access to the course: “Sir, I live in the village, I don't have a phone, teacher, I don't have internet excuses need to be removed... Students state that they have difficulty in accessing the classes” (H).

“We have students who have difficulties in accessing the courses, and for them, we have already recorded the courses and uploaded them to the system. This is how we can solve this problem” (P).

Applied lessons: “Students graduating from applied sciences can practice in the greenhouse in the field. From time to time, the laboratory can also do this, when these people do not see these practices, it is one-to-one. No matter how much we support it from afar, the person will have trouble in that regard because he does not do it himself. He needs to know how to plant, etc. I also have students who will work in the hospital. He should blend the basic information in practice so that he does not have a problem in business life” (S).

Clarity: “You can see from the eyes that the student understands you, you understand from the body language, but this is very difficult in distance education. It is very difficult to get feedback” (E).

“Since we couldn't get any reaction from the students, you can't determine how much of what we said has reached... It is very difficult to get feedback from the students” (O).

According to the research, the majority of the instructors state that they have difficulties in technological support and the software used, and that the students do not participate sufficiently. Instructors need more technical support and training. They also emphasized the importance of the effectiveness of the program used.

Instructors generally suggested the situations they used in practice to other practitioners. To prepare carefully, to adapt to distance education and to plan the upcoming lessons accordingly, to use interesting and visually appealing materials, not to fall into repetition and to be open to innovation, to use new situations to ensure the participation of students, to be able to solve technical infrastructure problems, to be original and They made suggestions such as presenting functional studies. Below are examples of the answers given by the instructors.

Technical infrastructure: “Universities need to develop their online education bases, and it will be beneficial to give the necessary training to the instructors about online education and material preparation” (R).

“Universities need to be constructive within the scope of technological infrastructure, material support, seriousness in education and content protection” (O).

Originality: “I find it important that the people who will give the training try to be original and always try to research new techniques, especially to apply methods according to the needs of the target audience” (Y).

Interesting: “Students need to prepare content in a way that grabs their attention and keeps their attention, and they really need to talk about topics that are relevant to their needs” (D)

“I don't think the distance education system is that bad. Although we talked about the negatives in general. I think it will be useful when applied in an integrated way. I think it takes time. Both for us and for the students. It is important to use it effectively. It is important to find solutions to the negative aspects. I think better results will emerge when educational scientists work on these issues” (S).

“Ppt presentation, these have remained traditional now. Different interactive platforms should be used”. (F)

To Adapt: *“We couldn't fully adapt because we thought we would get through this process, but the trend shows that even if the pandemic is over, a certain percentage of the lessons can take place online. The age demands it” (R).*

“I suggest that whatever we pay attention to in formal education, we should do the same. People must have the ability to motivate themselves... They must be motivated” (H).

Transferability: *“We need to share information that will be useful to the student and transfer them to their lives” (F).*

It has emerged as a result of the answers given that the instructors consider face-to-face education more efficient than online education. It can be thought that this situation is due to the fact that the practice was carried out for the first time and the instructors generally did not have any previous distance education experience.

While looking at the problems of distance education in general, it is seen that the reasons such as the problematic technical infrastructure, insufficient participation and interaction, and intelligibility come to the fore. While looking at the solutions to the problems in general with the implementation process, it was seen that the majority of the instructors agreed with the suggestions that the technical infrastructure should be developed, the facilities should be made more professional and the expectations of the students should be taken into account. Based on this situation, it can be interpreted that the importance of considering the views of students and instructors while completing the infrastructure works is emphasized.

Table 4: Codes, sub-categories and frequency table created in terms of Measurement and Evaluation

Themes and Subthemes	Codes	Frequency
A. EXPERIENCE		
Experience- Types of Measurement and Evaluation	Open-Ended Question	10
	Multiple Choice	9
	Homework	6
B. Problems		
	Unable To Take Exam	5
	Technical Infrastructure	7
	Copy/Plagiarism	8
	Crowded Classes	6
C. Suggestions		
	Encourage Students To Think	4
	Education	2
	Measuring Method/ Rubric	2
	To Be Objective	4
	Do Not Force The Student	5
	Process Evaluation	8
	Open-Ended Question	7

As seen in Table 4, what are the opinions/evaluations of the instructors regarding measurement and evaluation in the distance education practices of the research? In line with the answers and coding given by the participants to the questions, sub-themes were formed under the experiences, problems and suggestions and the frequencies related to them were included.

When the coding of the Assessment Types/Experiences section is examined, the instructors stated that they can better measure the students and avoid the problems in the coding under the problems title, instead of taking online exams in general, they apply Open-ended questions, multiple-choice asynchronous exams with case studies, and give homework. Below are examples of the answers given by the instructors.

“I ask weekly discussion questions and short answer questions. I created a question bank, randomly selected different questions for each student on the same topic basis. In this way, I was able to avoid copying” (T).

“I tried to apply assessment and evaluation in the exam, which usually consists of open-ended questions, from time to time by giving homework in addition to the exam” (B).

“Even though I take care to ensure a fair, consistent and reliable result in the design of assignments and exams given in the assessment and evaluation process, I think that this situation cannot be balanced from time to time as a natural consequence of distance education. For this reason, I paid attention to the design of exams where original and personal interpretation is at the forefront so that assessment and evaluation can be healthier” (B).

“I generally preferred to have assignments, presentations and exams with few questions. The most important measurement and evaluation criterion for me was to see whether the student had a good command of all the subjects that I explained and conveyed to the student throughout the term” (Y).

“Homework, I can measure with written material, I ask both information and interpretation questions. I also ask interpretation questions that they can blend with knowledge” (H).

“Quiz and reports replace visas in applied courses, they are in the form of homework as a final, and homework must be submitted in 3-4 hours. It can also vary according to the course, in some courses this period can be increased to 1 week or we want a presentation” (N).

“I want them to make a presentation, in terms of individuality” (S).

“I prefer to give homework more” (E).

“From the beginning of the semester, I had a 1-2 question homework prepared after each lesson, and I developed such a scoring system by adding the scores out of 5 or 10 on these assignments on top of their visas. I plan to make an evaluation by adding other notes on top of it” (P).

“I don't do process evaluation. Since we haven't seen it, the participation is very low anyway. Since the participation is low, it becomes impossible to make an evaluation in the process. We have to evaluate the results. I give homework to students during the midterm and final semesters, the homework focuses on a topic, students focus on a single topic and copy each other and send it to me. Other topics are ignored. I focus on the assignment that students need to know most in practice. Including several knowledge and skills. At least, I prefer them to prepare an assignment that they can research and add something from themselves. At least they try to study a few subjects and use their creativity to prepare something” (F).

“Assignments and presentations are the techniques I use mostly. In this way, I prevented students from memorizing only to take the exam, and I was measuring the students' ability to question and produce solutions related to the lessons (Y)”.

“Even though I take care to ensure a fair, consistent and reliable result in the design of assignments and exams given in the assessment and evaluation process, I think that this situation cannot be balanced from time to time as a natural consequence of distance education. For this reason, I paid attention to the design of exams where original and personal interpretation is at the forefront so that assessment and evaluation can be healthier” (B).

When we look at the problems related to the measurement and evaluation part, when we look at the methods and techniques mentioned about the measurement and evaluation of the instructors, the instructors do not take the exams because online students have difficulties in accessing the exams, they cannot do it, and this process is given to the students by various techniques during the term, giving homework, making presentations, etc. It was concluded that they were subjected to process evaluation. Some teachers also stated that they had difficulty in reading the comment questions in crowded classrooms. Also, it seems that the biggest problem is cheating, plagiarism. Below are examples of the answers given by the instructors.

Technique/Infrastructure: *“I have to give homework because the infrastructure of the university is not suitable for online exams” (F)*

“We have been subjected to the betrayal of technology in the exams we have made, we are improving our system” (T).

“Our assessment and evaluation experience is not very productive, actually, our systems oblige us to either give homework or take an exam” (H)

“There are systemic problems. Students upload their assignments to the system and we grade them. We always have to write them down on paper. It needs to become more systematic. When I press somewhere, I need to get their document. These are always a waste of time. It is very difficult to write it down one by one and transfer it to the student information system” (F).

“We give them the opportunity to write by hand while taking the exams, so that the student who does not have a computer can write by hand while taking the test” (F)

Copying/Plagiarism: *“The distance education process is a system in which it is difficult to prevent preparation and copying activities, especially at the point of measurement and evaluation. For this reason, it seems like a more effective solution to prepare assignments and presentations specific to the course or subject, based on interpretation and encouraging research” (Y).*

“Students can gather in online groups and solve the same questions” (H).

“I ask questions about the opinions of the students in a way that they cannot find on the internet so that they do not send and copy to each other” (P).

“In order to avoid copying, I can do an open exam with everyone's camera” (S).

“You give 1 day, cheated again, 3 days again. You say you are disabled 40 min. You say let me pull the process. It also dissolves in groups collectively” (O).

“The distance education process is a system in which it is difficult to prevent preparation and copying activities, especially at the point of measurement and evaluation. For this reason, it seems like a more effective solution to prepare assignments and presentations specific to the course or subject, based on interpretation and encouraging research” (M).

Crowded classes: *“I have about 300 students and it takes a lot of time to read their homework” (G).*

“I have 110 students, I have to ask each student a comment question separately, this is how I can prevent cheating or plagiarism, which is a very challenging situation for a teacher”.

“We still have problems with measurement and evaluation. In other words, when we give an online education to a crowded classroom, we cannot perform the exam because some of the students state that they have great difficulties in accessing online education” (R).

“.... I am in favor of students making preparations rather than giving homework for a certain period of time. Students may have difficulties in accessing” (S).

Within the scope of measurement and evaluation, the suggestions of the instructors suggested that open-ended questions that would encourage students to think should be asked and thus copying should be prevented. It has been suggested that the assessment and evaluation method is important and that the rubric prepared should be more objective and fair on behalf of the students, that the prepared questions should be suitable for the target and that the student should be subject to the process evaluation. Due to the fact that the process is challenging enough, it was mentioned that it was unnecessary to force the student more and suggestions were made. Below are examples of the answers given by the instructors.

Encourage the student to think: *“Prepare multiple choice questions in a way that is thought-provoking and based on interpretation. If the exams do not focus on a single question pattern, they inevitably become a stimulus for the student and the student is encouraged to think” (A).*

“I recommend that students ask questions that can use their creativity. Asking questions in a way that the student can use his/her own originality rather than questions such as explain what is memorization and write it down” (O).

Assessment Method/Rubric: *“Instead of using the questions that already exist in digital media or printed works, I recommend that the instructor prepare his/her own questions and use a scale method consisting of specific details that can measure mastery of the course and the subject.” (Y).*

“They have to choose a measurement method according to the conditions of the university and they need to develop a measurement according to the structure of the course in order to make a healthy measurement” (F)

Objective: *“No matter which measurement and evaluation approach they apply; objectivity should be at the forefront.” (F).*

“In order for the assessment and evaluation system to be fair, consistent and reliable, it is necessary to prepare the questions in a more classical (open-ended) and original format in which personal interpretation is at the forefront” (B).

“I have always tried to give fair scoring and to measure and evaluate students according to their level. I didn't just subject the students to the exams they would take via remote access, I gave them assignments frequently and scored these assignments” (Y).

Not forcing the student: “The information you give in applied lessons may not go to the other side, we are the ones who feel this the most. We should not force the students in this process too much” (N).

Process evaluation: “This is necessary in terms of not sticking to a single exam and the functioning of the course. Even if face-to-face training is started, one should not stick to a single midterm exam (T).”

“Students can be given long periods of time for exams and homework. It should be a student-oriented system” (S).

“Presentations can be expected from each student at 2-3 week intervals. Of course, this is very difficult in crowded classrooms” (S).

“I wish we could evaluate the process, but it would be very challenging. It is important to inform the student at the beginning and say that they will be evaluated with tiny little notes and to create the appropriate process. But we have more bureaucratic procedures that make us more tired. These need to be minimized” (F).

Open-ended question: “If the exam cannot be done online and under good supervision, I plan to test the knowledge level of the student by asking interpretation-based questions, by asking open-ended questions that the person needs to answer specifically. If it is not done online, it should be done in this way” (P).

Education: “I do assessment and evaluation in the form of homework, which can cause me to evaluate the student sufficiently. If it is distance education, it is absolutely necessary to give practical training to the instructors, where we can make the multiple-choice exams more practical... I have multiple-choice tests with high validity and reliability. I also need to get an education on this subject. I don't know where and how to get it from whom” (F).

“Since I could not receive training on online systems, I already learned about my site by solving it by myself, but there is still an unfamiliarity with the system and I did not choose that system because I was concerned about determining the question styles for the online evaluation system” (P).

4. Discussion

With the sudden transition to distance education, it is in question that universities cannot adapt sufficiently. Distance education practices have affected both students and lecturers. Conducting the courses with purely technological tools can sometimes be challenging for both parties. According to Petzold (2020), the instructors who switched to distance education do not have sufficient pedagogical knowledge, and many of the instructors did not give distance education and did not give a seminar/course etc. related to distance education. They did not participate and this situation brings with it complexity for them (Bailey & Card, 2009). Trying to carry out distance education in the logic of face-to-face education is the main problem (Ozalkan, 2021). According to the findings of Tuncer and Tanas (2011) they concluded that most of the lecturers did not receive any training related to distance education. Considering the results of the research, the majority of the instructors stated that they did not have experience with distance education and did not receive any support. They think that this is due to the university they work at.

The most important opinion of the instructors participating in the research about the preparation and planning stages of the lesson is that they have the anxiety of teaching online. Instructors stated that they generally prepare for their lessons regularly and make their plans in advance. However, they mentioned that they had problems in being motivated to the lesson and that the students were not motivated enough, and that this situation had a negative effect on them while planning.

When some of the universities that provide distance education are examined, it has been observed that all of the materials opened for access are printed materials and there are no interactive resources (Can, 2020). For this reason, the materials to be prepared regarding distance education should be prepared in accordance with the distance education program and in a way that encourages student participation and motivation.

Tuncer and Tanas (2011) stated that there are problems in distance education due to teacher qualifications such as preparing quality materials, creating appropriate learning environments, communication and presentation in distance education. In the research conducted, they stated that there is usually no problem in preparing materials, and that they are more efficient in accessing resources. However, the majority of the instructors stated that they encountered technical problems. It has also been concluded that the practitioners who will provide distance education take a long time in the planning and adaptation stages of distance education, they lose control from time to time, they feel stressed at these stages, and they have difficulties in transforming the content they have prepared for face-to-face education in accordance with distance education practices (Marek, Chew & Wu, 2021). It has been concluded that most of the distance education instructors do not think of providing distance education after the pandemic period (Kurnaz & Sercemeli, 2020). (Erfidan, 2019) As stated by the instructors involved in the research on content, transferring the most important content to students is also supported by other studies (Sayan, 2020). Similar results were also obtained in the study.

When evaluated within the scope of measurement and evaluation, measurement and evaluation processes were suspended in many countries, and it was necessary to conduct online exams without validity and reliability studies instead of exams and tests (Bozkurt, 2020). In terms of assessment and evaluation, it was observed that students performed lower than face-to-face education (Falowo, 2007). When the students were asked how to do measurement and evaluation in distance education, it was concluded that they preferred homework and project studies (Zan & Zan 2020). Instead of face-to-face exams, homework that can be evaluated in the process, presentations to be prepared by students, etc. It has also been supported by the literature (Sayan, 2020). Instructors also shared similar views both in the planning phase and in the assessment and evaluation parts.

According to Baris and Cankaya, (2016), they stated that distance education provides rich content access, theoretical and verbal courses can be given more easily with distance education, but practical courses cannot be given. Again, in the same study, it was stated that there was no serious problem in reaching examples during distance education activities, and it was observed that the lecturers in the research expressed similar views.

According to the results of the research, there are still many problems in the implementation of distance education. It is possible to increase productivity by continuing distance education, improving the system, reviewing methods, awareness-raising and practices that will increase interaction (Erfidan,2019). In addition, as in the study, the instructors question whether the students who receive distance education learn as much as the students who receive face-to-face education (Balta & Turel, 2013). In the future, it is predicted that distance education will become the primary basis of education or become a secondary learning tool instead of being a support function in face-to-face learning (Telli & Altun, 2020). For these reasons, it is the general opinion that the infrastructure of all relevant units should be improved and supported. In the interviews made with the lecturers, it was seen that the training, support and standardization were emphasized during the preparation of the lessons for the practicing part. For these reasons, it is important suggestions to provide sufficient infrastructure support to the instructors, to provide trainings, to provide expert support while preparing the content, to set standards in terms of methods and techniques to be applied in distance education, and to increase interaction with students (Erfidan, 2019).

When the table titled Data on Courses Given Through the Distance Education Center (23 March-07 April 2020) is examined, the rate of students' use of distance education materials is 50% (Can, 2020). The fact that students have the opportunity to watch the lessons later also reduces synchronous participation and student interest. The fact that students do not use cameras and microphones also causes a loss of motivation for practitioners in terms of the uncertainty of whether the student is in front of them or not (Ozalkan, 2021). Additional problems were encountered due to the fact that some applied courses were completely suitable for the classroom environment (Kurnaz & Sercemeli, 2020). When viewed from the student dimension, students' lack of technological tools and internet problems generally lead to their inability to participate in distance education practices (Marek, Chew & Wu, 2021). Students have self-discipline and self-regulation in this process, they can act responsibly for their own learning, it is important that they be aware of learning and have a self-control mechanism (Durak, et al., 2020).

In addition, the necessary technical / infrastructure of universities should be established in order to evaluate the success of the student. For this reason, measurement and evaluation units for distance education can be established in universities, measurement and evaluation experts can evaluate the questions and situations of the exams and necessary security measures can be taken (Can, 2012). It has also been observed that many of the universities do not have online exam practicing principles, and there is a need for legal regulations for measurement and evaluation in distance education practices (Can, 2020). As a result of the analysis, it was observed that the instructors generally focused on questions such as case studies, case studies, etc. in order to ensure student participation and prevent copying, and they made measurement and evaluation based on the interpretation power of the students on the questions. Bakioglu and Can (2011) mentioned that the same questions are asked over and over again and that the terminology questions cannot measure the success of the students, and that the students can use their metacognitive skills as well (as cited in Can, 2020).

According to the recommendations of UNESCO in terms of planning and applicability of distance education; Encouraging the use of different web tools, the necessity of having a strong internet connection and providing appropriate opportunities for students with device and internet problems, preventing inequality of opportunity in education, finding ways to increase interaction, planning the process by taking into account school closures, making continuous improvements, appropriate learning methods. plan and implement the program according to teachers, students, etc. It has suggested that digital literacy trainings should be given, the use of blended approaches, focusing on the process, making plans for assessment and evaluation and scanning feedback, making and maintaining lesson plans by considering the motivation and interest levels of the students (2020). Higher Education Quality Board (YOKAK, 2020), establishing a distance education policy in a qualified and effective distance education program, increasing technical and infrastructure opportunities, taking into account access situations, usage competencies, education-training processes, expert human resources, support services and information. In this process, there is a need to consider the safety and ethical dimensions.

5. Suggestions

According to the opinions of the instructors, it can be said that distance education programs have not yet achieved the desired efficiency. The following suggestions are given for the elimination of the deficiencies:

- In order to achieve success in distance education, the programs should be arranged in a way that covers the requirements of distance education.
- It is necessary to provide trainings based on serious examples on the design of distance education practices, how to design and conduct the teaching process, and the design and implementation of assessment activities.
- Content development units should be established regarding distance education, and necessary arrangements and improvements should be made by considering the interests and needs of the students, their motivations and the conditions of the social situation.
- A committee can be formed regarding distance education and this committee can make the necessary arrangements. Legal arrangements should be made in terms of the practicality of practices related to distance education.
- Pilot practices related to distance education should be made, legal regulations and laws related to distance education should be prepared in a way that does not leave any gaps.
- To instructors, students. 24/7 technological support regarding distance education should be provided. Support units can be created.
- A general program for distance education should be developed/adapted and revised in line with the feedback received. Regional programs should be put to work.
- Equality of opportunity should be ensured and the necessary technical infrastructure should be established in order for each student to easily access distance education systems, solutions should be developed for the foreseen problems, and possible problems should be predicted and precautions should be taken.

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The Impact of Augmented Reality-Based Argumentation Activities on Middle School Students' Academic Achievement and Motivation in Science Classes

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Abstract

Science teaching is one of the subjects that has been actively affected by Augmented Reality (AR) technology worldwide. Although the use of AR in science courses is increasing, the effective use of AR still needs improvement. The purpose of this study was to investigate the effect of augmented reality-based argumentation activities in 7th grade students' academic achievement and motivation in teaching astronomy content. The quasi-experimental design was used in this study. The participants consisted of 79 seventh-grade students from three different science classes. The students in experimental group 1 (n=26) participated in an instruction that included both augmented reality and argumentation activities about astronomy. The students in experimental group 2 (n=27) participated in an astronomy instruction that includes only argumentation activities and the students in control group (n=27) received astronomy instruction through traditional methods. The data were collected through pre-and post- academic achievement test and the Motivated Strategies for Learning Questionnaire (MSLQ). ANOVA and Kruskal Wallis tests were used to determine the statistical differences between the pretest and posttest scores of the students. The results showed that augmented reality-based argumentation activities were more effective in increasing students' achievement and motivation than the argumentation and traditional instruction in teaching astronomy.

Keywords: Augmented Reality, Argumentation, Science Education, Astronomy Education, Academic Achievement, Motivation

1. Introduction

The development in technology has resulted in a very important change in computer science and its use in different areas. Internet-related technologies and digital equipment have become a part of daily life for the new generation (Kennedy et al., 2008). In terms of access to information, this is the fastest phase of technological evolution ever (Palfrey & Gasser, 2011).

As schools try to cope with these new cultural and technological challenges, the technology continues to move towards more powerful GPS-enabled, location-based, WIFI-enabled handhelds capable of delivering high-quality multimedia, computing power (Dunleavy et al., 2009). Augmented Reality (AR) is one of the new technologies that emerged in this period. Azuma (1997) described AR as a change of virtual reality and stated that AR should have the features of 1) combination of reality and virtual, 2) real-time interaction, 3) registering in a three-dimensional environment. According to Cai et al. (2013), AR means integrating virtual objects into the users' environment through 3D graphics technology, computer vision, human-computer interaction, and multimedia techniques.

In many different areas, AR applications are created to use by independent groups and organizations. In the last 60 years, AR has been used in various fields (Cai, 2013) such as medical visualization, maintenance and repair, annotation, robot path planning, entertainment, and military aircraft navigation and targeting (Azuma, 1997). In addition, it is also used in other fields such as informatics, advertising, design, and health. Education is one of the areas that has been actively affected by AR technology worldwide.

AR learning environments have various benefits in the teaching and learning process (Klopfer & Squire, 2008; Shelton & Hedley, 2002). AR motivates students and increases their participation (Kerawalla et al., 2006); it helps teachers to teach subjects where students cannot obtain first-hand experience all the time such as in the field of astronomy and geography (Shelton & Hedley, 2002), and helps students take control of the learning in their method and at their rate (Hamilton & Olenewa, 2010). A great number of researchers have studied the potential effect of AR in student learning. Studies emphasize that AR can eliminate students' misconceptions and improve their understanding of concepts (Cai et al., 2021; Chang et al., 2013; Shelton & Hedley, 2002; Yoon, et al., 2017), increases students' achievement (Chiang et al., 2014; Fleck & Simon, 2013; Sahin & Yilmaz, 2020; Sirakaya & Kilic Cakmak, 2018; Sin & Zaman, 2010; Yıldırım & Seckin Kapucu, 2021), triggers motivation (Kirikkaya & Başgül, 2019; Cai et al., 2013; Chang & Hwang, 2018; Chen & Liu, 2020; Lu et al., 2020; Yen et al., 2013), develops positive attitude (Sahin & Yılmaz, 2020; Hwang et al., 2016), generates self-efficacy (Cai et al., 2021) and helps students to understand complex abstract concepts (Abdüsselam & Karal, 2012; Shelton & Hedley, 2002; Sirakaya, 2015; Yuen et al., 2011). AR was integrated with different learning strategies in these studies such as collaborative learning (Baran et al., 2020, Chen & Liu, 2020), inquiry-based learning (Radu & Schneider, 2019), problem-based learning (Fidan & Tuncel, 2019) and argumentation (Jan, 2009; Squire & Jan, 2007) in science learning. In the current study, AR was integrated with argumentation in teaching astronomy content. There are only two existing research studying both AR and argumentation (Jan, 2009; Squire & Jan, 2007). Both studies were conducted in environmental education and location-based AR games were used to make students participate in argumentation. In astronomy education, studies integrating AR and argumentation have not been examined yet. In the current study, AR was used through handheld devices in teaching astronomy content to engage students in argumentation.

Many students perceive science as a difficult lesson because of the abstract concepts (Palmer, 1999). Especially, astronomy concepts are considered difficult to learn by students (Aktamış & Arıcı, 2013) because 3D spatial relationships include unobservable events but they are taught usually with 2D animations and photographs (Chen et al., 2007). Understanding complex abstract concepts, unobservable and difficult to visualize events is easier through AR technology that enables 3D representation of events and provides an understanding of topics that students find difficult (Aktamış & Arıcı, 2013; Pellas, et al., 2019; Yuen et al., 2011; Wu, Lee, Chang, & Liang, 2013).

Although the usage of AR in science education is increasing, adopting AR into teaching is slowly, teachers are still not ready to use AR in their class (Oleksiuk & Oleksiuk, 2020) and prefer not to utilize AR technology (Garzón et al., 2019; Romano et al., 2020). Because they lack the competence and motivation to create their own AR learning experiences (Dunleavy & Dede, 2014; Romano et al., 2020). Also, the adoption and implementation of educational technologies are more difficult and time-consuming than other methods (Parker & Heywood, 1998). However, teachers who can not use existing technology will face significant difficulties, as they provide education for 21st-century students who use computers, mobile phones, tablets, the internet, and other technology devices every day (Aksoy, 2003; Reiner, 2009). Teachers need to follow up and keep up with

innovations like AR and use them as part of their teaching practice. Therefore, the current study has the potential to contribute to the usage of AR in science classes and how science teachers can integrate AR technology into class.

1.1 Argumentation and Augmented Reality

It is difficult for science teachers to develop learning strategies that engage students in inquiry in which they develop scientific thinking skills (Squire & Jan, 2007). Argumentation is a critical component of learning that facilitates scientific thinking and reasoning (Voss & Means, 1991) and it has a crucial role in knowledge construction (Walker & Sampson, 2013). The more students engage in argumentation, the more scientific thinking and reasoning skills they could develop (Nussbaum et al., 2012). Especially it is very important to engage students in argumentation in science classes and support them to construct more consistent and evidence-based arguments in Covid 19 pandemic process (Erduran, 2020). To construct more consistent and evidence-based arguments, supportive elements such as visual tools should be used (Akpınar et al., 2014). Meaningful connections in discussions increase (Erkens & Janssen, 2006), and more detailed communication about arguments was established with enriched visual tools (Jermann & Dillenbourg, 2003).

The students observe the behaviour of the objects (Clark et al., 2007), obtain different perspectives on the subject (Oestermeier & Hesse, 2000), comprehend presentations of scientific facts that are difficult to understand through textual or oral explanations (Cadmus, 1990) and find evidence for their arguments by the help of enriched visual representations (Clark et al., 2007; Jermann & Dillenbourg, 2003). One of the contemporary and cutting-edge visual tools is AR that provided rich data source for students' arguments. AR provides a real-world environment and real-time interaction to students enriched with 3D models by merging virtual objects with the real environment in 3 dimensions (Kerawalla et al., 2006). Models that students can interact with, enhance information acquisition and permit deeper understanding (Thornton, Ernst, & Clark, 2012). In this way, students collect data and evidence to support or refute the arguments. Studies conducted with AR technology concluded that all students participated in argumentation and constructed arguments (Squire & Jan, 2007; Jan, 2009). However, the variables such as academic achievement and motivation have not been examined using AR technologies integrated with argumentation.

The purpose of this study is to examine the effect of augmented reality-based argumentation activities in 7th grade students' academic achievement and motivation in teaching astronomy content.

Following research questions were addressed:

1. Is there a significant difference between the academic achievement scores of students in three different instructional interventions?
2. Is there a significant difference between motivation towards science and technology course of students in three different instructional interventions?

2. Method

The non-equivalent groups design is used as one type of quasi-experimental design. In quasi-experimental design, the members in the groups are not selected randomly, the experimental and control groups are formed with existing classes (Cohen et al., 2000).

2.1 Participants and Context

The participants consisted of 79 seventh grade middle school students determined by convenience sampling method; 26 were in the experimental group 1; 17 females and 9 males. 27 were in experimental group 2; 13 females and 14 males. And 26 were in the control group; 13 females and 13 males. Three groups of students were randomly assigned in one of the groups called experimental group 1, experimental group 2 and control

group (Cohen et al., 2000). The ages of students were between 12 and 13 and were from high socio economic status (SES) families.

The interventions in all groups were carried out by one of the researchers. Because the use of AR technology in science education was new when the study was conducted and science teachers lacked the ability to use AR technology. Before the implementation, the researcher participated in classes with the teacher of the course and made observations. The reliability of the implementation of instructions and data collection was increased by this prolonged engagement (Guba & Lincoln, 1989).

2.2 Interventions

A three-weeks 19-hours intervention was carried out for each group. Students in experimental group 1 received instruction that included AR-based argumentation activities about astronomy. The students in experimental group 2 engaged in astronomy instruction based on argumentation activities and the students in the control group received traditional astronomy instruction. The control group instruction did not contain either AR or argumentation activities. Figure 1 shows the interventional process of the study.

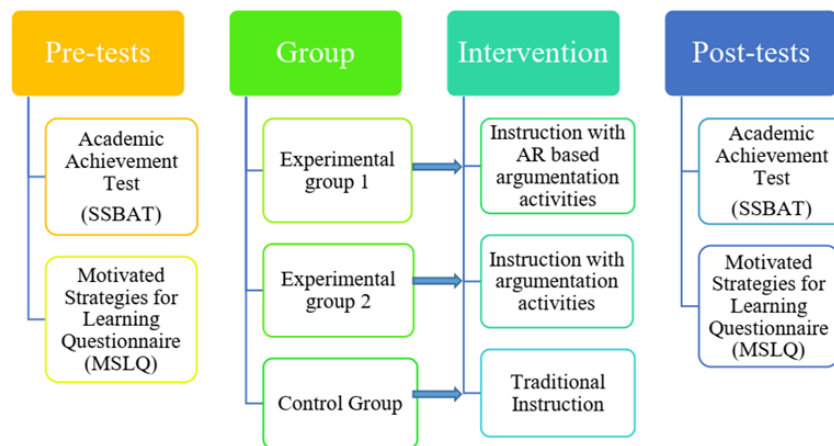


Figure 1: The interventional process of the study

2.2.1 AR activities

Students in experimental group 1 engaged in AR activities integrated with argumentation. AR activities were conducted with students' tablet computers through free applications such as i-solar system, Aurasma, Junaio, Sky view Free, Augment and Star Chart. Videos, simulations, and 3D visuals about astronomy in Augment and Aurasma applications were used as "overlays" during the activities. "Trigger images" were photographs, coloured areas and pictures in the students' textbooks and worksheets. Junaio browser app was used for the mobile applications of the planets in "Augmented Reality Magic Book: Solar System." The students could interact with and manipulate these videos, simulations, and 3D visuals during the AR activities.

Students made sky observations through "Sky View Free" and "Star Chart" applications. The school administration supplied tablet computers from their stock. The AR activities are given in detail in Appendix A.

2.2.2 Argumentation Activities

Argumentation activities were performed with experimental group 1 and experimental group 2 students. The students were divided into six groups by the teacher, each consisting of four students, paying attention to heterogeneity in terms of gender and success before the instruction. The students engaged in whole-class discussions after small group discussions. Table of statements, Predicting-Observing-Explaining, Competing Theories Cartoons and Argument Driven Inquiry (ADI) frameworks were used in argumentation activities. ADI consists of eight steps called "identification of the task, the generation and analysis of data, the production of a

tentative argument, an argumentation session, an investigation report, a double-blind peer review, revision of the report, and explicit and reflective discussion” (Sampson & Gleim, 2009; Sampson, Grooms & Walker, 2011). Due to the limited time, the last two steps of the ADI method were not performed in this study. The argumentation activities are given in detail in Appendix B.

2.2.3 Activities used in control group

Traditional astronomy instruction suggested by the curriculum was used in the control group. The activities used in the control group were similar to the activities used in the experimental groups. But the activities did not include either AR technology or argumentation. For example, experimental group 1 students observed the moon phases using AR and then small groups consisting of four students participated in argumentation. The students in experimental group 2 observed the moon phases in small groups through modelling which includes small balls that represent earth, moon, sun. Then small groups consisting of four students participated in argumentation. The control group students only observed the moon phases through modelling. They did not engage in argumentation or use AR technology for the observation.

2.3 Data Collection

The data were collected through an academic achievement test about astronomy and Motivated Strategies for Learning Questionnaire (MSLQ).

2.3.1. "Solar System and Beyond: Spacecraft" unit academic achievement test (SSBAT)

An achievement test was developed by the researcher to determine the academic achievement of the students for the "Solar System and Beyond: Spacecraft" unit. The test consisted of 40 questions used from TIMMS 2007 (Trends in International Mathematics and Science Study), PISA (Programme for International Student Assessment), Astronomy Diagnostic Test, course books, the Ministry of National Education's terminal exams, Deniz Çeliker's (2012), Arici's (2012) and Baltacı's (2013) studies. Three experts from the department of science education; (one of them held a PhD degree in astrophysics) and a science teacher examined the content validity of the test. Some questions were changed in line with expert views and two questions were removed from the test. The test consisted of 38 questions were given to 140, 8th-grade students for the pilot implementation. Item analysis was carried out by ITEMAN software for the pilot implementation. After the required changes, the final version of the test consisted of 30 questions. With a reliability value of .84 using the Kuder Richardson-20 (KR-20) scale, the pilot test was considered reliable. The reliability value of the test in the main implementation was .71 for the pre-test and .70 for the post-test.

2.3.2. Motivated Strategies for Learning Questionnaire (MSLQ)

Motivated strategies for learning questionnaire (MSLQ) was constructed to assess students' motivation and learning strategies in a course context (Pintrich et al., 1993). The latest version of MSLQ developed by Pintrich et al. (1993) consists of motivational and learning strategies subscales. The motivation section of the questionnaire consists of 31 items and six subscales composed of intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance, and test anxiety. The learning strategy section consists of 50 questions and nine subscales. The items of the questionnaire use a seven-point rating scale (1= not at all true for me, 7= very true for me). The MSLQ consists of two sub-scales and the scores obtained from the subscales can be used partly according to the purpose of use of the researcher (Pintrich et al. (1991). So, in the current study, only the motivation section was used to assess students' motivation.

The Turkish version of the MSLQ was adapted to Turkish by Sungur (2004) and it was found reliable. In the current study, the questionnaire was used for the science and technology course and the reliability coefficient for the motivation section was .87. The reliability coefficients were .67 for intrinsic goal orientation, .68 for

extrinsic goal orientation, .77 for task value, .89 for control of learning beliefs and self-efficacy for learning and performance, and .73 for test anxiety.

2.3 Data Analysis

ANOVA was used to determine whether there was a significant difference between the pretest and posttest mean scores of the students' "Solar System and Beyond: Spacecraft" unit academic achievement test. To determine whether there was a significant difference between students' motivation towards science and technology courses, the Kruskal Wallis H test was used because the data did not correspond to a normal distribution.

3. Results

3.1 Academic achievement

ANOVA was carried out to determine whether the pre-test and post-test scores of the students in the experimental and control groups showed significant differences. Before implementation, Tamhane's Post Hoc Test was conducted, due to the Levene Homogeneity test results. There was no significant difference between the pre-test SSBAT's mean scores of the groups ($X_{\text{experimental 1}} = 13.27$ $sd = 4.01$, $X_{\text{experimental 2}} = 15.48$ $sd = 5.57$, $X_{\text{control}} = 14.23$ $sd = 3.79$, $p > .00$). Descriptive statistics for SSBAT's post-test scores were examined when ANOVA assumptions were met. Descriptive statistics for SSBAT post-test scores are given in Table 1.

Table 1: Descriptive Statistics of the SSBAT's posttest mean scores

GROUP	N	\bar{X}	SD
Experimental group 1	26	25.96	2.51
Experimental group 2	27	23.63	3.11
Control group	26	22.07	3.67

The ANOVA results of SSBAT mean scores of the groups are presented in Table 2.

Table 2: ANOVA Results of the SSBAT's posttest mean scores

	Sum of squares	df	Mean square	F	p
Between groups	198.87	2	99.44	10.14	.00*
Within groups	745.10	76	9.80		
Total	943.98	78			

ANOVA results showed that there was a significant difference between the posttest achievement mean scores of the groups ($F_{2-78} = 10.14$, $p = .00$). The Scheffe test was used as post hoc to find out where the significant difference occurred among the three groups' means scores and the results are presented in Table 3.

Table 3: The Scheffe test results related to the SSBAT's mean scores

Group (i)	Group (j)	$x_i - x_j$	SE	p
Experimental group 1	Experimental group 2	2.33	.86	.03
Experimental group 2	Control	1.55	.86	.20
Control	Experimental group 1	-3.88	.87	.00

Results from Table 3 indicate that there was a significant difference between post-test mean scores of students in the experimental groups and control group in favor of the experimental group 1 whereas there was no significant difference between the experimental group 2 and the control group.

3.2 The motivation of students

To determine whether there was a significant difference between students' motivation towards science and technology course, the Kruskal Wallis H test was used because the data did not correspond to a normal distribution. The results were presented in Table 4.

Table 4: Kruskal Wallis H Test results of the groups' gain scores on motivation

Subdimensions	Group	n	Mean rank	df	χ^2	p
Intrinsic Goal Orientation	Experimental group 1	26	53.46	2	13.85	.00
	Experimental group 2	27	32.48			
	Control	26	34.35			
Extrinsic Goal Orientation	Experimental group 1	26	47.73	2	6.13	.00
	Experimental group 2	27	39.65			
	Control	26	32.63			
Task Value	Experimental group 1	26	55.12	2	18.89	.05
	Experimental group 2	27	28.83			
	Control	26	36.48			
Control of Learning Beliefs	Experimental group 1	26	52.50	2	12.13	.00
	Experimental group 2	27	34.09			
	Control	26	33.63			
Self-Efficacy for Learning and Performance	Experimental group 1	26	52.54	2	12.88	.00
	Experimental group 2	27	30.70			
	Control	26	37.12			
Text anxiety	Experimental group 1	26	33.69	2	2.96	.23
	Experimental group 2	27	43.35			
	Control	26	42.83			

The results of the Kruskal-Wallis H test indicated that there was a significant difference between the groups in all subdimensions of the MSLQ except "test anxiety." Mann Whitney U test were conducted to evaluate pairwise differences among the three groups. The results were given in Table 5.

Table 5: Comparison of the MSLQ post-test gain scores of the groups (Mann Whitney U Test)

Subdimension	Group	N	Mean rank	Rank sum	U	p
Intrinsic Goal Orientation	Experimental group 1	26	34.27	891.00	162.00	.00
	Experimental group 2	27	20.00	540.00		
	Experimental group 1	26	32.69	850.00	177.00	.00
	Control	26	20.31	528.00		
	Experimental group 2	27	26.48	715.00	337.00	.80
	Control	26	27.54	716.00		
Extrinsic goal orientation	Experimental group 1	26	29.52	767.5	285.50	.23
	Experimental group 2	27	24.57	663.5		
	Experimental group 1	26	31.71	824.50	202.50	.00
	Control	26	21.29	553.50		
	Experimental group 2	27	29.07	785.00	295.00	.29
	Control	26	24.85	646.00		
Task Value	Experimental group 1	26	35.40	920.50	132.5	.00
	Experimental group 2	27	18.91	510.50		
	Experimental group 1	26	33.21	863.50	163.50	.00
	Control	26	19.79	514.50		

	Experimental group 2	27	23.93	646.00	268.00	.13
	Control	26	30.19	785.00		
Control of Learning Beliefs	Experimental group 1	26	33.27	865.00	188.00	.00
	Experimental group 2	27	20.96	566.00		
	Experimental group 1	26	32.73	851.00	176.00	.00
	Control	26	20.27	527.00		
	Experimental group 2	27	27.13	732.50	347.50	.95
	Control	26	26.87	698.50		
Self-Efficacy for Learning and Performance	Experimental group 1	26	34.17	888.50	164.50	.00
	Experimental group 2	27	20.09	542.50		
	Experimental group 1	26	31.87	828.50	198.50	.01
	Control	26	21.13	549.50		
	Experimental group 2	27	24.61	664.50	286.5	.24
	Control	26	29.48	766.50		

The results of the Mann Whitney U test showed that the gain scores of the students in the experimental group 1 in all sub-dimensions of MSLQ except for the “extrinsic goal orientation” sub-dimension, were significantly different than the gain scores of the experimental group 2 and the control group students. In the “extrinsic goal orientation” dimension, there was a significant difference between experimental group 1 and control group but there was no significant difference between the gain scores of experimental group 1 and experimental group 2. No significant difference was found between the gain scores of the experimental group 2 and control groups in any of the sub-dimensions.

4. Conclusion and Discussion

Results showed that students in experimental group 1 engaged in the learning process that includes both AR and argumentation activities about astronomy had higher scores of achievement test than the experimental group engaged only in argumentation activities about astronomy and the control group engaged in traditional intervention. But there was no significant difference between the experimental group 2 and the control group. In line with these results, it can be claimed that the reason for the high academic success of the experimental group 1 is due to the AR technology. In parallel with the results, it has been reported in the literature that AR technology increases achievement (Chiang et al., 2014; Fleck & Simon, 2013; Sahin & Yilmaz, 2020; Sırakaya & Kilic Cakmak, 2018; Sin & Zaman, 2010; Yıldırım & Seckin Kapucu, 2021). For example, in the study of Sin and Zaman (2010) conducted with middle school students to determine the usability of the book developed using AR technology on the Solar System, on the ease of use, learnability and effectiveness, it was concluded that experimental group students' success was higher than the control group students. Similarly, Sırakaya and Kilic Cakmak (2018) conducted a study to investigate the effect of AR on students' achievement, misconception and course engagement and they found that AR technology increased the achievement level of students and the experimental group had fewer misconceptions than the control group.

The reason for the high achievement of the students in experimental group 1 in the current study could be that the AR technology increased the motivation of the students and facilitated their learning. The AR technology was very new in science education when the study was conducted so it attracted the attention of students. Gurian and Stevens (2005) defined the motivational process as a process that tries to understand and achieve success by studying biochemistry, neurotransmitters and nerve tissue (cited in Rogers, 2014). Applegate and Applegate (2010) also stated that one of the most important factors affecting student achievement is motivation.

For middle school students, astronomy has abstract concepts that science teachers have difficulty in teaching (Aktamış & Arıcı, 2013). The fact that AR technology facilitates learning by concretizing the subjects, eliminating misconceptions, and providing retention could be a reason for the increase of students' achievement. Researchers have stated that AR technology helps students to understand complex abstract concepts and that it is a technology that can be used for unreachable things, unobservable and difficult to visualize events and enables them to understand subjects with learning difficulties (Aktamış & Arıcı, 2013; Cai et al., 2013; Kerawalla et al.,

2006; Pellas et al., 2019, Yıldırım & Seçkin Kapucu, 2021; Yuen et al., 2011). Abdüsselam and Karal (2012) concluded that AR environments are an advantage in students' understanding of physic concepts and transforming it from abstract to concrete. In Sirakaya's study (2015), the students stated that the implementation concretized abstract issues. Fleck and Simon (2013) determined that the AR system used on the phases of the Moon with 4th and 5th-grade students eliminated the misconceptions and significantly improved astronomy learning. In the study conducted by Zhang et al. (2014) on stars and constellations with fifth-grade students, the effect of AR on retention was investigated, and at the end of the implementation, it was found that there was a significant difference in favour of the experimental group in the retention tests.

The use of tablets as a mobile learning tool in the study can also be associated with the increase in the success of experimental group 1. With mobile learning, students can have the opportunity to learn whenever and wherever they want (Kamphuis et al., 2014). Students' being able to access learning materials prepared with AR technology whenever they want may be a factor in increasing their achievement.

In addition to emphasizing that AR technology increases achievement, it was also found in some studies that AR technology does not have a significant effect on achievement. In the study of Cai et al. (2013) with eighth-grade students, the students' success on the thick-edged lens experiment was examined and at the end of the study, it was found that although the average scores of the experimental group students were higher than the control group, there was no significant difference between the two groups. Abdüsselam and Karal (2012) examined the effect of the AR technology on the academic achievement of 11th-grade students in the "Magnetism" unit and no significant difference was found between the two control groups using the traditional method and the experimental group. Disparities in the results of the studies suggest that physical activities may be more effective in concrete subjects and when using realia. Researchers have stated that AR applications enable students to embody many abstract objects and experiments and that it is an approach that can be used for unreachable things (Aktamış & Arıcı, 2013; Cai et al., 2013; Kerawalla et al., 2006; Pellas et al., 2019; Yuen et al., 2011). Cheah et al. (2014) stated that AR may not always be the most effective learning tool, sometimes more traditional methods may be more effective in the learning process, and some students prefer physical models over virtual simulations. Similarly, Jonk et al. (2013) stated that sometimes, virtual research may be equal to or more effective than physical research, and at other times physical laboratories may be more appropriate than virtual laboratories. According to Jonk et al. (2013), virtual laboratories are effective when students investigate situations that cannot be done with physical research and cannot be observed. Kozma (1991) emphasized that even though children learn equally with different tools, some methods are specific to a certain environment.

In the current study, it was found that the gain scores of the students in the experimental group 1 in all sub-dimensions of MSLQ except for the "extrinsic goal orientation" sub-dimension, were significantly different than the gain scores of the experimental group 2 and control group students. No significant difference was found between the gain scores of the experimental group 2 and control groups in any of the sub-dimensions. Considering this finding it can be claimed that the AR applications with argumentation are more effective than other methods in increasing motivation. While there was a significant difference between the gain scores of experimental group 1 and experimental group 2, and between experimental group 1 and control group, the fact that there was no significant difference between the gain scores of experimental group 2 and the control group leads to the conclusion that AR technology creates this difference.

Similar results have been reported in the literature (Kirikkaya & Başgöl, 2019; Cai et al., 2013; Chang & Hwang, 2018; Chen & Liu, 2020; Lu et al., 2020; Yen et al., 2013). Intrinsic motivation is self-motivation and results in enjoying the process of enhancing one's competence in terms of certain academic tasks (Ryan & Deci, 2000). Individuals were internally motivated when they had fun, were interested, wondered (Deci et al., 1991; Malone, 1981), participated in the activity (Deci et al., 1991), and had difficulty (Malone, 1981). The AR technology was very new when the current study was conducted and the students had no experience with AR technology in their science class before. So, it is thought that the activities performed with AR technology, which is a new technology, cause students to be surprised, arouse curiosity and emotional reactions. The findings of this study also concluded that AR technology motivated the students internally.

5. Limitations and Future Research

This study has some limitations. First, the sample size was not big enough to generalize the results of the study. This study was conducted with students from high socio-economic status. To generalize the results, the future researcher can select more participants from both low and middle SES families. The students participated in an instruction that included both AR and argumentation activities in about “Solar System and Beyond: Spacecraft” unit. It was concluded that the AR technology-based argumentation activities were more effective in increasing the academic achievement and the motivation of the students. In future research AR-based argumentation activities can be developed and used in different topics of science. Because AR was a new technology in science education and teachers had inadequate knowledge and experience about AR technology when the study was conducted, one of the researchers of the study carried out the lesson in all groups. Teachers need to develop their own AR experiences to present the learning effects of AR available to a wider audience (Romano et al., 2020). This study was conducted with a quasi-experimental design. Action research with the science teacher who is the instructor can be carried out to examine the learning outcomes and problems experienced in implementation.

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Appendix A**The activities performed with augmented reality technology**

Activities	Content	AR applications used in activities
My constellation story	Designing a constellation, preparing a poster with information about this constellation, creating a story about the constellation, recording the narration of this story with video and superimposing the video on the poster through Aurasma	Aurasma
Meteor shower	Watching a video of a meteor shower superimposed on textbook	Aurasma
The moon and planets	Observing three-dimensional images of the moon and planets superimposed on a textbook	Blender and Aurasma
Space shuttle and the moment the shuttle launches	Observing a 3D image of the space shuttle with the Augment app. and the first launch moment of the shuttle superimposed on a textbook with Aurasma.	Augment and Aurasma
Moon, Earth, Telescope, Space Shuttle	Observing the rotation of the moon in its orbit around the Earth, the 3D telescope and the space shuttle view	Augment
The Planets	Exploring 3D models, videos, images and sounds about planets in the “Augmented Reality Magic Book” created by Nedim Slijepcevic and Wanju Huang	Junaio
Solar System	Interactively observing the solar system	i Solar System book and its application
First landing on the moon	Examining the first landing on the moon while this is happening in front of you in an immersive virtual world	Moon walking
Sky Observation	Observing the sky (the current position of every star and planet visible from the Earth and where they are and 3D effects, distances, brightness and positions of stars, constellations and planets)	Star Chart, Sky View

Appendix B**Activities performed with argumentation**

Activities	Content	Argumentation Frameworks
Who is right?	To engage in argumentation on the question of whether astrology is a science or not.	Competing Theories-Cartoons
The planets-table of Statements	To engage in argumentation whether the statements in the presented table about the planets are true or false.	Table of Statements
The phases of the moon	To explain the following: What are the phases of the moon and why do we see them in the order we do? Why do we see the same side of the moon every day?	Argument Driven Inquiry (ADI)
Urgent solution to space pollution	Making arguments about preventing space pollution	Constructing an argument



Problems in Writing a Qualified Journal Article Publishing an Article in a Reputable International Journal: What Makes it a Mission Impossible? (Especially at the Result and Discussion)

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Abstract

In developing countries, the quality of the publication in reputable international journals is continuously being improved. However, many writers struggle to be able to write a qualified article for such journal. Based on the observation and interview, it was found out that though the writers already knew about the rhetorical structures in the finding and discussion section, still their articles were not considered eligible to be published. The objective of this paper was to discuss the problems faced by writers in writing an article to be published in a reputable international journal. The data was gathered using a questionnaire given to students studying in the graduate school in University of Bengkulu majoring in Language Education. The findings reveal that the writing problems are related to the four aspects of behavior suggested by Adnan (2017) : 1) lecturers' behavior in the thesis consultation, 2) behavior aspect outside the learning, 3) cognitive aspect, and 4) psychomotor aspect. A number of recommendations have been made regarding these findings: A continuous and proper training on formal writing genre should be started from middle school. In the university, students should be widely exposed to the scientific articles published in reputable international journals, especially in subjects like Academic Writing and English Language.

Keywords: Graduate Students, Reputable International Journal, Writing Problems

1. Introduction

Writing an article for a reputable journal is a challenging task even for graduate students. The Result and Discussion section seem to be the very difficult part to write especially for graduate students of Language Education Department, both English Language Education and Indonesian Language Department in University of Bengkulu. Their articles are often rejected by editors of a journal since they have not met the required standard for academic writing. Arsyad (2014) states that most of students' writing in Discussion section is not in the form of argumentative writing. Moreover, Wardhana (2016) says the articles are often written not in complete Swales' steps; only steps 1, 2, and 5 are applied. Therefore, readers' understanding of the articles may be disrupted. Readers may not be able to find clear and complete information concerning the result of the research, previous research applied and the recommendation for the application of the research result. In other words, the

information presented by the writer is incomplete (Iqnatius, 1999). In addition, articles written by those graduate students are lack of rhetorical construction of academic writing.

Based on the fact, it is more likely that the quality of education may be affected. 80% of those graduate students of Indonesian Language Department are mostly in-service teachers of elementary and primary school, even some of them are lecturers teaching in private universities in Bengkulu. In addition, it was found out from the tracer study Indonesia (2016) that 50% graduates of this department became teachers of various levels of education all over Indonesia. It is a general understanding that teachers are important element in education. Improving teachers' quality means improving the quality of education as well (Farhani, 2015). One way to improve teachers' quality is to require them to write an article to be published in a journal prior to their thesis exam. It is assumed that if they write their article by employing the right ways in writing an article for journal publication, they will write their thesis draft in a similar way. In order for the students to be able to write a good article, this particular research study attempts to find out and describe problems faced by graduate students of English and Indonesian Department in writing an article to be published in a reputable international journal, specifically in the Result and Discussion section.

The importance of language in acquiring academic writing skills is similar to the area of writing tests (Weigle, 2002). Therefore, the ability to write in Writing Learn Language (WLL) perspective is focused on the examining the rules of writing which are developed in second language learning (L2) competence with the priority of L2 as a part of writing in L2. Meanwhile, the master program in Education field expects its graduate to be junior researchers. Based on this fact, it is a general rule that a researcher should also serve as an author for journal publication reporting the research result he/she has conducted. Hence, it is an urgent need for a researcher to be able to write a qualified article to be published in a reputable journal. When the problems in writing the articles have been identified, the writers may then anticipate them by using the appropriate strategies.

This study was also conducted as a way to support the Vision and Mission of the Faculty of Teacher Training and Education, University of Bengkulu as a world class Faculty (Bengkulu, 2013). One of the first steps to achieve this is to improve the quality of articles written by the academicians. The increase of the citation index of the academicians is also encouraged through the publication of the graduates internationally.

2. Methods

This is a descriptive qualitative study which describes various problems faced by graduate students of English and Indonesian Language Department, University of Bengkulu in writing an article to be published in an international journal. The study involved six graduate students from English and Indonesian Language Department. Characteristics of the subjects are able to manage and develop research results that are beneficial to society and scientific development, and get national and international.

2.1. Data Collection Technique

The data was collected by using interview questions which were developed based on four aspects of behavior in writing suggested by Adnan (2017). They are: 1) lecturers' behavior during the thesis consultation, 2) behavior aspect outside the learning, 3) cognitive aspect, and 4) psychomotor aspect. There were 20 questions served as a guide in digging information concerning the problems faced by the respondents. The interview was conducted either directly using the interview questions, or indirectly during the consultation hours. The data was gathered during the teaching and learning process, the consultation hours, and during the discussion with colleagues. The data was then compared to the data gathered from the descriptive and reflective field notes.

2.2. Data Analysis Technique

Data analysis involved representing the data into descriptive form and counting the data quantitatively to get the pattern of the problems faced by the respondents. This pattern was then validated by comparing it to the respondents' writing and by discussing it with other colleagues.

3. Procedures of the Research

A participatory and non-participatory interview guide was employed to answer the research question. This study followed these procedures:

- (a) Designing an interview guide as the instrument to find out the problems faced by the students
- (b) Practical and pragmatic try out to the instrument
- (c) Developing the specification of the instrument and specific indicators to formulate the data material
- (d) Validating the pragmatic data of the problems faced by the students
- (e) Validating the instrument using expert validation
- (f) Taking descriptive and reflective notes
- (g) Analyzing the descriptive and reflective notes
- (h) Writing research result

4. Results and Discussion

Results of the study are discussed in four aspects based on the aspects of behavior in writing suggested by Adnan (2017). They are 1) lecturers' behavior in the thesis consultation, 2) behavior aspect outside the learning, 3) cognitive aspect, and 4) psychomotor aspect.

4.1. Lecturers' behavior during the thesis consultation

The thesis consultation activities are divided into two main activities. The first is the activities during the course in Academic Writing (2 credit semester) at English and Indonesian Language Department, and the second is the activities of the writing consultation outside the classroom (through email or one-on-one consultation). Based on the data analysis, it can be said that lecturers' behavior during the consultation affects the students' activities when they are writing an article. Articles being written by the students are 100% taken from their thesis report. Thesis report is one of the requirements to get the master title.

Lecturers' behavior during thesis writing consultation is already good and appreciated, and they act as the supervisor for the article writing as well. The lecturers are those who have been certified and who have experience in writing articles. Averagely, they write two articles in each academic semester; one for a conference proceeding and the other for a journal. However, the experience of the supervisor is not appreciated well by the advisee. There is a tendency for the students to ignore the supervisor notes. They also prefer to copy the style of their former cohort who have been succeeded in publishing their writing in local journals.

During the consultation hours, even on the learning hours, advice from the supervisors are not really well listened by the advisee. This phenomenon applies since the students still depend on the style of writing shown by the the supervisor. Based on the observation, there are still some of the supervisors who do not follow the guidelines in writing articles for an international journal. Therefore, it is a need to build cooperation between the Department Association and the journal editors in order to set the agreement regarding the standard or guidelines for article writing. Another urgent matter which needs to be taken into account is the government intervention, in this case the Ministry of Research, Technology, and Higher Education. The ministry should give more attention to the improvement of the quality of articles. A rule concerning the external reviewer of research should also be considered since one of the output of granted research is the lecturer to publish an article in a journal. It is expected that the more qualified a supervisor is, the more qualified the articles being supervised.

In addition, the system applied in the university does not give wide appreciation to the lecturers who have well supervised their students in writing the article. Another problem is the time limitation. It is of a general understanding that there is only little time in finishing an article as the requirement to graduate. Most students are still allowed to have their exam two days prior to their judgement registration. It means that they have only two days to write their articles. It does not give the lecturers adequate time to supervise the article writing. As the result, the supervisors will sign the approval of the article without thoroughly reading or checking the draft of the article.

Based on the discussion with the lecturers, it can be said that the lecturers act as supervisors are exhausted in checking sentence by sentence on the students' article. It happens because the students only copy and paste the sentences directly from their thesis report. They seem to be unaware of the theories and rules in writing an article (JJ Eko, 2017). They could not be care less in revising their articles and providing non-academic reasons for why they do not do so.

4.2. Behavior aspect outside the learning

This aspect should be followed up with a system applicable in the faculty and in the university. The data about problems faced by the graduate students of English and Indonesian Department create a certain pattern. The pattern means that the students face quite similar problems. The description gathered from the observation and interview shows that both the surrounding environment at campus and at work is not conducive yet. It means that they do not have 'the power' to write and to publish their article since they are doing it merely for the fulfillment of the graduation requirements. Meanwhile at work, they write an article just for their need to be promoted. Publication has not been oriented to the real meaning of a publication.

4.3. Cognitive Aspect

This aspect very dominantly affects the students' skill in writing since writing is the most difficult skill to be acquired by most of the students. Students are more likely to be affected to express themselves orally. Therefore, when they are required to represent their ideas in written form, there is a tendency that they use the oral version of texts into the written form. Based on the data analysis, all subjects of this research have good cognitive competence or good IQ. However, this cognitive competence is not getting higher, if not to say degrading, since the academic atmosphere does not fully encourage it. Another data to support the cognitive aspect is the data from their Aptitude Test which shows that the students have good aptitude.

From the data gathered during the learning process in the Academic Writing class, which is designed institutionally to provide students with the ability to write academic articles, shows that students are able to follow the class activities satisfyingly and understand the materials well. Even they are equipped with the material from the (Swales, 1990) book and (Arsyad, 2001). However, the students are failed to produce acceptable research reports and the discussion was not written completely as well.

4.4. Psychomotoric and affective aspect

Psychomotor aspect and subjects' behavior in writing an article become dominantly represented on the article written by the subjects. There is an assumption that it is affected by the local and national culture which results into local and national wisdom. This aspect refers to the oral habit or culture which is rooted in the subjects themselves.

Based on the result of data analysis, this aspect inhibits the subjects' ability to read and write research-based articles, either in English or in Indonesian language. It is a need to change the oral habit into a writing habit in order to be able to share ideas and research report nationally and even internationally. Subjects' oral habit also discourages themselves to achieve the wide chance of being able to publish an article. Meanwhile, to be able to publish the article, Indonesian research should master the academic writing skill and be able to transform the rhetorical structure of Indonesian language into rhetorical structure of English language.

The habit of writing argumentative articles with expected academic indicators should be encouraged since the students write their final report or research report. Lecturers' supervision and good academic atmosphere are also needed in order to achieve the expectation. In order the lecturers to be able to supervise the students, a wide opportunities and good competency in writing qualified articles are needed as well. The same thing is done by Latief (2014).

5. Conclusion

Identifying the problems in writing a qualified article is specifically urgent so that the students may be aware of their own problems in writing an article for either accredited journal or international journal. Publishing is important since it gives the students the chance to contribute to the development of body of knowledge nationally and internationally. By publishing, an author has helped the society to improve life quality through reading recent research findings or reviews. It may also help introducing Indonesia widely to the international academic society.

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Under the Background of "Internet +," the Pain Points and Reflections of Participation in the Innovation and Entrepreneurship Competition of Liberal Arts College Students

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Abstract

China International "Internet +" College Students Innovation and Entrepreneurship Competition is one of the important starting points for the country to cultivate innovative and entrepreneurial talents. After investigation and research, it was found that the proportion of liberal arts projects advancing to the national finals was much lower than that of science and engineering projects, and the degree of compatibility between innovation and entrepreneurship projects and competition requirements was relatively lower. Liberal arts college students have many pain points such as little interest in innovation and entrepreneurship competitions, low participation, solidification of innovative concepts, and insufficient innovation. Colleges and universities should pay attention to their core advantages in text expression, topic speeches, information collation and other core advantages when cultivating the ability of liberal arts students in innovation and entrepreneurship competitions, combined with the current political hotspots to cultivate awareness of problems. They can stimulate the innovation vitality of liberal arts students through educational means such as "practical" professional course learning, "cross-border" second classroom construction and "immersive" innovation and entrepreneurship guidance, and then inject new momentum into social innovation and entrepreneurship.

Keywords: "Internet +" Innovation and Entrepreneurship Competition, Liberal arts college students, Pain Points, Reflection

With the proposal of the national strategy of "mass entrepreneurship and innovation," the majority of young students closely follow the national strategic deployment and the trend of science and technology innovation, and take the "Internet +" as the opportunity of the times, a large number of high-tech innovation and entrepreneurship projects continue to emerge, injecting a source of vitality and power into the national "double

creation" construction. The projects of the China International "Internet +" College Students Innovation and Entrepreneurship Competition are concentrated in the fields of manufacturing, information technology services, modern agriculture, social services, cultural creativity and public services, and the competition projects are closely integrated in various fields and industries. However, the survey and analysis found that the concentration of participation of liberal arts students in the competition is insufficient. With the continuous deepening of innovation and entrepreneurship education, the cultivation of innovative and entrepreneurial talents in colleges and universities has attracted much attention. Combined with the Guiding Opinions of the General Office of the State Council on Further Supporting College Students' Innovation and Entrepreneurship (The general office of the State Council, 2021, p.1), the pain points and solutions encountered by liberal arts college students in the process of innovation and entrepreneurship practice are further explored.

1. In the past three years, the data analysis of "Internet +" college students innovation and entrepreneurship competition national finals project

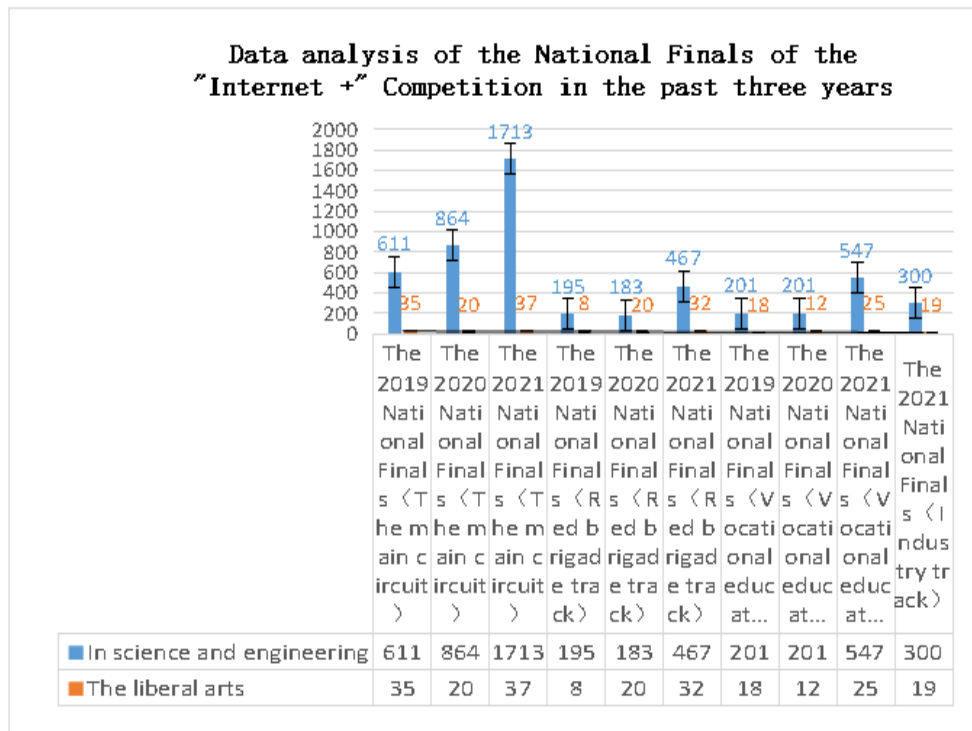


Figure 1: Data analysis of the national finals of the "Internet +" competition in the past three years
 Source: Ministry of Education of the People's Republic of China

In the past three years, the statistical chart of the "Internet +" College Students Innovation and Entrepreneurship Competition has been counted in various competitions of science and engineering and liberal arts projects

After data analysis, among the project teams that broke through the national finals of the China International "Internet +" College Students Innovation and Entrepreneurship Competition, there was a certain number of gaps between the number of projects with the theme of liberal arts and the number of projects with the theme of science and engineering. In the finals of the 5th China International "Internet +" Competition held in 2019, the proportion of projects with the theme of liberal arts and science and engineering is about 1:17; in 2020, it is 1:24; and in 2021, it is 1:27. In the past three years of China's international "Internet +" innovation and entrepreneurship competition, the proportion of liberal arts theme projects is low; the proportion of projects participating in the main track is mainly new science and engineering themes, and the proportion of liberal arts theme projects participating in the Red Brigade Track and vocational education track is increasing year by year. In order to better play the synergistic role of the competition, it is urgent to reflect on the pain points and difficulties exposed by the liberal arts in talent training and actively seek solutions.

2. The pain points of liberal arts college students participating in the competition

2.1 *The theme is not fit enough, and the disadvantages are getting bigger*

In recent years, the number of projects participating in the "Internet +" competition has increased year by year, but the proportion of projects with liberal arts and science themes has continued to increase, which is undoubtedly due to the strong growth of the new science and engineering theme projects, which further highlights the inferior position of liberal arts students in the "Internet +" competition. The reasons for this include three aspects:

The first is related to the theme of the competition. The five themes of the "Internet +" College Students Innovation and Entrepreneurship Competition are "Internet +" modern agriculture, including subdivision and classification of projects such as agriculture, forestry, animal husbandry and fishery; "Internet +" manufacturing industry, including advanced manufacturing, intelligent hardware, industrial automation, biomedicine, energy conservation and environmental protection, new materials, military industry and other project subdivisions; "Internet +" information technology services, including artificial intelligence technology, Internet of Things technology, cyberspace security technology, big data, cloud computing, tool software, social networks, media portals, enterprise services, next-generation communication technology and other project subdivisions. In 2017 Yong Lili, Song Hengheng and Xie Xinyi showed that "Internet +" cultural and creative services, including radio, film and television, design services, culture and art, tourism and leisure, art trading, advertising and exhibitions, animation and entertainment, sports competitions and other projects (p.147) ."Internet +" social services, including e-commerce, consumer life, finance, finance and legal affairs, real estate and home, efficient logistics, education and training, medical and health, transportation, human resources services and other project subdivisions. It can be seen that the majority of topics related to science and engineering are the majority, which also means that science and engineering projects are more likely to fit the theme of the competition, and liberal arts projects do have inevitable disadvantages in this regard.

The second is related to the foundation of the project. Compared with liberal arts projects, many science and engineering projects are after years of experimentation and research and development, with a deep disciplinary foundation, such as the "Seawater Rice - China New Rice Bowl" project of the Red Brigade Track of the Seventh China International "Internet +" College Students Innovation and Entrepreneurship Competition is the project team members and instructors in the farmland hundreds of experiments, countless days and nights of observation and data comparison results, with a solid disciplinary foundation and a large number of experimental data, which also provides a basic guarantee for the project to embark on the highest podium.

The third is related to the nature of the project. Most science and engineering projects focus on practicality, focusing on how to solve the technical difficulties and practical problems encountered in life, which can bring more timely benefits to society, including economic and social benefits. The liberal arts projects focus on theoretical discussion, law research, social guidance and other directions, the threshold is relatively low, the applicability is poor, it is difficult to grasp, so it will be greatly restricted when setting up the project.

2.2 *Students' participation is insufficient and their thinking is solidified*

Through the analysis of the participating projects, it was found that the participation rate of liberal arts students was much lower than that of science and engineering majors, and most of the core members of each team were science and engineering students, and the proportion of arts and sciences was extremely uncoordinated. The enthusiasm of liberal arts students to participate in innovation and entrepreneurship activities is not enough, and low participation has become the norm, which boils down to the solidification of mindset and the thinness of subject literacy.

Liberal arts majors are more inclined to theoretical learning, emphasizing the memory and understanding of subject knowledge, and schools often ignore the practical application of them in the process of talent training. This also makes a considerable number of liberal arts students understand "innovation and entrepreneurship" like

"neighbor story" and have not established a sense of innovation and entrepreneurship development. Under the constraint of the mindset, many liberal arts students are not interested in entrepreneurial and innovative activities, and some people think that innovation and entrepreneurship are special fields of science and engineering and have nothing to do with themselves. At the same time, the thinness of discipline literacy is also a shackle that restricts them. Liberal arts majors are mainly concentrated in 8 disciplines such as philosophy, economics, law, education, literature, history, management, and art, and each discipline can find a position in all walks of life. Even for enterprises with pure science and engineering, they also need management talents in production and operation, and they also need talent organizations and planning in literature majors in advertising and publicity, and need to consult legal talents when defending rights and appeals. However, many liberal arts students focus on pure liberal arts work such as civil servant examinations, writing, and editing, ignoring the original positioning of the discipline, which is the embodiment of the weak quality of the discipline.

In recent years, with the promotion and popularization of the "Internet +" innovation and entrepreneurship competition, more and more students understand that "Internet +" does not mean just delve into Internet technology, but also pays more attention to opening up new ideas for innovation and entrepreneurship, and also allows a number of liberal arts-themed projects to continue to "break through" in the "Internet +" innovation and entrepreneurship competition Red Brigade track. In the face of the growth of liberal arts projects, it is necessary to see the great potential of liberal arts projects, but also to accelerate the transformation of students' concepts and stimulate students' enthusiasm for participation in order to achieve the goal of sustainable development.

2.3 The project theme is single and lacks innovation.

The projects with the theme of liberal arts are mainly concentrated on the promotion of red culture in the propaganda of party history, and there are problems of single themes, duplicate contents, and lack of innovation. In 2017 Yong Lili, Song Hengheng and Xie Xinyi agreed that in contrast, in the talent training plan of liberal arts majors, the problem of insufficient innovation is also traceable, on the one hand, there are loopholes in the curriculum of liberal arts students, on the other hand, the weak awareness of students' problems, and the two problems lead to low willingness to innovate and lack of innovation ability of liberal arts students (p.147).

The improvement of students' technological innovation ability must be supported by a relatively complete knowledge system and subject theory, and it is necessary to have rich curriculum support and broaden their horizons. However, at present, the curriculum of liberal arts majors in various colleges and universities is far from it, mainly manifested in: the number of subject theory courses is large, emphasizing students' memory and understanding of theoretical knowledge, but the time in the arrangement of practical courses is not balanced, showing a situation of emphasizing theory and light practice; the course content is outdated, lack of cutting-edge courses, and even the problem of overlapping course content. Most of the knowledge points in the liberal arts revolve around the timeline of history, so there are often cases where teachers of several professional courses require students to repeatedly learn the knowledge of the same historical period; there are fewer interdisciplinary and inter-professional courses, resulting in narrow knowledge and poor comprehensive ability of students, and professional knowledge and other professional knowledge cannot be integrated when studying problems, thus making them lack the necessary technological innovation ability.

Deng Xiaohua (2019) explained that the loopholes in the curriculum have also given rise to new problems - the weak awareness of students' problems (p.131). Because students focus on the content of this discipline most of the time in the learning process, they neglect to think about other subject areas and lack awareness of active problem solving.

Shi Mengyi (2020) considered that the essence of innovation and entrepreneurship is to solve problems, but even the problems cannot be raised, and even if there are cutting-edge technical means, it is difficult to carry out (p.1). How to guide students to open the window of problems and cultivate problem awareness has become a new topic in modern innovation and entrepreneurship education.

3. Reflection and countermeasures

3.1 Give play to core advantages

In the current mainstream double innovation projects, science and engineering projects dominate, but we must also clearly realize that innovation and entrepreneurship are only the things of science and engineering, and we must combine the characteristics of liberal arts majors and give full play to the core advantages of their majors. Liu Bin (2017) deemed that science and engineering students focus on the technical production areas and physical research of the double creation project, and the role of liberal arts students in the double creation project is also crucial (p.122).

Compared with science and engineering college students, liberal arts college students have relative advantages in text expression, topic speech, information collation, etc., so the professional ability of liberal arts college students is an indispensable part of the construction of innovation and entrepreneurship projects. Liberal arts college students who are sensitive to text information are good at finding problems in language expression, making the original pale and powerless business plan come alive, making the expression more infectious and impactful; for the project content and team introduction, they can also rely on their excellent writing skills to clarify the logic, improve the team's deficiencies, improve the quality of team innovation and entrepreneurship, and optimize the allocation of innovation and entrepreneurship resources; in addition, liberal arts college students trained by disciplines can pay more attention to social trends. Strong political sensitivity also allows them to find the right direction for development, and these confidences are the driving force for the team's continuous development. In order to make the road of innovation and entrepreneurship go further, Liu Hang and Yang Weidon (2020) concluded it is necessary to combine college students with different majors, and use the collision of disciplines to help learn from each other's strengths and promote each other, so as to achieve a breakthrough in the project (p.163).

3.2 Breakthrough non-innovative thinking

Under the restriction of mindset, many liberal arts college students are not highly motivated to participate in innovation and entrepreneurship, and their ability to innovate is limited. In order to solve this problem, liberal arts college students need to think outside the box and actively seek innovation. In order to achieve a breakthrough in traditional thinking, Yu Lu and Chen Haihua (2019) believed that work can be carried out from two aspects, one is to establish the self-confidence of students in innovation and entrepreneurship, and the other is to be good at guiding students to find problems and solve problems (p.34).

Science and engineering students start relatively early and have a good foundation in entrepreneurship and innovation, but it is undeniable that liberal arts can also create good projects. Taking the "Red Cultural Relics Youth Talks" project of Nanchang University, the Red Brigade Circuit of the 7th China International "Internet +" Innovation and Entrepreneurship Competition, as an example, the team used the media integration method to promote the "party lesson" to the whole country, implement the important spirit of General Secretary Xi Jinping on "using red resources, telling red stories, doing a good job in red education, and passing on red genes from generation to generation" to celebrate the centennial of the party. Summing up their experience, it is mainly divided into three aspects: the first is to be good at borrowing technology and can borrow the carrier of media technology to do a good job in publicizing party lessons; the second is to dare to break through the convention and break the way of telling party history only with secretaries for a long time; the third is to combine professional characteristics and combine the way that the public likes to hear and hear with the only system of your own discipline. Their breakthrough also proved to college students across the country that liberal arts majors could also "play" and "Internet +," and the success of liberal arts projects is not lacking in technology but in action. In the "Internet +" College Students Innovation and Entrepreneurship Competition, the liberal arts project team broke through and won in the "Internet +" competition, which also means that the "Internet +" competition is no longer a special field for science and engineering students, but also a stage for liberal arts students to show themselves.

In addition, it is necessary to further breakthrough conventional thinking and cultivate students' awareness of "problems." Only students who can ask questions and solve problems can achieve breakthroughs in entrepreneurship and innovation. By paying more attention to current political hot spots, cultivating a high degree of political sensitivity, further thinking about social hot spots under the new era and new policies, and thinking about programs that are in line with the social needs of the times; you can participate in social research, understand the current situation of society and society, think repeatedly, and dig deep into problems; you can communicate with people of different disciplines and different professions, learn from and inspire each other.

3.3 *Cultivate comprehensive talents*

Liberal arts students may be blocked by professional barriers in innovation and entrepreneurship, but the whimsical ideas in their minds are innovative elements of the new era. On the whole, Zhang Chao (2010) pointed out there are three main goals for cultivating comprehensive talents: to enable liberal arts college students to realize themselves in innovation and entrepreneurship, inject new momentum into social innovation and entrepreneurship, and cultivate comprehensive talents who adapt to contemporary society (Update the concept of education, para.1).

3.3.1 "Hands-on" professional course learning

As the saying goes, "It is better to read ten thousand books than to travel thousands of miles." In addition to learning the theoretical knowledge of books, the ability of liberal arts students to practice is also very important, and students should be encouraged to actively participate in social practice: visiting laboratories or museums, going to village social research, learning a software technology, etc. When the realization of the combination of books and actions, diligent hands-on, I believe that the improvement of comprehensive ability is just around the corner. As liberal arts students, it is necessary to actively cultivate liberal arts students to maintain curiosity about the phenomena in life, and exercise their thinking and observation skills in a subtle way, which is conducive to cultivating problem awareness and improving their comprehensive ability.

3.3.2 "Cross-border" second classroom construction

In order to allow liberal arts students to have opportunities for interdisciplinary and interdisciplinary learning, schools should build cross-border second learning classrooms, open professional courses in different disciplines for liberal arts students, and establish a more diversified knowledge system. Through the adjustment of the discipline talent cultivation program, relevant incentive policies are formulated to encourage liberal arts students to use more of their free time to learn other majors and other subject knowledge. The construction of the second classroom can allow more disciplines and majors to be understood by liberal arts students, and when the combination of "having to learn" and "willing to learn" is achieved, I believe that liberal arts students will make leaps and bounds in comprehensive quality and knowledge reserves.

3.3.3 "Immersive" innovation and entrepreneurship guidance

"Immersive" innovation and entrepreneurship guidance is a guiding method to create a liberal arts innovation and entrepreneurship environment, and it is also the most effective way of education. "Immersion" is a comprehensive and continuous guide for students. Plant the seeds of innovation and entrepreneurship. Starting from the first grade, the basic education of innovation and entrepreneurship is carried out, so that liberal arts students can contact, understand, learn innovation and entrepreneurship, feel the atmosphere, and have fun in it; in the second grade, actively encourage students to participate in innovation and entrepreneurship competitions, let students learn in practice, let them feel the form and process of innovation and entrepreneurship, and accumulate experience; in the third grade, students have the experience of understanding and participation in innovation and entrepreneurship, under the guidance of teachers, do "I dare to break through, I will create"; in the fourth grade, the school in addition to arranging students employment internship, In addition to entering the social position experience, it is also necessary to provide students with the most professional guidance for students such as small classes of innovation and entrepreneurship, interactive entrepreneurial exchanges, and

personalized guidance. Under the guidance of such "immersive" innovation and entrepreneurship, the comprehensive liberal arts talents cultivated are believed to go further on the road of innovation and entrepreneurship.

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Humanistic Literacy: Exploring Education Policies for MBKM (Collegiate Independent Learning) Programs from the Participation of the Academic Community in Indonesia

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Abstract

This paper explores 1) why humanistic literacy is important in welcoming the industrial revolution 4.0, especially in the academic community and 2) how the implementation of MBKM (Collegiate Independent Learning) programs can be the main support in responding to industry 4.0. The purpose of this paper is to illustrate “how” the academic community uses knowledge from humanistic literacy. The study used a sample of 1,753 respondents from the academic community of Universitas Muhammadiyah Malang from December 16 to December 19, 2021 using PISA instruments and UNESCO indicators through Likert scale measurements. We show that humanistic literacy is a knowledge capital for the academic community with scores from respondents at the level of identification (4.3), application (4.22), and reasoning (4.24) that support the academic community for the development of social skills such as collaborative efforts and networking development in producing innovative industrial service products.

Keywords: Academic Community, Humanistic Literacy, MBKM programs

1. Introduction

The industrial revolution 4.0 will bring a higher level of automation and interconnectivity in manufacturing processes. The tools, technology, and machines that will be used are expected to be different from what is utilised today. Production tools in the form of smart machines will coordinate their own manufacturing processes with

mechanization of control from human design thinking that will be applied to products or corporate service systems (Berger, 2016).

The manufacturing industry is currently facing the fourth industrial revolution, better known as industry 4.0, in which one can find an intersection between the 'real' and 'virtual' worlds that need to be connected seamlessly to give rise to what is known as a cyber-physical production system. In effect, traditional manufacturing processes undergo a macro transformation that will change the way companies approach manufacturing (Berger, 2016). This will, in turn, encourage an industrial change.

The adoption of the 4.0 model which causes variations, ranging from the mechanization of smart factories. This mechanization automatically impacts the preparation of human resources to control the system productively in the face of several obstacles in the business ecosystem. Such obstacles include, *first*, virtualization of work processes: the level of use of technologies such as augmented reality, virtual plants (cultivation), and for automated information exchange along with monitoring, control and simulation purposes. The *second* obstacle is the complexity of the supply-chain using digital technology. The *third* obstacle is technological disruption, which refers to the degree of change in the business model and ecosystem with the adoption of the latest technologies such as the internet, 3D printing, and smart grids. The *fourth* challenge is resource efficiency of the core process, which refers to efforts needed to increase resource efficiency and to optimize smart machines in the process of adapting industrial technology. The *fifth* and last challenge is forecasting new frameworks or regulations in developing policies or releasing initiatives to promote the adoption of industrial technology.

The Collegiate Freedom to Learn (*Merdeka Belajar-Kampus Merdeka/ MBKM*) program is part of the Freedom to Learn Policy issued by the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia that provides opportunities for students to hone their talents and interests by directly participating in the professional workforce and preparing for their future careers. The industrial world is undergoing rapid changes in the form of a new service system through the internet as well as the financial ecosystem (fintech) and online shopping (e-commerce). In this context, design thinking based on knowledge of humanities is needed because of the interaction between online merchants, customer service, users, and buyers. The basis for the MBKM policy is that field practice activities will be converted into credit hours (*Sistem Kredit Semester/SKS*). The exploration of knowledge and skills through a field practice for more than one semester is based on the link website of Indonesia's Ministry of Education (www.kampusmerdekakemdikbud.go.id).

The sites for this study could be programs outside their department or home university. The academic community is able to obtain knowledge and strategies directly from qualified and reputable partners. The concept of "independence" from this program is that the academic community strives to be independent in their decisions and strategic knowledge to face industrial revolution 4.0 by taking advantage of the various available media in this age of information. New media is a form of design on how to stay in touch with the audience and users. (Sinek, 2009) states this in his philosophical design concept thinking that starts that is referred to as "starts with why?".

The urgency of this study is to describe the interconnection between the natural abilities of the academic community and the prediction of demand from the industrial ecosystem 4.0. Capital knowledge of humanities becomes the central theme, complemented by communicative skills and the ability to create designs. Humanities knowledge, communicative skills, and design knowledge are fundamental to sharpen social skills in the form of team works and collaborative efforts to realise innovative products in the age of industry 4.0.

2. Literature review

2.1 Concept and the Urgency of Humanistic Literacy as well as Digital Aspects

Literacy is defined as the ability to read and write, while humanistic literacy is related to communication skills, critical thinking, collaboration, creativity and innovation. Humanistic literacy is a fundamental or essential issue

to pay attention to. This is because literacy is the most basic ability that needs to be possessed by humans or individuals in living their lives, both personally and socially (Alfin, 2018).

In our society, excellent communication skills have a strong correlation with the ability to build networks and/or collaborate with other individuals or groups. Therefore, humanistic literacy becomes a major aspect that must be possessed as a basis for every individual and can be fulfilled by the individual himself, family, school, and country (Yusup, 2017)

Furthermore, it is necessary to understand that there are several types of literacy. In particular, this study refers to basic literacy as described by the Ministry of Education and Culture through the national literacy movement (<https://gln.kemdikbud.go.id>). There are six types of literacy according to the website, A.I, basic literacy, numerical literacy, scientific literacy, financial literacy, digital literacy, cultural literacy and citizenship. These six types of literacy are the basis for fulfilling humanistic literacy (Masitoh, 2018).

These six types of literacy are the responsibility of citizens as well as the government in an effort to fulfil the national goal. However, an important role is held by formal educational institutions because they are the dominant sector in providing education and humanistic literacy. Improving the quality of education is a basic indicator in this regard. It is also argued that critical thinking, creativity, collaboration, and global communication are important competencies in the 21st century.

Formal educational institutions are required to properly prepare students to enter the 21st century (Suyatna, 2017). The purpose of strengthening humanistic literacy is to answer problems, and how to build critical, creative, collaborative, and communicative thinking skills through the learning process in formal institutions. Through strengthening humanistic literacy, we hope that it will be able to have a positive impact in increasing the quality index of human resources (Ramdani, 2021)

Fundamentally, humanistic literacy should be the government's obligation to fulfil and facilitate in addition to literacy that comes from the individual's own will as well as from the environment and family. As the executor of the task of prospering the community, the government should be able to provide formulations and stimuli to the community to grow humanistic literacy indicators (Kurniawan, 2019).

In today's advanced digital technology era, there are many changes and novelties in the patterns of humanistic literacy. The ability to communicate and build collaboration is not only understood simply as applying conventional patterns, but is starting to experience a shift by realizing new, more modern pattern (Naufal, 2019). The change in communication and collaboration patterns must go hand in hand with a high level of humanistic literacy. This is important considering that there are quite a few challenges in dealing with various problems in the modern era. The modern era that presents the progress of information and communication technology that is so massive must be understood in a complex way so as not to fall into the trap of time (Fardiah, 2020).

Studying and understanding humanistic literacy is a complex matter. There are several concepts, perspectives, and indicators in understanding humanistic literacy. Adult humanistic literacy is now developing and has a novelty or what is known as new literacy (Achmad Irwan Hamzani, 2020). This new literacy includes data literacy, technology literacy, and humanistic literacy. In the era of ICT advancement, humanistic literacy must be linear with data literacy and technological literacy. These three literacy categories are basically taught in formal schools, both at the elementary and high school level (Nastiti, 2020). The embodiment of technology, cyberspace, big data, and the like has been a serious challenge for the human generation recently. Therefore, humanistic literacy or new literacy needs to be prioritised and emphasised by all relevant stakeholders so that each individual has the ability to communicate and build networks well in the era of disruption (Lestari, 2018).

Today, easy access to information has become a boomerang in the lives of individuals and groups. Some of the problems in the digital era are the presence of hoaxes and discriminations on digital platforms or spaces. The impact is that there are many internet users who swallow information without filtering them (Widiatmojo, 2020). In order to overcome and minimize said problem, the new literacy or literacy possessed by each individual is the

basic requirement for surfing in the virtual world. This becomes important and can be a wise benchmark in navigating life in the modern era (Ainiyah, 2018).

On the other hand, the presence of digital technology has had a huge impact on influencing the pattern of human social life. If in the conventional era an individual could only build communication and networks in the real world, now humans can communicate, through the ease of access offered by the internet and digital platforms, and gather together virtually (Murwani, 2012). Communities in technological advancements can also more easily and freely express their aspirations and build as well as mobilise the masses in virtual spaces. This is certainly a positive value brought by the development of ICT for people's lives, especially in activating democracy. This means that the development must be accompanied by good humanistic literacy, because a good basic understanding of individuals is needed to be able to adapt and develop through the progress of the times especially in the pattern of social life in the digital era (Flew, 2020).

In the current era, the concept of literacy is no longer only associated with information and media. The concept of literacy in this case has been brought into certain parts of human life in a more specific and complex way. With regards to the use of information and communication technology (ICT), for example, literacy is associated with an individual's ability to use computers and the internet on a daily basis (Suri, 2018). Today, literacy has interacted with almost all aspects of human life. The point is that literacy is attached to a lifelong learning process. Individuals who have a strong desire to improve their literacy and abilities will later be able to survive and thrive in navigating life in the world and facing various challenges of the current era. This is indeed the basis because literacy can test and represent an individual's ability to interact with the community and build networks in social life (Yusup, 2017)

Developing and improving humanistic literacy of a country requires cooperation and determination from all parties, from formal educational institutions, government, social / family environment and from within the individuals themselves (Suwardana, 2018). Awareness to meet the needs of humanistic literacy which aims to improve the quality of human resources is an important issue to pay attention to. It is added by considering the many problems and challenges in supporting good humanistic literacy in the era of massive development. So, basically there are several patterns or concepts that can be presented by each element that has been described previously to develop a strong humanistic literacy (Batoebara, 2021).

Next, there are several concepts or patterns that should be implemented to fulfill the indicators of humanistic literacy in order to realize it properly. *First*, it is to provide massive education and information, especially to formal educational institutions, from elementary to upper secondary and tertiary levels. It is very important to pay attention to the improvement of the quality of education (Ainiyah, 2018). *Second*, it is imperative to set the foundation through early education in the primary circle. The primary circle in this case is the family. Family as the first element of individual growth and development can be the primary source in providing literacy and a shield for individuals to be wise in living their lives, both in the real world and virtual world (Batoebara, 2021). *Third*, it is important to massively and periodically filter and publish information and education on various digital platforms. This can be done by the government as the greatest authority in a country. With all the access that they have, the government should have high political will in improving humanistic literacy for its people (Kurniawan, 2019). The point is that all relevant elements or stakeholders in the effort to realize humanistic literacy must be able to collaborate and carry out their respective duties and functions optimally. This is the key to success in fulfilling the indicators of humanistic literacy (Ramdani, 2021)

Below is a table related to the concept and indicators of humanistic literacy that can be carried out as an effort to develop human resources through strengthening humanistic literacy:

Table 1: Concept and Indicator of Humanistic literacy

Humanistic literacy or Communication Skills and Networking or Collaborative Efforts		
No.	Concept	Indicator
1.	Massive education and information in formal education institutions	- Strengthen and improve the quality of education - Cross-check and evaluate educational practices

		- Massively and periodically promote humanistic literacy in educational institutions
2.	Implanting literacy from an early age in the primary circle (family)	- Literacy is introduced early by parents and family - Provide education to parents regarding the pattern of educating/providing literacy in children
3.	Implanting literacy on digital platforms	- Subsidise the provision of information on humanistic literacy culture in various digital/social media platforms - Cancel or terminate access to publications containing discriminations and hoaxes - Provide and guarantee freedom of communication and build networks in digital space/platforms

In order to develop high quality human resources, it is necessary to improve the pattern of humanistic literacy as well. To increase humanistic literacy, we can pay attention to and implement the basic concepts and indicators as mentioned in table 1. The contents of these concepts and indicators are to certainly be carried out by all relevant parties in a country. Thus, if it can be carried out in a collegial collective manner, it is not impossible to strengthen humanistic literacy and make it impact the quality of human resources in such country.

2.2 The Illustration of Humanistic Literacy in the Era of Industry 4.0

The industry 4.0, where the position of the virtual and ‘real’ worlds is connected with the production system of the cyber world, represents a transformative change for business institutions (corporates) and regulators (government) that call for a change of the manufacturing approach from the basis of human resource management. In a global survey conducted by the Roland Berger Consulting Institute (2016) on skill development for the workforce group in the age of industry 4.0, there is a mismatch between the skill sets demanded by the industry and those mastered by job applicants.

When referring to the conceptual approach of humanistic literacy, especially humanistic philosophy, the intersection is in the development of skills on “how to build networks” and collaborative efforts for the individual aspect of students, while the industrial 4.0 orientation requires resource management skills (RMS) in the form of financial and material management, people management, time management, and communication skills. However, to support resource management skills, it is necessary to understand how individuals build their networks. The said social skills are in the form of coordinating with others, negotiation, persuasion, emotional intelligence, directing and teaching others, and service orientation (Berger, 2016).

Possess social skills alone is not enough. It is also necessary to have fundamental backups in managing networks, namely, active listening, critical thinking, and self-monitoring. It is an effort to ensure that students can do collaborative work by maximising teamwork to produce product designs that are accepted by the business ecosystem.

The collaborative effort aims to improve students in design thinking which includes the use of logic, imagination for illustration, intuition, and systemic reasoning. Design thinking elaborates rational thinking with intuitive thinking. This is based on the concept of design intelligence that the system needs to solve a problem by understanding the rapidly changing situation (Simon, 1985).

(Simon, 1985) distinguishes analytical thinking (which results in breaking down ideas) from design thinking (which results in ideas). Ultimately, what we need is the abductive reasoning, a reasoning that prioritizes simplification in order to solve problems with simple methods. Design thinking requires four simple points:

1. Empathy: How to see the world from another person's point of view, not just seeing it from an individual perspective.
2. Optimism: Efforts to ensure that there is the best solution to a problem.

3. Experiment: The audacity to try new things, including the courage to fail and learn from failure.
4. Collaboration: Always looking for opportunities to collaborate with others, to get the most optimal results.

The stages of implementing design thinking are (1) defining the problem, (2) determining solution options from various perspectives, (3) creating prototypes accompanied by a commitment to improve, and (4) constantly iterating solutions along with efforts to improve the most needed design constructions.

Design thinking is an important basis for humanistic literacy to support student skills in building networks and collaborative efforts. In the Guide to the Preparation of the Higher Education Curriculum in the Era of Industry 4.0 by the General Directorate of Higher Education within the Ministry of Education and Culture of the Republic of Indonesia, it is stated that humanistic literacy is an understanding of humanities, and communication by design. This is indeed prioritised to improve students' social skills with each student group making collaborative efforts aimed at producing product designs for industrial purposes.

Strengthening design thinking requires variables from the conception of humanities knowledge, which are ethics, art history, philosophy, media studies, cultural anthropology, and art performance (Rens, 2013). In the field of communication, one needs journalism, public relations, interpersonal, news, and marketing studies (Ferguson, 2014). Meanwhile, in design, we need social media toolkit, frame analysis, figure analysis, the grammar of design, and motion picture (Cross, 1982).

Networking for students is nothing but self-management related to increasing social capital (Putnam, 2000). From social-capital bonding which starts from strong social ties to the alma mater, public-good model, and inward looking which then transforms to bridging social capital that is outward looking and the ideas can be accepted by various people with different backgrounds (Claridge, 2018).

Humanistic literacy aims to increase the active participation of individuals to involve themselves in certain phenomena and react to them in their own way (Sari, 2020). Strengthening humanistic literacy is nothing but honing social skills as reflected in the Indonesian education philosophy, namely solidarity and collaboration (known as the concept of "*gotong-royong*" in Indonesian), anti-discrimination, dialogue, inclusivity, and integrity.

3. Research methods

The research was conducted using a field survey, the data was analysed quantitatively with rapid analysis following the data collection procedure for the participation of the academic community. The research instrument was compiled through the process of compiling a grid based on the measured literacy aspect and the literacy level referring to the PISA model (Suprayitno, 2018).

There were "statement" and "question" questionnaire items that the respondent needed to answer. Next, we inputted these questions and statements results into a Google Form practical instrument. The questionnaire was measured using a Likert scale with various statements from 1 to 5 referring to the "Global Framework of Reference on Digital Literacy Skills: Skills for Indicator 4.4.2" (UNESCO, 2018). 1 = totally disagree 2 = disagree 3 = not sure 4 = agree 5 = totally agree.

The key elements of humanistic literacy include social, physical, intellectual, cultural, and emotional (S.P.I.C.E). The online questionnaire was conducted among 35,000 academics, specifically the undergraduate program at the Universitas Muhammadiyah Malang, Indonesia. The participants were told that the goal is to investigate the tools used for the involvement of the academic community in online education during the transition from physical to distance learning (hybrid learning as class method).

Questionnaires were administered to the academic community, using a Google form, with multiple choice questions. For these students, as well as for most of the lecturers, this is the first time they are fully involved in

online education without any offline meetings. In a pandemic situation, the distribution of lecture materials, assignments, and tutorials is carried out through a learning link management system built on the concept of “student centred learning” (SCL) (www.lms.umm.ac.id).

The results of our research are several variables, which indicate the participation of the academic community at Campus Three of Universitas Muhammadiyah Malang. To keep track of the increase in identification, researchers used instruments for probability (Aassve, 2012). Quantitative description model was carried out with Likert scale instrument (Allen, 2007). It has been estimated by researchers that data from 7 faculties (Psychology, Islamic Religion, Economics, Social Sciences, Education, Agriculture and Engineering) were taken through an online sample involving 1,753 respondents, it averages 5% of the entire population through nonparametric quantitative descriptions.

4. Results

The research location is Campus Three of Universitas Muhammadiyah Malang, which is a sub-urban campus located 8.7 km from the downtown of Malang. This campus is located in the Subdistrict of Dau at Jl. Tlogomas No. 246. According to the archives of the Directorate General of Higher Education in 1966 based on Decree Number 68/B-Swt/p/1966 Campus Three of UMM consists of 7 faculties covering 26 undergraduate programs (bachelor degree).

At the beginning of the picture of the participation of academia community related to human literacy questionnaire shows aspects of S.P.I.C.E in the following bar diagram: notes in Bahasa term identification (*identifikasi*), implementation (*penerapan*), and reasoning (*penalaran*).

Description of civitas academia participation in the form of gender based on the results of data retrieval:

Table 2: The level of human literacy based on gender

Literacy Aspect	Gender	Identification	Category	Implement	Category	Reasoning	Category
Socially	Men	4.010229	good	4.398902	good	4.152335	good
	Women	3.954244	fair	4.474286	good	4.103826	good
Intellectually	Men	4.027156	good	4.28613	good	4.17599	good
	Women	4.025534	good	4.365608	good	4.198225	good
Culturally	Men	4.129951	good	4.28507	good	4.310222	good
	Women	4.170913	good	4.288947	good	4.191777	good
Emotionally	Men	4.469618	good	4.364876	good	4.326543	good
	Women	4.417043	good	4.427283	good	4.333653	good
Physically	Men	4.341494	good	4.190748	good	4.211792	good
	Women	4.359061	good	4.240143	good	4.276942	good

Note. in Bahasa term good (*baik*) and fair (*sedang*)

The exploration of knowledge capital and capabilities in the field during the online learning period results in the following information. According to PISA, the stages of literacy includes: 1) identification, 2) implementation, and 3) reasoning. According to this standard, the scores of literacy among the academic community in the 26 study programs are as follows: identification (4.3), implementation (4.22), and reasoning (4.24).

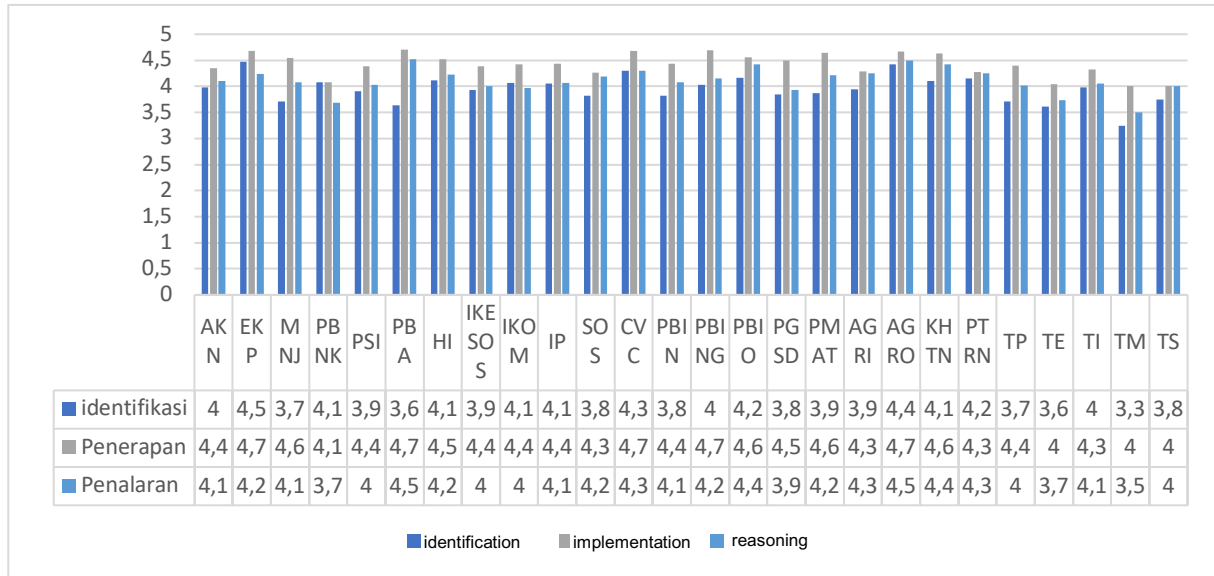


Figure 1: Human Sosial Literacy Level

The social aspect score is considered to provide opportunities for the development of the social skills of the academic community for network building and collaborative efforts (Sari, 2020). Network building requires reading of humanistic literacy from respondents in the form of emotional aspects that support individual traits, with each score per faculty, which are: identification (4.41), implementation (4.39), and reasoning (4.31).

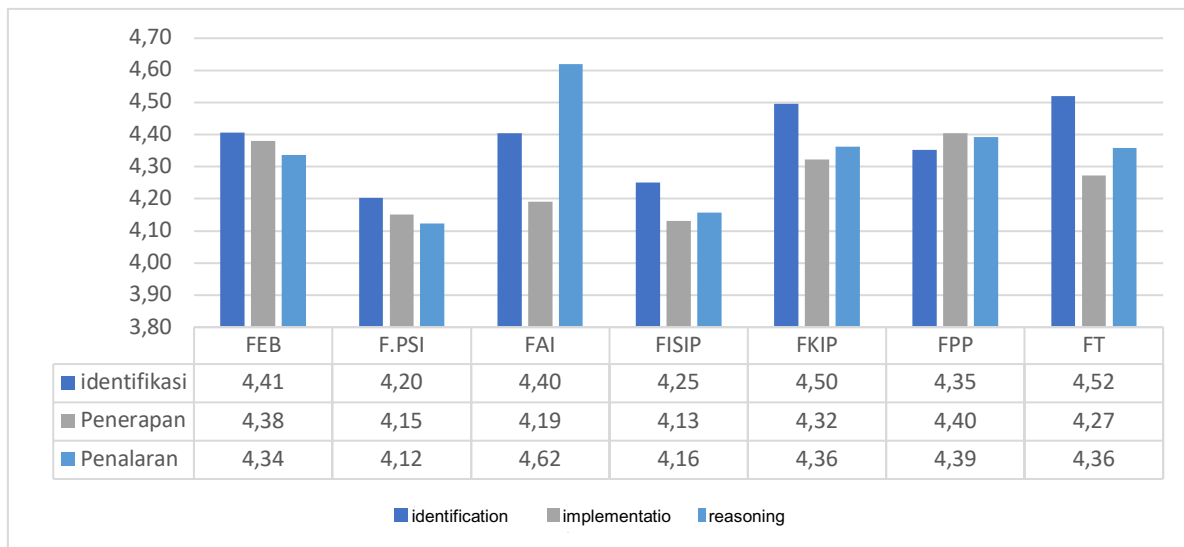


Figure 2: Human Emotional Literacy Level

Data collection is based on a sample of faculties in viewing humanistic literacy using Likert scale. We begin to discuss the empirical results by first showing several tables of quantitative descriptions of the participation of the academic community by seven faculties, then presented in the two tables. The tables show the level of participation of the academic community for the sample used in the estimation of 1,753 respondents.

Table 3: Participation of the academic community socially

Socially						
Faculty	Identific- -ation	Category	Implement- -ation	Category	Reasoning	Category
(1)Economy and Business	3.92	Fair	4.43	Good	4.08	Good
(2)Psychology	3.91	Fair	4.39	Good	4.03	Good
(3)Islam	3.63	Fair	4.71	Good	4.52	Good
(4)Social and Political Sciences	4.04	Good	4.44	Good	4.10	Good
(5)Education	3.97	Fair	4.57	Good	4.15	Good
(6)Agriculture	4.01	Good	4.38	Good	4.26	Good
(7)Engineering	3.75	Fair	4.16	Good	3.88	Fair

Table 4: Participation of the academic community emotionally

Emotionally						
Faculty	Identific- -ation	Category	Implement- -ation	Category	Reasoning	Category
(1)Economy and Business	4.41	Good	4.38	Good	4.34	Good
(2)Psychology	4.20	Good	4.15	Good	4.12	Good
(3)Islam	4.40	Good	4.19	Good	4.62	Good
(4)Social and Political Sciences	4.25	Good	4.13	Good	4.16	Good
(5)Education	4.50	Good	4.32	Good	4.36	Good
(6)Agriculture	4.35	Good	4.40	Good	4.39	Good
(1)Economy and Business	4.52	Good	4.27	Good	4.36	Good

The hypotheses related to humanistic literacy are as follows: H0; There is no difference in the average humanistic literacy between students who have participated in MBKM programs and those who have not participated in the MBKM programs.

H1; There is a difference in the average humanistic literacy between students who have participated in MBKM programs and those who have not. Quantification of each faculty provides an overview of the level of participation and percentage of the academic community, with a pie chart as follows:

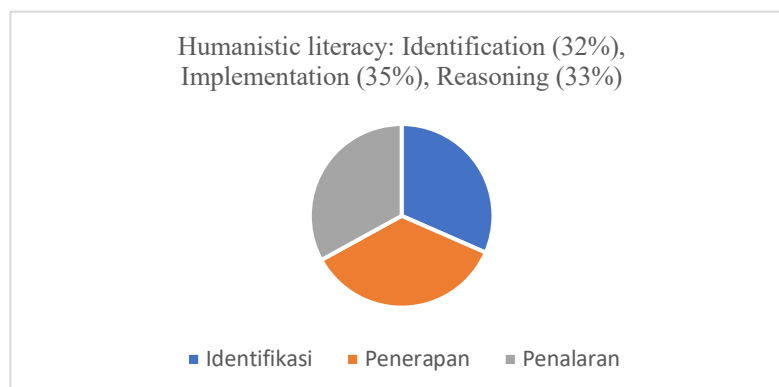


Figure 3: Humanistic Literacy response

The responses from the academic community regarding the identification questionnaire shows that identification is 32%, implementation is 32%, and reasoning is 33%. This is related to the actualization of “student centred learning” which is the basis for MBKM policies to anticipate the age of industry 4.0. Then the participation of academia community related to the level of human literacy based on regional origin in Indonesia:

Table 5: Human literacy based on regional origin in Indonesia

Literacy Aspect	Region	Identification	Category	Applied	Category	Reasoning	Category
Socially	Bali	3.77	Fair	4.41	Good	4.02	Good
	Jawa	4.06	Good	4.52	Good	4.17	Good
	Kalimantan	3.84	Fair	4.39	Good	4.00	Fair
	Maluku	4.06	Good	4.51	Good	4.12	Good
	Nusa Tenggara	4.04	Good	4.47	Good	4.24	Good
	Papua	3.63	Fair	4.48	Good	4.14	Good
	Sulawesi	3.92	Fair	4.68	Good	3.86	Fair
	Sumatra	3.97	Good	4.30	Good	3.95	Fair
Emotionally	Bali	4.33	Good	4.42	Good	4.28	good
	Jawa	4.59	Good	4.42	Good	4.38	good
	Kalimantan	4.38	Good	4.39	Good	4.26	good
	Maluku	4.42	Good	4.50	Good	4.21	good
	Nusa Tenggara	4.46	Good	4.42	Good	4.41	good
	Papua	4.49	Good	3.92	Fair	4.17	good
	Sulawesi	4.32	Good	4.46	good	4.56	good
	Sumatra	4.46	Good	4.27	good	4.17	good

5. Discussion

As a comparison from the findings of Naufal's previous study (2019), there has been a realization of a new, more actual pattern in the context of modernity. In the point of view of this study, the content of social skills is based on the emotional aspect of humanistic literacy that produces empathy. Empathy is the foundation of the academic community's ability to develop social skills that are oriented towards networking and collaborative efforts.

The development of empathy in the individual and social circles requires experimentation on taking new patterns from the achievements of the academic community. The knowledge capital obtained from access to humanistic literacy and the knowledge of humanities as well as communication is expected to create expressions of humanistic value in various individual statements in the context of social media accounts, especially promoting product knowledge and team-performance to the audience.

Experimentation in the teamwork among the academic community is individual as well social character building through collaborative efforts, especially the division of roles based on teamwork. In the concept of bridging social capital, this argument can improve managerial actions in building teamwork relations so that they can recognize “people who are different” and are inclusive and outward looking (Claridge, 2018)

The relationship between the development of the academic community in the concept of “student centred learning” places individuals in teamwork based on humanistic literacy in line with placing emotions into empathy and constructive reasoning. Emotion and empathy are based on moral development whose reasoning process is based on humanistic literacy. Humanistic literacy can function as a parameter for the development of individual morality on how to evaluate scientific and artistic works related to design thinking.

Humanistic literacy can serve as a reference for the academic community both as individuals and as a community that need to have “motivated goals” and for designing them with peers. The concepts offered by Kohlberg's (2009) moral development and Putnam's (2000) social capital in the development of collaboration are based on the homogeneity of information, new ideas, and behaviour patterns towards team-work relations by negotiating with the audience or structural ties.

If the linear conception of Kohlberg (2009) is applied, the moral development process is based on individual reasoning processes based on relational exchanges related to regulatory systems and social order construction. In moral development, the construction of a social contract determines the universal ethical principle based on access to humanistic literacy.

6. Conclusion

The results of data collection indicate that the level of humanistic literacy in the academic community of Universitas Muhammadiyah Malang requires individual strengthening which is useful for networking and collaborative efforts. This matter requires the adoption of the concept of “student-centred learning” which is promoted by the MBKM policy with the consequence of a reasoning rate of 33%. Reasoning in the form of quantitative reasoning, logic, empathy, and communication skills are a form of individual strengthening for the academic community to convey work designs or study products, which is parallel with the opportunities for collaborative efforts.

7. Acknowledgments

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Factors Affecting Students' Achievement in English Language Learning at Thailand National Sports University of Central Region

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Abstract

The objectives of this research were 1) to study the relationship between student factors, English language instructor factors, and environment factors with students' achievement in English language learning and 2) to develop equations to forecast factors affecting students' achievement in English language learning. The population used in this research was 415 students of Thailand National Sports University of Central Region enrolled in the English for Communication Course in the second semester of the academic year 2019. The sample size was determined using the Krejcie & Morgan table. A sample of 200 was obtained and a simple random sampling method was used based on the proportion of the population on each of the five campuses. The research instrument was a five-rating scale questionnaire comprising items on student factors, English language instructor factors and environment factors, with a reliability of the whole questionnaire of 0.973. The statistics used in the data analysis were fundamental statistics, Pearson correlation analysis, and stepwise multiple regression analysis. The major findings indicated that there were four factors affecting students' achievement in English language learning with statistical significance at the .01 level namely, attitude variables towards learning English language course (X_1), instruction management variable (X_4), student availability variable (X_2), and classroom environment variable (X_7). The four factors could jointly explain the variance of students' achievement in English language learning by 52.50% and could be used to forecast students' achievement in English language learning in the form of raw scores and standard scores as follows:

$$Y' = 1.125 + .320 X_1 + .139 X_4 + .124 X_2 + .096 X_7$$

$$Z' = .375 z_1 + .165 z_4 + .145 z_2 + .128 z_7$$

Keywords: Achievement in English Language Learning, Thailand National Sports University of Central Region

1. Introduction

His Majesty King Maha Vajiralongkorn Bodindradebayavarangkun is graciously pleased to proclaim that it is expedient to revise the law on institutions of physical education, it is graciously enacted by the King, by and with the advice and consent of the National Legislative Assembly acting as the National Assembly. This Act is called "The National Sports University Act, 2019" announced in the Government Gazette on 22 May 2019 and stipulates the powers and duties in Section 8 that the University shall be an academic and professional educational institution in the field of sports with the objectives of providing education, promoting academics and professions, teaching,

researching and develop academic and professional services to society, nurturing arts and culture by focusing on creating knowledge in sports, physical education, health promotion, sports science, sports management, business and sports industry and related disciplines, as well as being a source of building and developing personnel in the field of sports in the country.

The elevation of the university status has made the role of sport and related disciplines more distinctive, diverse and international, and thus there is a need to intensively improve students' English proficiency. This is in line with the policy and goals of the Office of the Higher Education Commission that Thai graduates' English proficiency should be on par with graduates in ASEAN Member States (Office of the Higher Education Commission, 2010) in accordance with the ASEAN Charter, Article 34, "The working language of ASEAN shall be English" and in accordance with the policy of raising English language standards in higher education institutions according to the announcement of the Commission on Higher Education, which stipulates 4 issues as follows: 1) To have higher education institutions formulate policies and goals for raising English language standards in higher education institutions in all programs and at all levels of education to be a guideline to develop students' English proficiency skills to become graduates who are equipped with academic, professional and English communication skills at a working knowledge level. 2) Have higher education institutions prepare a plan to implement policies and goals with clear indicators and assessments. 3) Institutions of higher education shall consider improving the teaching and learning management in English course with an aim to achieve the goals set. 4) Higher education institutions shall consider organizing extracurricular activities, processes, media and/or environments that will provide opportunities and enhance motivation for students to develop their English language skills on their own; and 5) Institutions of higher education shall arrange for all students to test their English language proficiency in accordance with the Higher Education Standards Test created by the institution or which it deems appropriate to use to measure English Proficiency, which can be compared with Common European. Framework of Reference for Languages (CEFR) or another standard to determine the level of competence of each student.

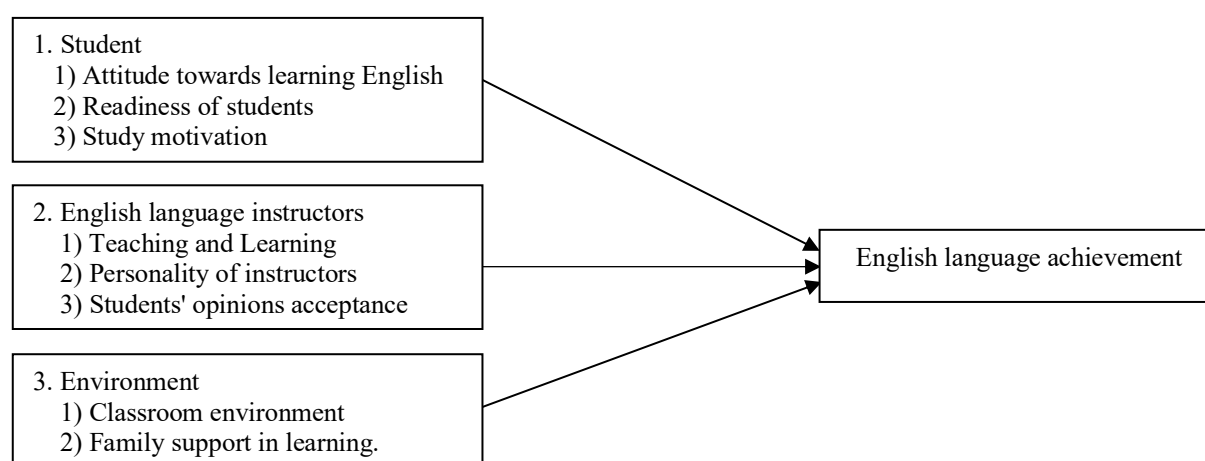
The Institute of Physical Education has always given importance to the development of English language skills and proficiency, as can be seen from the designation of English course as a compulsory course in the foreign language group and in the Institute of Physical Education Strategic Plan B.E. 2007-2013 that has set a goal of organizing activities to promote and develop the use of English for students to be able to use English both in study and in work. Especially now that when it has been upgraded to the National Sports University, the development of English language proficiency for students is even more important because after graduating graduates must be able to use English for work; just like Wiley and Wrigley (1987) said, English is important to students and individuals moving to work. In particular, in line with the National Sports University Act, Article 9 (3), which states that "strengthening the network of cooperation in education and sports with communities, government agencies, private sector, educational institutions and international sports organizations."

As English is not the main language of Thailand, learning English for Thai people must be learned from language learning in educational institutions. This is in line with the Willkins concept of language learning (Willkins. 1974), which states that language learning is divided into two types: 1) language acquisition and 2) language learning. The management of English language teaching according to the curriculum of the National Sports University has arranged for students to study English for Communication Course Code 051057 as a compulsory course with the objective of enabling learners to be able to listen, speak, read and write English for basic communication in various situations. Including to enable learners to be able to apply knowledge and English skills appropriately in daily life by requiring students to study content according to the course descriptions as follows; "English sentence patterns and structures and practicing listening, speaking, reading, writing in daily life about greeting and farewell, introducing yourself and others, describing the nature of things and people, giving advice or giving suggestions, inquiries and information about exercise and sports, time, weather conditions, directions, prices" Therefore, if the student's learning achievement in English for communication is at a good or very good level, students will be able to use English as an important tool for communication, education, pursuit of knowledge, and sports competitions. International, occupational, cultural understanding in a global context and awareness of cultural diversity and global social perspectives which will bring friendship and cooperation with other countries, help develop students to have a better understanding of themselves and others. In addition, the study of factors affecting students'

achievement in English language learning will be of great benefit in order to use the research findings to plan for curricular development and teaching and learning to increase English language course achievement.

2. Conceptual framework

From the study of concepts and theories related to factors affecting learning achievement from both Thai and foreign academics such as Bloom (Benjamin S. Bloom, 1976), stating that two important factors determined a student's school record, namely: a student's academic history, and quality of instructional management of teachers. This was consistent with Cremer's (1994) concept that the effectiveness of instruction derived from instructional management by a teacher. This was consistent with the findings of Chatkaew Powwiset and Wanwipha Chatuchai (2013), Paiboon Sukwijit (2010), Aimachara Khotkaew et al. (2011), Nuchanrat Vorayossri (2001), stating that factors affecting language learning achievement consisted of learners, teachers, and classroom teaching environment and social context. Therefore, the research conceptual framework was developed by the researcher using the foresaid concept as follows:



3. Research objectives

1. To study the relationship between student factors, English language instructor factors, and environment factors with students' achievement in English language learning at Thailand National Sports University of Central Region.
2. To create forecast equations for factors affecting students' achievement in English language learning at Thailand National Sports University of Central Region.

4. Research Hypothesis

There is at least one factor that can predict students' achievement in English language learning at Thailand National Sports University of Central Region.

5. Scope of research

The subjects used in this research study were English for Communication Course, course code NS 051057 according to the curriculum of the National Sports University, 2019.

6. Population and sample

The population and sample used in this research were: 415 students of the Thailand National Sports University of Central Region, consisting of 5 campuses including Bangkok Campus, Chonburi Campus, Samut Sakhon Campus, Suphanburi Campus, and Angthong Campus who registered for the English for Communication course in the second semester of the academic year 2019. The sample size was determined using the Krejcie and Morgan table. A sample number of 200 was obtained and a simple random sampling method was used from the students of the Thailand National Sports University of Central Region's five campuses according to the proportion of the population on each campus.

7. Variables studied

The independent variables were factors affecting students' achievement in English language learning at Thailand National Sports University of Central Region, consisting of the following variables:

8. Student factors

1. Attitude towards learning English (X_1).
2. Readiness of students (X_2)
3. Study motivation (X_3)

9. English language instructor factors

1. Learning management (X_4).
2. Instructor's personality (X_5).
3. Students' opinions acceptance (X_6).

10. Environment factors

1. Classroom environment (X_7).
2. Family education support (X_8).

The dependent variables were the learning achievement of English for Communication course, course code NS 051057 of students of the Thailand National Sports University of Central Region, academic year 2019.

11. Methods of research

1. Study the concepts, theories and research related to factors affecting Achievement in English language learning.
2. Create a questionnaire on factors affecting learning achievement in English, 1 questionnaire consisted of 82 questions.
3. The questionnaire was sent to 3 experts for analysis and examination to determine the content validity and appropriateness of language use, and then select the questions with an index of congruence (IOC: Index of congruence) starting from 0.6 or higher, 75 items.
4. The pre-selected questionnaires were tested by asking non-sample students to determine their reliability. The confidence value of the whole questionnaire was 0.934.
5. Coordinate with the research office of the Thailand National Sports University of Central Region in all 5 campuses to request assistance to collect data from the sample group. A total of 200 questionnaires were returned, representing 100%.

12. Data Analysis

The researcher used a statistical package to analyze the data, which includes the following details:

1. The correlation was analyzed between student factors, English language instructor factors and environment factors and students' achievement in English language learning at Thailand National Sports University of Central Region, using Pearson correlation coefficient analysis.
2. An analysis of student factors in English language instructors and environment and students' achievement in English language learning at the Thailand National Sports University of Central Region by using Stepwise Multiple Regression Analysis.

13. Data analysis results

1. The results of the analysis of the relationship between student factors, English language instructor factors and environment factors and achievement in English language learning.
2. Analysis of factors affecting achievement in English language learning.

Table 1: The correlation coefficient between various factors and learning achievement in English for Communication Studies.

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	Y
X ₁	1.00								
X ₂	.743**	1.00							
X ₃	.706**	.786**	1.00						
X ₄	.669**	.744**	.800**	1.00					
X ₅	.599**	.650**	.691**	.689**	1.00				
X ₆	.469**	.547**	.580**	.563**	.536**	1.00			
X ₇	.609**	.730**	.741**	.727**	.623**	.565**	1.00		
X ₈	.502**	.663**	.676**	.601**	.564**	.465**	.275**	1.00	
Y	.525**	.591**	.211**	.564**	.436**	.430**	.651**	.237**	1.00

** p<.01

From Table 1, the results of the analysis of multiple correlation coefficients between various factors and learning achievement in English for Communication Studies showed that all factors (X₁-X₈) were related to learning achievement in English for Communication Course (Y) with a statistically significant level of .01 with a correlation coefficient between .211 - .651.

Table 2: Factors Affecting Learning Achievement in English for Communication (independent variable).

Independent variable	B	Std. Error	Beta	t	sig
a (Constant)	1.125			6.414	.000
X ₁	.320	.075	.375	4.747	.000
X ₄	.139	.057	.165	3.545	.000
X ₂	.124	.064	.135	3.728	.000
X ₇	.096	.046	.128	1.458	.000

R = .730 R Square = .532 Adjusted R Square = .525 F= 76.793**

From Table 2, it was found that the factors affecting students' achievement in English language learning at the Thailand National Sports University of Central Region were statistically significant at the .01 level including 4 variables, sorted by the predictive coefficient from descending as follows: attitude variables towards learning English language course (X₁), instruction management variable (X₄), student availability variable (X₂), and classroom environment variable (X₇). The four factors together explained the variance of students' achievement in English language learning at Thailand National Sports University of Central Region by 52.50% and could be used to forecast the Achievement in English language learning at the central sports university students in the form of raw scores and standard scores as follows:

$$Y = 1.125 + .320 X_1 + .139 X_4 + .124 X_2 + .096 X_7$$

$$Z = .375 z_1 + .165 z_4 + .135 z_2 + .128 z_7$$

14. Summary of research results

1. Student factors, English language instructor factors and environment factors, were positively correlated with students' achievement in English language learning at Thailand National Sports University of Central Region at statistically significant level of 01.
2. There were 4 factors affecting the students' achievement in English language learning at the Thailand National Sports University of Central Region were statistically significant at the .01 level sorted by the predictive coefficient from descending as follows: attitude variables towards learning English language course (X_1), instruction management variable (X_4), student availability variable (X_2), and classroom environment variable (X_7). The four factors could jointly explain the variance of students' achievement in English language learning at Thailand National Sports University of Central Region by 52.50%.

15. Discussion

From the research results, it was found that there were variables of 3 factors, namely student factors, English language instructor factors and environment factors, which significantly affected the learning achievement in English for Communication at the .01 level, which was based on the research hypothesis. The results were discussed as follows:

Student factors affecting learning achievement in English for Communication course consisted of 2 variables, namely the variable of attitude towards learning English (X_1) and student readiness (X_2). The variables in student attitudes affecting achievement in English language learning may be due to the fact that attitudes are important and influencing learners' language proficiency and language learning success (Reid, 2003; Visser, 2008) and Padwick (2010), who said that the nature of language learning lies in the learner's motivation and attitude towards language learning. This is in line with the research results of Gardner and Lambert (1972: 1-136) found that influencing factors in English language learning were attitude towards instructors, attitude towards the content of the course, and in line with the research results of Aimatchara Khotkaew, et al (2011: Abstract) who studied the factors affecting the learning achievement of students in the category of Business Administration at the Higher Vocational College level, Northeastern Vocational College. The results showed that the factors affecting the learning achievement of students with a statistical significance at the 0.05 level were the student's attitude towards learning. It was able to explain the variance of the student's learning achievement by 28 percent with a statistical significance at the 0.05 level. It is also in accordance with the research results of Nuchanat Vorayossri (2001: 50) studied the factors related to the students' achievement in English language learning at Rajamangala Institute of Technology, South Bangkok Campus. It was found that the relationship between student factors, social factors and teaching and learning factors and students' achievement in English language learning had a statistically significant positive correlation at the 0.05 level, and it was found that the variables that could predict the outcomes of Achievement in English language learning were: attitude towards learning English, in which the variance could be explained by 21.80% with a statistical significance level of .01.

As for the student readiness variable that affects achievement in English language learning, it may be because learners who are ready to learn English must be students who have planned, scheduling, arrangements, equipment, allocated time for studying the lesson in advance, reviewed the lesson before studying, doing more research to understand the lesson better This includes watching movies in English with subtitles, listening to their favorite international songs and studying the lyrics to find the meaning of words and expressions in the songs, playing games where students can practice English, and always converse with foreigners who speak English whenever the opportunity arises. Such students' preparation for study will result in better achievement in English language learning, in line with Cronbach's (Cronbach, 1954) concept that readiness of learners is an essential element of learning. If learners have prepared both body and mind, the learning materials and the environment are ready before the class, they will make the learning achievement at a good level. Therefore, the development of learning achievement must prepare learners to be ready to learn. Learners are very important in learning. No matter how good the instructor has the knowledge transfer, if the learners are not ready, don't care, don't pay attention, learning

will not happen. On the other hand, if the learners are ready to learn physically, mentally, with interest and attention, they will lead to learning as well which will result in better learning achievement too.

English language instructor factors affecting achievement in English language learning were 2 variables for English language instructors' learning achievement in English language instructors, namely the learning and teaching management variable (X_4). Teaching management that affects achievement in English language learning may be due to the fact that instructors are well prepared to teach, which has a positive effect on students' academic performance. This is because if the instructor can prepare the teaching to teach on time, prepare various appropriate materials and attract the attention of students, review the original content before teaching in order to organize teaching activities in accordance with the new content, give examples for explanations, suggest sources to find knowledge and always have questions to measure the understanding of the students during the course, they will result in the students' knowledge and understanding of learning more, which is consistent with the teaching management model of Bronfenbrenner (Bronfenbrenner, 1977) who found that instructors influence teaching and learning in many ways, especially instructional management, teaching preparation and teaching processes that affect learners' learning achievements, study related to the course taught until able to clearly explain the content of the course taught, with examples to illustrate, explain and answer questions about the course taught in detail, explain the course taught and link them to other courses so that learners can gain knowledge, understanding, as well as summarize important content after teaching and assigning tasks for students to review appropriately, resulting in better learning achievements in English course.

As for the environment factors, from the research findings that the classroom environment variables affect the students' achievement in English language learning. This may be because the classroom environment should be well ventilated, not too hot, noise-free, clean, with the availability of educational materials which will affect the student's study intentions, making students have a good learning achievement. This is consistent with what Benson (Benson, 2007) who said that the classroom environment and atmosphere help learners to learn better. Therefore, teaching and learning in the classroom, the instructor must create an atmosphere and environment that will help learners to learn. From the classroom environment concept, according to the ecological environment model of Bronfenbrenner (Bronfenbrenner, 1977), there are three teaching and educational contexts including the classroom system, the school system, and the community system. Therefore, the classroom environment is the teaching context that is closest to the learner and the instructor, such as light, sound, color, air, classroom size, school supplies, etc. As Bronfenbrenner explained, the study of anything, especially living things, needs to be studied or taken into account in order to be successful in educational management, so the classroom environment affects learning achievement.

16. Suggestions for implementation

1. At the executive level involved in overall educational policy, such as at the executive level, at the university and at the campus level, emphasis should be placed on promoting and training English language instructors to be management experts to be able to provide good teaching and always have the opportunity to increase knowledge, abilities, especially encouraged to receive training and study visits in native-speaking countries.
2. The Faculty of Liberal Arts responsible for teaching English should provide students with preparation in addition to classroom instruction, such as organizing an English camp, organizing a training course on preparing the foundation for English language learning. This is because learners who are well prepared will result in better learning achievement.
3. English language instructors should always be prepared to teach. Appropriate media should be selected for students seeking additional knowledge in both teaching and learning management, and the study of teaching and learning psychology for the benefit of accessibility, understanding of the students, allowing instructors to choose and adjust the teaching and learning methods that are suitable for each group of students appropriately. This will help students to focus on their studies and ultimately achieve better English language learning.
4. Advisors should motivate and inspire students to recognize the importance of English language achievement as well as caring to provide students with help, advice on preparation, and academic preparation that will help them improve their achievement in English language learning.

17. Suggestions for future research

1. The causal factors affecting achievement in English language learning should be studied, which will provide a wide range of information that can be used to improve the quality of English language learning.
2. There should be an experimental research study in English language course management that is suitable and effective for physical education students.

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Investigation of the Effectiveness of the Problem-Based Learning (PBL) Model in Teaching the Concepts of "Heat, Temperature and Pressure" and the Effects of the Activities on the Development of Scientific Process Skills

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Abstract

This study aims to reveal the effectiveness of the problem-based learning (PBL) model in teaching the concepts of heat, temperature and pressure, as well as the effect of the activities on the development of scientific process skills. For this purpose, the change in the academic achievement levels of the students constituting the sampling group was tried to be determined with a pilot application designed based on this model. The research was carried out on a single group based on a pretest-posttest applied quasi-experimental design. Teaching activities addressing the concepts of heat, temperature and pressure and designed according to the PBL model were carried out in a private school over a two-week period. In this context, a unique problem situation was designed, in which two brothers watched and discussed the volume changes of small and large inflated balloons with the effect of temperature, and student-centered activities were carried out, in which demonstration, lecture, question-answer and discussion methods were dominantly used. The problem situation, which includes important connections such as gas, gas pressure, temperature and heat concepts, the relationship between heat and temperature, and the relationship between temperature and pressure, which are known to be quite difficult to understand by 8th-grade students, were implemented sequentially in a single scenario. From the pretest-posttest results, it was determined that there was a significant positive difference in the academic achievement levels of the students constituting the sampling group after the application, and there was a very large difference between the pretest-posttest scores (66.0-92.5). As a result, it can be said that very striking results can be achieved in understanding the selected concepts and the relations between them, with the scenario and appropriate teaching activities designed in a sufficient time based on the problem-based teaching model, and especially the effective and interactive use of demonstration and question-answer methods. Moreover, the results of the pre-test and post-test related to the integrated science process skills test showed that the application in question led to a positive and significant difference in the scientific process skills of the students.

Keywords: Problem-Based Learning, Conceptual Success, Integrated Science Process Skills, Student-Centered Education

1. Introduction

Developments in the field of science and technology affect and change our education system as well as every aspect of our lives. Developed and developing societies need individuals who can adapt to these changes and make sense of these changes. Education aims to raise individuals not only who know but also who always criticize, examine, learn, think, innovate, and adapt to these innovations. It is very important to teach individuals with high-level thinking skills, who actively participate in the learning process, how to use this knowledge in terms of ways of obtaining information, evaluating the information obtained, and solving the problems they encounter (Çelik et al., 2012). In this context, the problem-based learning approach is a prominent and promising model. The problem-based learning approach (PBL), which used the principles of John Dewey's learning-by-doing approach and was first applied at the Case W. University School of Medicine in the USA in the 1950s, was also implemented at McMaster University in Canada in the late 1960s and more recently in primary school and high schools (Kaptan and Korkmaz 2001; Temel 2014). PBL, which is a student-centered and active learning-based approach, covers the application process with problem solving or understanding (Ali 2019). In PBL, students encounter the problem for the first time and take an active role in the process of obtaining information, thus constructing their knowledge in a meaningful and permanent way under the guidance of the teacher, and just like a scientist. They try to find solutions to problems by following scientific research steps. In this process, their dependence on their teachers decreases and they become self-learning individuals (Tosun et al., 2013). The problem-based learning model is one of the most effective approaches that can be used in science lessons, as it enables students to transfer the knowledge and skills they have learned to daily life and to produce solutions to new problems they encounter every day (Yew and Goh 2016). In teaching activities based on the PBL model, scenarios involving real problem situations are carried to the classroom in a student-active manner by using a wide variety of media tools (Kaptan and Korkmaz 2001). Today, one of the main purposes of science education is to raise individuals who find solutions to the problems they encounter in daily life. These kinds of individuals are expected to ask questions, examine, investigate, and make connections between scientific concepts and daily life, and look at their environment as a scientist. In order to be successful in such a process, it is very important to use scientific process skills effectively.

PBL is a model that enables students to use their scientific process skills effectively, while at the same time providing active participation of students in the teaching process and giving them responsibility (Hmelo-Silver 2004). Scientific process skills consist of basic skills that give students a sense of responsibility, facilitate learning and increase the permanence of knowledge (Tosun et al. , 2013). In the 21st century, individuals need to have some basic skills in order to keep up with the complex world order. Students are expected to ask questions, wonder, do research, see inconsistencies and contradictions, make good observations and make correct inferences from their observations, think scientifically, be creative and entrepreneurial, think multi-dimensionally, make decisions, be responsible, and express themselves. In addition, in this context, it is extremely important for students not only to memorize information, but also to be able to access and use information, and to be able to produce new information. However, in this way, individuals with the quality of scientists can be raised. In particular, the sense of curiosity is the key feature for individuals to start and continue research, and the tools that can be used for its satisfaction are scientific process skills. These skills are also needed to recognize, identify and solve existing problems (Shahali et al., 2010). The main purpose of PBL approach, which is also called the "contemporary education" approach, is to enable students to actively use all their scientific process skills in reaching and producing information (Da Silva et al., 2018). Undoubtedly, children are curious and ask endless questions like scientists, and this characteristic should never be suppressed. In this respect, developing scientific process skills should be one of the main goals (Köğçe 2005). The aim of this study is to reveal the effectiveness of the problem-based learning (PBL) model in teaching the concepts of heat, temperature and pressure and the effect of the activities on the development of scientific process skills. Science process skills have been defined as the basic skills which make it easier to learn science, enable students to be active and develop a sense of responsibility for their own learning, increase the permanence of learning, and also show research ways and methods (Kaya et al., 2012).

Science process skills are the multidirectional skills that are used to comprehend and develop knowledge and transferable, appropriate for all fields of science, and include skills such as problem-solving, designing

experiments, and drawing accurate conclusions (Coil et al., 2010). These skills are used to construct knowledge, think about problems, and generate results. Developing these skills allows students to pose and solve problems, think critically, make decisions, and satisfy their curiosity rather than memorize concepts (Köseoğlu et al., 2008). The science process includes the mental and physical skills necessary for collecting information, organizing and explaining this information in different ways, and solving problems. It is very significant to develop these science process skills for research for which they used scientific methods for children. Most of the learning-teaching approaches are designed to provide students with the knowledge, the processes necessary to obtain this knowledge, and the ways of thinking (Şimşek and Karapınar 2010). Especially, it is argued that the best way to learn in primary schools is to use science process skills and that dealing with objects and events enables to learn actively in the studies. In the science process skills, each skill needs cognitive improvement and the improvement in one of them triggers the others. For instance, the improvement in observing, classification, and measuring skills develops inference skills (Aydınlı et al., 2011; Dökme 2005; Maranan 2017). Even though different researchers have made different classifications while defining science process skills there is no difference in the definition of skills. Science process skills have a hierarchical structure but this structure is not rigid. For instance, making observations is considered one of the basic process skills, but it is also used in the most complex processes. All skills interact with each other (Akar 2007; Gürses et al. 2014). In science education, basic and integrated processes skills are the key skills used in studies. Generally, the basic process skills classify as observing, classifying, measuring, using numbers, establishing a space-time relationship, predicting, inferring and communicating (Ekici and Erdem 2020). On the other hand, integrated process skills are classified as determining and controlling variables, forming and testing hypotheses, making operational definitions, planning and conducting experiments, and interpreting data (Tatar 2006; Fugarasti et al., 2019).

In Turkey, the concepts of heat, temperature and pressure are included in the curriculum of the science course starting from the fourth grade of primary education. The fact that students have permanent misconceptions about the concepts of heat and temperature by mixing them with each other has led to many studies on teaching strategies and the elimination of misconceptions about these concepts and the concept of pressure (Gülay and Tekbıyık 2015). Therefore, the presented study mainly focused on revealing the effectiveness of the problem-based learning (PBL) model in teaching the concepts of heat, temperature and pressure, and the effects of the activities on the development of scientific process skills.

2. Material and Method

The research was carried out on a single group based on a pretest-posttest applied quasi-experimental design. Teaching activities addressing the concepts of heat, temperature and pressure and designed according to the PBL model were carried out in a private school over a two-week period. In this context, a unique problem situation was designed, in which two brothers watched and discussed the volume changes of small and large inflated balloons with the effect of temperature, and student-centered activities were carried out, in which demonstration, lecture, question-answer and discussion methods were dominantly used. The sampling of the research consists of a total of 31 8th grade students, 12 boys and 19 girls. The conceptual achievement test (CAT), which was developed and whose validity and reliability were determined, was administered to only a group of students as a pre- and post-test before and after the application, which started with the implementation of a problem situation originally developed by the researchers. The success of the application was evaluated statistically using the SPSS 14 Data analysis software, taking into account the difference between the pre-test and post-test results. In addition, an integrated scientific process skill test (BPSST) was applied to the students before and after the application in order to determine the effect of the application based on the PBL model on the change of students' scientific process skills.

2.1. Conceptual Achievement Test (CAT)

These tests, administered before and after the application, include 16 different but similar multiple-choice questions, 8 for the pre-test and 8 for the post-test. Pre-test questions are intended to measure students' current knowledge before the application. However, the post-test questions were re-developed to determine the success of the students in learning the selected concepts. In order to determine the content validity of the tests applied,

teachers and academicians who are experts in the relevant field were interviewed and their validity was confirmed.

2.2. Integrated Science Processes Skill Test (ISPST)

The integrated science process skill test consists of 25 items covering all fields of science and has a Cronbach alpha coefficient of 0.81. The test consists of four subtests: controlling variables, forming hypotheses, experimenting and interpreting data (Gürses et al., 2014). The obtained data were analyzed at a significance level of 0.05 using SPSS 14 software, and paired-sample t-test and descriptive statistical analysis were used to evaluate the effect of the application on students' achievement levels.

The scenario dealing with the problem situation chosen in this study is given below:

“Ayça 5 and Alp are 13 years old two siblings. Their parents, who work hard during the week, took them to a very nice restaurant for dinner at the weekend. Before the meal started, a sweet waitress presented Ayça with a chubby balloon. This made Ayça very happy. Meals and then desserts were eaten. Ayça did not let go of the plump balloon for a moment, and after the meal she said to her mother, “I want another uninflated balloon.” Of course, this request was not broken and she placed the different colored uninflated rubber balloon given to her in her bag. As soon as he got home, she tried to inflate the balloon first, but couldn't make it as big as the previous chubby balloon. Although Alp helped him, neither of them could make the new balloon as big as the chubby balloon. After a few games, it was time for Ayça to sleep. But he didn't want his chubby little balloon to get cold, so she tied the balloons to the heater's valve. But what he saw when she woke up in the morning shocked him. The chubby balloon was now just tiny bits of rubber, that is, it had burst. However, the small balloon that he could not inflate with his brother had turned into a huge balloon. Ayça rushed to Alp's side crying. “Why did you explode the chubby?” she said. Alp “I swear I didn't blow it up.” he said. Finally, Ayça wiped her tears and “Then why did it explode?” she asked. Alp thought about it and asked Ayça, “Where did you leave them?” she asked. He said, “I put them next to the heater so they don't get cold.” he replied. “Hurrah!” Alp shouted. I know why the chubby popped and the little bubble got bigger. Ayça said, “Brother, can you please tell me?”, and then Alp said, “I want you to listen to me carefully.” 1. To inflate, I and you blew on the balloon did, but still we couldn't make the balloon as big as the other one, this means that we fill the balloon with something to inflate it.

2. The chubby exploded when it got hot next to the heater because it was so full. It means that its warming increased the desire of the thing we filled in it to escape outside. When it couldn't escape, it tore the rubber membrane, so the balloon burst.

3. Although you and I blew into the little bubble, we couldn't overfill it. But when the small balloon got hot, the contents started to move faster, making the elastic, expandable rubber balloon huge. Meanwhile, Alp said “The temperature in our room was very high, so I sweated a lot.”

4. I think the chubby balloon in our room, which was warmer than other days, couldn't stand the higher temperature like me and it burst, but the little balloon just got bigger.

After these explanations, Ayça was confused. But Alp's eyes were shining with pride and he couldn't wait to share these explanations with his teacher.

And now the teacher will try to share and explain this incident with other Ayça and Alp at school and even in the classroom.”

3. Findings and Discussion

In this section, the statistical evaluation of the pre-test and post-test results applied to the sample group to determine the change in conceptual achievement and scientific process skills was made.

Table 3.1: Kolmogorov-Smirnov and Shapiro-Wilks Test relating to Normality of Conceptual Achievement Test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Difference Score	.146	31	.093	.936	31	.063

Since the level of significance was found to be $0.063 > 0.05$ in the normality test, it was concluded that the distribution was normal (Table 3.1).

Table 3. 2: Descriptive Statistics of Achievement Test

	Mean	N	Std. Deviation	Std. Error Mean
Pre-test	66.03	31	14.824	2.663
Post-test	92.52	31	8.846	1.589

As can be seen in Table 3.2, the pre-test average is considerably lower than the post-test average, which indicates an exceptionally positive change in student achievement.

Table 3.3: t-test results for related samples between pre-test and post-test scores for the sampling group

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Differences				
				Lower	Upper			
Pre-test Post-test	-26.484	19.223	3.453	-33.535	-19.433	-7.671	30	.000

The t-test results given in Table 3.3 show that the level of significance (2-tailed) is $0.000 < 0.05$ and therefore there is a significant difference between the students' pre-application success levels and their post-application success levels. The results of the Kolmogorov-Smirnov and Shapiro-Wilks test for the normality of the science process skills test are given in Table 3.4.

Table 3.4: Kolmogorov-Smirnov and Shapiro-Wilks Test relating to Normality of Scientific Process Skills Test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Difference	.110	31	.200*	.968	31	.456

From Table 3.4, it can be seen that the level of significance in the normality test is $0.063 > 0.05$ and accordingly, it can be said that the distribution is normal.

Table 3.5: Descriptive Statistics of Scientific Process Skills Test

	Mean	N	Std. Deviation	Std. Error Mean
Pre-test	52.52	31	11.159	2.004
Post-test	64.39	31	13.520	2.428

From Table 3.5, it can be seen that the average of the pre-test results related to the scientific process skill test is lower than the average of the post-test results.

Table 3.6: t-Test Results for Related Samples between the Science Process Skills Pre-Test and Post-Test Scores of the Sampling Group.

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Differences				
				Lower	Upper			
Pre-test – Post-test	-11.871	16.280	2.924	-17.843	-5.899	-4,060	30	.000

The t-test results given in Table 3.6 show that the level of significance (2-tailed) is $0.000 < 0.05$. Accordingly, it can be said that the students' scientific process skills changed significantly and positively after the application.

4. Conclusions

As a model focused on problem analysis, student-centered learning, and the application of knowledge, PBL is a promising alternative to existing teacher-centered education programs. The key to effective teaching using this model is to present students with an interesting and unusual problem. The problems developed in this model have a critical role as initiator and intensifier for students' learning and active participation. In such a teaching process, students become self-motivated and focused on a specific goal while trying to recognize and solve the problem.

Descriptive statistics on the mean scores of the pretest and posttest show that the posttest grades are significantly higher than the pretest grades. In addition, paired sample t-test results also confirm the existence of a statistically significant difference between students' average success. The original problem situation used in this study can combine important connections such as gas, gas pressure, temperature and heat concepts, heat and temperature relationship, temperature and pressure relationship, which are quite difficult to understand for 8th grade students, in a single scenario.

Therefore, it can be said that the problem situation developed for the application based on the problem-based learning model can be extremely effective in learning these concepts and the relations between them by the effective and interactive use of demonstration and lecture methods in a sufficient time. On the other hand, the pre- and post-test results of the integrated science process skill test showed that there was a significant positive difference in terms of these skills of the students after the application. This positive change is an expected result for the scenario designed with its accurate content and interactive nature.

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Investigating Lexical Concept and Semantic Representation of Covid-19 in Coronavirus Corpus: A Corpus-Based Study

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Abstract

This article discusses the lexical and semantic representation through the collocation that appeared in the Coronavirus Corpus. This research investigates the frequent collocates that appeared together with the node word Corona and find out how those collocates construct the meaning through the linguistic system and conceptual system as they are involved in lexical representation. This research offers a new insight into teaching language using Lexical Concepts and Cognitive Models (Evans, 2009). The data collected are from the Coronavirus corpus by using the corpus-based method. The strength of the keywords and collocate is measured by using Mutual Information (MI). The MI was set in 5; therefore, three lexemes resulted, i.e., cases, patients, and outbreak. The data were analyzed using the lexical concept and cognitive model proposed by Evans (2009). The research results, in general, reveal that the information is coming from the “authorized institution” and “government’s representative”; it needs “the official approval or agreement” before publishing to the media, and in the passive form, it describes the foregrounded information and agentless informational assertion. Therefore, the information should be accurate and firm. However, another lexical concept reveals that the information is terrorizing and terrifying; the educated and trained person should also conduct the treatment.

Keywords: Coronavirus, Corpus-Based, Frequency, Lexical Concept, Mutual Information, Semantic Representation

1. Introduction

Since this virus spreads globally, newspapers, magazines, electronic media, and social media have published articles on Coronavirus. The government keeps posting how to deal with or avoid people getting infected by that virus. If we look at the history of this Coronavirus, it was backdated to November 17, 2019. According to South China Morning Post (LiveScience Report, published March 14, 2020) accessed December 18, 2020, they said that this disease started to spread across the globe “when a 55-year-old individual from Hubei Province in China may have been the first person to have contracted COVID-19.” (Bryner, 2020). This study investigates the lexical concepts that appeared in the collocates of node words “corona” published in the Coronavirus corpus. The previous research about Coronavirus has not discussed the data based on the Lexical Concept and Cognitive Model (LCCM) analysis. Therefore, this article offers a new perspective on investigating the lexical dan semantic representation

that appeared in the collocates of Corona using Lexical Cognitive Model analysis as a linguistically mediated simulation (Evans, 2009). The present researchers convince that this approach would benefit English learners and English teachers to understand how to interpret the concept of words and understand the meaning.

How is this disease contagious? Or how people are getting infected by this virus? They are the questions that are not treated as the primary focus. Instead, the main focus of this research is the collocates that frequently appear together with the node words Corona in news articles, television, electronic media, and even social media.

The coronavirus corpus was created during this pandemic and was released by May 2020. Creating this Corpus intends to discover what people are saying in online daily papers and magazines in 20 distinctive English-speaking nations (Mark Davies, 2020). His research aims at identifying the “collocates” that appear together with the node words “corona.” Furthermore, the collocations which arise will be analyzed based on the corpus method. Finally, this research also describes how those collocations formed semantic representations using Lexical Concept and Cognitive Models (LCCM).

Since this virus spread out around the globe, several linguists have conducted research concerning Covid-19. This pandemic draws attention not only the scientists but also to linguists. The articles discussed Covid-19, among others, are written by Olimat (2020), who investigated whether Jordanian Arabic society used euphemism or dysphemism when discussing the Covid-19 pandemic. He distributed questionnaires to 200 Jordanian respondents concerning the demographic information and open-ended and closed-ended questions. He used the sociolinguistics approach based on Allan and Burrige’s theory (1991; 2006) concerning euphemism and dysphemism, together with Warren’s model of euphemism (1992) also Lakoff and Johnson’s Conceptual Metaphor Theory (1980). His research results show that Jordanians use a different euphemistic techniques in daily Covid-19 conversation, such as metaphor, a shift from Arabic into English, medical terms, and abbreviations, but they hardly use dysphemism.

When Olimat (2020) investigated Covid-19 by distributing a questionnaire to Jordanian respondents, other research based on Sociolinguistic theory conducted by Malaysian researcher Kasdan et al. (2020) observed the terminology Covid-19 Malay Language Terminology Corpus using Socio-terminology theory. Their study aimed at analyzing the coinage of the terms related to Covid-19 in which the community-initiated it. They used the data source from the text released by the Ministry of Health Malaysia from January 16 2020, to May 10, 2020. The terms studied were compared to the DBP database. The results show that DBP already standardizes 67.0% of terms used by the Ministry of Health Malaysia. Even though some words were new, they were still in line with the guideline. However, they were unfavorable among terminologists.

Other research concerning Covid-19 also was conducted by Malaysian researchers. Nor & Zulcafli (2020) investigated how the news of Covid-19 was broadcast in News reports based on Corpus Driven study. They used an online newspaper report about Covid-19 downloaded from the Star online from March 1 to March 31, 2020, as the data source. They collected about 1018 news reports, and 140 themes came up. In addition, they chose 100 top collocates with the MI score minimum set 5 at least by using Antconc software. Their research results show that the collocates reflect fear, anxiety, and uncertainty that most Malaysians feel.

Joharry & Turiman (2020) also investigated the Malaysian public letter to the editor on the Covid-19 pandemic based on a Corpus-assisted discourse study, similar to research conducted by Nor and Zulcafli. Joharri and Turiman used a combination between corpus methods and classic CDA. Their investigation revealed that mostly Malaysian readers showed negative expressions, especially in an emotional way.

Another research article written by Rajandran (2020) discussed his finding of a negative expression in the data. He examined how the Prime Minister of Malaysia and Singapore framed Covid-19 through Metaphors. Rajandran used the Metaphor Identification Procedure and Metaphor Interpretation. The data were taken from the Prime Minister’s broadcasts on or to Media in March, April, and May 2020. Using Metaphor Identification Procedure and Metaphor Interpretation shows that both Prime Ministers used a similar metaphor, resulting in COVID-19 IS WAR.

The four studies explained above used the same sources, Malaysia newspapers, whether articles or public letters sent to the editor, show the negative expression concerning of Covid-19 pandemic. However, one of the studies concerning the Covid-19 pandemic has a different perspective. Rapi & Sultan (2020) employed the Positive Discourse Analysis framework. They collected 28 recorded press conference sessions announced by the Indonesian government spokesperson's speech. Their study shows that the government's spokesperson used the strategies such as "*nomination, predication, argumentation, perspectivization and intensification, and mitigation*" to deliver information to the public. The whole discursive strategies are used to improve the public's optimism and build solidarity among the citizens as a moral force to face the pandemic.

On the other hand, primarily Jordanian Arabic society used euphemisms in broadcasting the pandemic situation of COVID-19 (Olimat, 2020). A similar result of what Olimat had done also happened in the study conducted by Rapi & Sultan (2020). According to Rapi & Sultan (2020), the information released by the spokesperson in Indonesia gave a positive result; using discourse strategies, the Indonesian government improved the public's optimism and built solidarity among the citizens.

This research fills the gap between the previous research conducted by Nor & Zulcafli (2020) and Rajandran (2020). Nor and Zucafli used the articles published in the star online news portal. This news portal discussed the issue of Covid-19 in Malaysia. In comparison, this research used the Coronavirus corpus. This Corpus collected the issue of the Coronavirus pandemic in 20 different English-speaking countries.

Nor & Zulcafli (2020) investigation resulted in the collocates appearing with Covid-19. In addition, one of their research results found the noun collocates 'cases', 'outbreak,' and 'patients' as the top three most frequent noun collocates. Our research also found that the noun collocates frequently appeared with the keyword Corona. In contrast with Nor Fariza Mohd. Nor and Zulcafli, our research conducted the study based on Cognitive Model using a corpus-based method during Nor Fariza Mohd. Nor and Zulcafli conducted the research based on Corpus driven study combined with Discourse analysis. This current research is also under the semantic cognitive theory of Rajandran (2020). However, Rajandran used Metaphor Identification Procedure and Metaphor Interpretation, and the researchers analyzed the data using the Lexical Concept and Meaning Construction based on LCCM theory (the abbreviation of LCCM will be applied further).

Fillmore has three main contributions to Linguistic theory. They are case grammar, frame semantics, and construction grammar, as cited in (Hank, 2013). This research focuses on frame semantics initiated by (C. Fillmore, 1975; 1976; 1982a; 1985). We aimed at figuring out the conceptual meaning of lexemes "cases," "outbreak," "patients" that appeared in the Coronavirus corpus. The conceptual meaning is in line with what Fillmore said about 'frame' that the frame is "the system of concepts... to understand the meaning, we have to understand the whole structure in which it fits" (Fillmore, 1982a). To conclude, Fillmore's opinion is that frame semantics focus on analyzing conceptual relations.

Linguists have a variation concept of frame semantics. Among others are, Fillmore & Kay mentioned it as Linguistic System (Fillmore et al., 1988). Evans considers it a Symbolic Unit (Evans, 2009). Goldberg refers to it as Cognitive Construction Grammar (Goldberg, 1995; 2006). At the same time, Langacker tends to use it as Cognitive Grammar for complex symbolic assemblies (Langacker, 1987, 2008). However, all names have the same intention, i.e., finding out the lexical concept and meaning construction. Croft illustrated the anatomy of symbolic units as follows

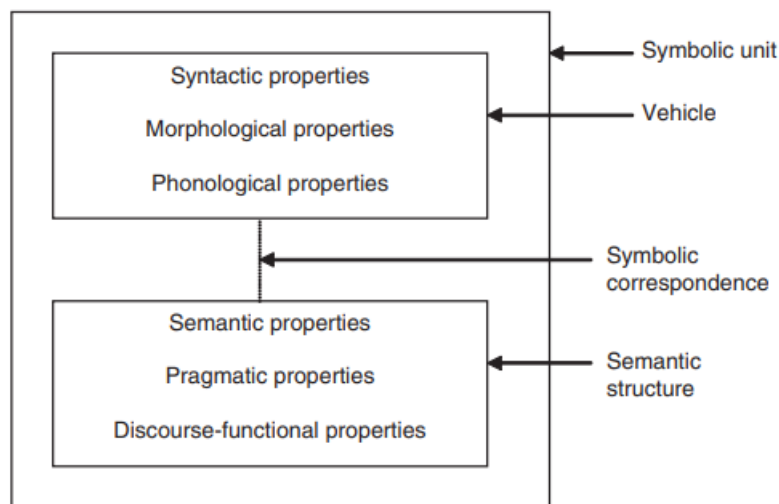


Figure 1: Anatomy Symbolic Units' Croft model (adapted by Evans, 2009, p. 95).

Evans (2009) discusses the structure of symbolic units based on Croft's model above as follows

- a. Vehicle: "France"
Lexical concept: [FRANCE]
- b. Vehicle: "NP *kick*FINITE *the bucket*"
Lexical concept: [AN ANIMATE ENTITIES DIES]
- c. Vehicle: "NP FINITE VERB NP NP"
Lexical concept: [THING X CAUSES THING Y TO RECEIVE THING Z]

Evans (2009) proposed the Lexical Concept Cognitive Model (LCCM theory) as a symbolic unit. This LCCM is the representation type held to populate the linguistic system. According to Evans, a symbolic unit is a bipolar assembly of phonological content represented by a vehicle. Thus, the lexical concept forms the semantic structure, while the vehicle is phonetically overt.

The lexical concept is formed by paired closed-class vehicles and paired open-class vehicles. The paired closed-class vehicle results encode the linguistic content and paired open-class vehicles could form as encoding linguistic content and provide access site to conceptual content. Therefore, the cognitive model proposed by Evans (2009) is considered the appropriate theory to analyze the data.

Collocation is concerned with rehashed co-occurrence of words and writing (Brezina, 2019). To investigate the distribution of collocation, we observed frequency (F) and Mutual Information (MI). This collocation could appear in specific texts. They could occur at a very high frequency, appear in other texts at a low frequency, or are absent. The bias of frequency of words happens probably because of the text genre, or they appear in a limited genre.

Sinclair and Stubbs proposed collocation as simplified by (Lindquist, 2009, p. 57) as "the relation between a word or individual word-forms which frequently co-occur with it." The term collocation was motivated by the educationalist (Palmer, 1933). Palmer classified collocations based on several patterns. The term collocation is also defined by British linguist Firth as cited in Lindquist (2009) that the word's meaning is frequently influenced by the phrase accompanied by it.

There are two types of collocations, window collocations and adjacent collocations. Both have different methods. For example, in window collocations, they search the frequent words that appeared to the left and the right keywords in 4 to 5. This collocation aligns with Firth and Sinclair's proposal (cited in Lindquist, 2009); see Stubbs, 2002). However, Sinclair considered using the strength of the measures in a varied way based on the statistical measure considered appropriate.

The second type of collocation was in line with Palmer, and it is known as the Palmerian point of view (cited in Lindquist, 2009). This type of collocation search for the frequent collocates appeared immediately to the left or

right of the keywords. According to Lindquist, this adjacent collocation method is closer to the investigation based on a linguistic approach. It is different from window collocation, which is quantitative rather than qualitative. However, this research uses the combination of window and adjacent collocation.

This research investigates the frequency of collocates that appeared with the node words Corona. The MI score adopts window collocation to measure the strength between node words and the collocates. In searching for the frequency of words, this research also adopted the perspective of adjacent collocation by utilizing the measurement five for the MI score. Another tool to be used is frequency. Frequency also is an essential part of corpus linguistics. Furthermore, frequency helps the researchers handle massive data. The researchers will be able to identify the data by observing the frequencies of the occurrence of the words as the frequent words or frequently used word combinations (see Lindquist, 2009).

The language research can observe the concordance that appeared in the corpus tools. The researchers need to read and analyze concordances to find semantic or grammatical information. The researcher will quickly get the information by using concordance tools rather than reading the whole text, and then they decide on the data source.

This research uses Antconc software as third-generation concordance (McEnery & Hardie, 2011). Concordance is another helpful tool to see the span of a window of the text (Palmer; Firth as cited in Lindquist, 2009). First, collocates of “corona” were collected based on the frequency in the Coronavirus corpus. Next, those collocates are chosen based on MI. Finally, we set the score of MI to a maximum of 5. Those data sets are considered corpora. Next, we transferred those corpora into Antconc software. Through the Antconc software, we have the collocates of lexemes “cases,” “outbreak,” and “patients. Those collocates were collected based on the cluster/N-grams and analyzed in the LCCM theory scheme.

2. Method

This research is a corpus-based study in line with Corpus Linguistics. The data were collected using descriptive statistics through F and MI. The data were analyzed in a descriptive method. Since this pandemic, Brigham Young University created Coronavirus Corpus, released in May 2020. They collected the data from online newspapers and magazines from 20 different English-Speaking countries. The keyword chosen in this research is Corona since this research aims to find out what those people in 20 different English-speaking countries are saying about this virus. The collocates are selected by using F and MI, as mentioned earlier.

Coronavirus corpus size is currently 747 million words. Corpus allows the researchers to search for the frequent words that appeared in online newspapers and magazines in 20 English-speaking countries during the pandemic crisis. First, the researchers collected the data from the Coronavirus corpus based on the frequency. Next, the closeness of collocates and the node words is observed based on MI. Finally, the MI score is set at a maximum of 5.

Those purposive data then were transferred into Antconc software to find the span of the collocation. Furthermore, collocates are helpful to collect the word type of words that appeared in those collocates. Through F and MI, they result in three lexemes “cases,” “patients,” and “outbreak.” Finally, we analyze the data based on lexical and semantic representation, which aligns with the Cognitive Linguistic study.

This Corpus has many benefits for the researchers since Corpus is the only comfortable way to search for worldwide phenomena without conducting field research. Based on our observations and experiences, the announcement constantly caused people’s fear in the first semester. The frequent words the spokesman, the newspapers, or any media announce are the increasing numbers of infected people and people who recovered from the disease. Other frequent words during this pandemic are virus, pandemic cases, crisis, patients, positive, warriors, outbreak, disease, and infection. The frequencies are 9544, 1695, 1366, 1083, 988, 810, 731, 675, 549, 398 tokens respectively.

3. Results

In the first place, the researchers observed the collocates appeared with the word(s) Corona followed by All (not a specific category).

Table 1: The Frequency of Collocates words Corona

NO.	NODE WORDS "CORONA"	COLLOCATES	F
1		Virus	9595
2		Pandemic	1713
3		Cases	1380
4		Crisis	1097
5		Patients	999
6		Positive	827
7		Warriors	738
8		Outbreak	677
9		Disease	552
10		Infection	400

Source: Coronavirus corpus accessed on Dec. 13, 2020

In the second place, the researchers observed the collocates sorted by noun category. The result is shown in Table 2 below.

Table 2: The top 10 noun Collocates of CORONA

NO	Noun Collocates	F	MI
1	Virus	9600	8.05
2	Cases	1381	5.00
3	Crisis	1101	6.10
4	Patients	1003	5.85
5	Warriors	738	10.54
6	Outbreak	677	5.07
7	Disease	552	5.15
8	Spread	526	3.42
9	Infection	425	4.84
10	Number	378	3.07

Source: Coronavirus corpus accessed on Dec. 13, 2020

Table 2 above shows us that noun collocates appeared on the right side of node word corona; they form into NP such as 'Coronavirus,' 'Corona Cases,' and so on. However, to find out the strength of both collocations needs the statistical measures of MI. As we can see, according to Latham & Roudi (2009), "high MI indicates a large reduction in uncertainty and low MI indicates small reduction and zero MI between the two random variables means the variables are independent." Therefore, it takes the consequence that this collocate does not share mutual information due to a considerable reduction in uncertainty.

As mentioned earlier, this research has set the MI score to a maximum of 5 causes the results that the collocates analyzed are "cases," "patients," and "outbreak." Therefore, the discussion is limited to 3 data considered representative data.

To find the collocates of lexemes 'cases,' 'outbreak,' and 'patients' collected from the Coronavirus corpus, we transferred the data into Antconc software. From table 3 below, we can see that the collocates of cases are the word 'xa' as amount as F=342. However, this word cannot be understood and is considered fragmented, and we have to exclude the word 'xa' as our data. Then, the paired closed-class vehicles appeared as collocating cases such as the preposition 'of' and determiner 'the.' The paired with open-class vehicles also appeared, such as 'corona,' 'confirmed,' 'suspected.'

Table 3: The collocates of cases

Rank	Freq	Freq (L)	Freq (R)	Stat	Collocates
1	342	95	247	4.46212	Xa
2	96	12	84	4.09276	Of
3	85	2	83	4.45775	Corona
4	16	13	3	2.15024	The
5	16	14	2	4.18587	Confirmed
6	14	14	0	3.99322	Has
7	12	11	1	4.63333	Suspected
8	11	10	1	4.38226	Two
9	10	10	0	2.82972	To
10	10	8	2	1.94708	In

Source: Coronavirus corpus accessed on Dec. 13, 2020

From Antconc software (see table 4 below), we can see the collocates of the outbreak is the paired closed-class vehicles. They are determiners 'the' followed by the preposition 'of,' 'to,' 'in,' 'since,' 'after,' 'with,' 'over,' and 'due.' We limited the frequency not below 10. There are no paired with open-class vehicles. As in line with Evans's lexical concept, this paired close-class will encode linguistic content. As in the data example, "the outbreak of /.../.

Table 4: The collocates of the outbreak

Rank	Freq	Freq (L)	Freq (R)	Stat	Collocates
1	338	88	250	4.65126	Xa
2	79	79	0	3.68581	The
3	102	18	84	4.30468	Of
4	15	15	0	3.22598	To
5	12	11	1	2.07178	In
6	7	7	0	4.67665	Since
7	7	7	0	4.48400	Due
8	6	6	0	3.80218	After
9	5	5	0	4.41361	Over
10	4	4	0	3.86929	With

Source: Coronavirus corpus accessed on Dec. 13, 2020

The collocates patients (see table 5 below) are followed by paired open-class vehicle 'corona' and the paired closed-class preposition 'of,' 'in,' 'for,' 'to,' determiner 'the,' and conjunction. That paired closed-class which encodes linguistic content, will be analyzed in detail in the next section.

Table 5: The collocates of patients

Rank	Freq	Freq (L)	Freq (R)	Stat	Collocates
1	305	161	144	4.44864	Xa
2	98	60	38	4.38100	Corona
3	45	25	20	3.73775	Of
4	37	22	15	3.00519	The
5	27	5	22	3.21980	In
6	17	11	6	3.09079	And
7	14	10	4	3.11554	For
8	13	8	5	2.70377	To
9	13	4	9	3.45223	Are
10	11	6	5	2.81069	That

Source: Coronavirus corpus accessed on Dec. 13, 2020

We analyze the collocation based on the above collocates findings that appeared in table 3, table 4, and 5 to find the lexical concept and semantic representation using the LCCM theory. The schematic semantic content itself refers to the Cambridge Dictionary.

4. Discussion

4.1. The Lexical Concept of Cases and Its Semantic Representation

The verb collocates “confirmed.”

A. The perfect tenses

- (1) India too **has confirmed** three cases of Coronavirus in Kerala
- (2) Research (ICMR) **has confirmed** 4 positive cases of Corona in Karnataka, and within minutes of ICMR stating the positive case in the state
- (3) NAN reports that Nigeria currently **has two confirmed** cases of Corona Virus; the first was reported on February 27
- (4) The government **has confirmed** eight more cases of Coronavirus

Table 6.1: Schematic content associated with closed-class vehicles “has confirmed”

Closed-class vehicles	Schematic semantic content
Lexical class: verb (has/have confirmed)	Designates an entity as an event that has been started in the past and is still in progress.
Lexical class: noun (India; Research (ICMR); Nigeria; The Government; cases; Coronavirus)	Designates an entity as an object (as one possibility)
Grammatical relation: subject (visiting countries; India; Research (ICMR); Nigeria; The government)	Designates entity being the primary or focal entity in a designated relationship
Grammatical relation: object (cases; Coronavirus)	The secondary entity in a designated relationship
Active voice: through the verb form	Point of view being situated at the agent
Declarative word order	Speakers know the situation is to be true and assert it to the hearer

Table 6.2: Rich content associated with open-class vehicles “has confirmed”

Open-class vehicles	Rich semantic content
India	Proper place
Research (ICMR)	An institution that conducts the research
Nigeria	Proper place
The government	Proper name functions as a collective noun referring to people who conduct the rules of the country

The schematic content associated with the closed class and rich content associated with open class vehicles “has confirmed” shows [ANNOUNCEMENT OF EXTRAORDINARY EVENTS].

This announcement was launched by the authorized institution, organization, and government representatives. Therefore, it shows [LEGAL ANNOUNCEMENT] lexical concept. Furthermore, this second lexical concept brings forth the third lexical concept [INFORMATIONAL ASSERTION]. Those lexical concepts encode linguistic content that “has confirmed” pragmatically refers to the announcement concerning Covid-19. The participants involved are those who have the authorization. Therefore, the announcement is legal as the information assertion. To conclude, the semantic representation revealed from this lexical concept is [N/NP1(the authorized institution) has confirmed (legal information) N/NP2(information assertion)].

B. Simple past tense

- (5) with cases of Coronavirus or Cove in 19 now **confirmed** in New York, Vermont, and New
- (6) Institute also **confirmed** that there are no reported cases of Corona Virus in Sri Lanka so far.

- (7) Now 55 **confirmed** cases of Coronavirus in San Diego County.
 (8) Shares # Telangana CM KCR **confirmed** 10 new cases of Corona positive in a single day at the press meet he called for.

Table 6.3: Schematic content associated with closed-class vehicles “confirmed”

Closed-class vehicles	Schematic semantic content
Lexical class: verb (confirmed)	Designates an entity as an event that happened in the past; it proved accurate, and an entity was approved officially by formal agreement.
Lexical class: prep (in)	Designates entity is inside a container, place, or area.
Grammatical relation: subject (Cases of Coronavirus or Cove in 19); Institute; 55; Telangana CM KCR)	Designates entity being the primary or focal entity in a designated relationship
Grammatical relation: object (cases of Coronavirus; that there are no reported cases of Corona Virus; cases of Coronavirus; 10 new cases of Corona positive)	The secondary entity in a designated relationship
Active voice: through the verb form	Point of view being situated at the agent
Declarative word order	Speakers know the situation is to be true and assert it to the hearer

Table 6.4: Rich content associated with open-class vehicles “confirmed”

Open-class vehicles	Rich semantic content
Institute	Proper name functions as a collective noun referring to academics, such as research and educational matters.
55	Designates the amount or number of the entities
Telangana CM KCR	A proper name refers to a person who has authority in India.

The schematic content associated with the closed class and rich semantic content of vehicles “confirmed” shows the lexical concept of [FORMAL APPROVAL]. Since the entity is a formal approval, the authorized institution and the government’s representative are involved. So, the lexical concept revealed here is [AUTHORISATION AGREEMENT]. Those agreements bring forth [INFORMATIONAL ASSERTION] lexical concept. To conclude, the semantic representation revealed from this lexical concept is [N/NP1(authorized institution) confirmed (formal approval) (authorization agreement) N/NP2(informational assertion)].

C. Passive Sentence

- (9) About 525 cases **are confirmed**
 (10) postpone the holiday, despite there **being confirmed** cases of Coronavirus in Delhi,” she told me.

Table 6.5: Schematic content associated with closed-class vehicles “are confirmed”

Closed-class vehicles	Schematic semantic content
Lexical class: verb (are confirmed)	Designates an entity as an event that happened in the past; this entity proved true and was approved officially by formal agreement.
Lexical class: prep (in)	Designates something or someone is inside a container, place, or area.
Grammatical relation: subject (525 cases; despite there)	Designates entity being the primary or focal entity in a designated relationship
Grammatical relation: complement (cases of Coronavirus)	The secondary entity in a designated relationship

Passive voice: through the verb form	Designates entities occurred not from the point of view of the agent
Declarative word order	Speakers know the situation is to be true and assert it to the hearer

The lexical concept of the vehicle “are confirmed” shows a similar semantic representation with vehicles “confirmed.” However, the information occurred not from the point of the agent. Therefore, it reveals the [AGENTLESS INFORMATIONAL ASSERTION] lexical concept. To conclude, the semantic representation of vehicles “are confirmed” in passive voice is [N/NP(topics) are confirmed(formal approval)] the writers did not insert the agents involved.

The verb collocates “have been reported”

- (11) Cases of Coronavirus **have also been reported** from countries including Thailand, Vietnam, Singapore
- (12) to travelers from China or any country where cases of Coronavirus **have been reported** to observe self-quarantine on arrival in Lagos.
- (13) Dr. Zafar Mirza said that 4,446 suspected cases of Coronavirus **have been reported** in Pakistan
- (14) Two suspected cases of Corona Virus in Akwa Ibom State **have been reported** negative.
- (15) 2020, there **have been only two reported** cases of Coronavirus in Michigan.

Table 6.6: Schematic content associated with closed-class vehicles “have been reported”

Closed-class vehicles	Schematic semantic content
Lexical class: verb (have been reported)	A description of an entity’s designation. Designates an entity to prove to be true. Designates an entity being approved officially by formal agreement.
Lexical class: prep (in)	Designates something or someone is inside a container, place, or area.
Lexical class: prep (from)	Designates the place where the entities start.
Lexical class: prep (to)	Designates the action described in the infinitive that will happen later.
Grammatical relation: subject (Cases of Coronavirus; any country where cases of Coronavirus; 4,446 suspected cases of Coronavirus; Two suspected cases of Corona Virus)	Designates entity being the primary or focal entity in a designated relationship
Grammatical relation: complement (cases of Coronavirus: to observe self-quarantine on arrival)	The secondary entity in a designated relationship
Passive voice: through the verb form	Designates entities occurred not from the point of view of the agent
Declarative word order	Speakers know the situation is to be true and assert it to the hearer

The schematic content associated with the closed class vehicles “have been reported” shows [OFFICIAL APPROVAL] and [OFFICIAL AGREEMENT] lexical concepts. Since the vehicle is in a passive form, there is not any agent described. However, the event is foreground to highlight the information. As a result, the vehicles “have been reported” show [FOREGROUND INFORMATION] lexical concept. To conclude, the semantic representation of vehicle “have been reported” are [N/NP1(foreground information) have been reported (official approval/agreement) to-inf(action) in(proper place)] and [N/NP1(foreground information) have been reported(official approval/agreement) adj (state of entity’s condition)]; [There(expletive) have been reported(official approval/agreement) NP1(psychological subject)].

The verb collocates recorded

- (16) announced on Saturday that it **has recorded** 10 cases of Coronavirus.

- (17) The United States **has recorded** 122,000 cases of Coronavirus so far, the largest number of infections in one country.
- (18) announced on Monday that it **had recorded** 22 cases of Coronavirus during the past 24 hours in the region.
- (19) Kurdistan Region **has recorded** 161 cases of Coronavirus so far,

Table 6.7: Schematic content associated with closed-class vehicles “has recorded”

Closed-class vehicles	Schematic semantic content
Lexical class: verb (has recorded)	Designates devices used to record; the entity does an activity using electronic tools.
Lexical class: prep (during)	Designates entity occurs from the beginning to the end of a particular period.
Grammatical relation: subject (Cases of Coronavirus; any country where cases of Coronavirus; 4,446 suspected cases of Coronavirus; Two suspected cases of Corona Virus)	Designates entity being the primary or focal entity in a designated relationship
Grammatical relation: complement (cases of Coronavirus: to observe self-quarantine on arrival)	The secondary entity in a designated relationship
Declarative word order	Speakers know the situation is to be true and assert it to the hearer

The schematic content associated with the closed class vehicles “has recorded” shows the entity has done something using the electronic tools. The agent does the activity at a time, containing formal and accurate information. The speaker knows the situation is actual asserts it to the hearer. As a result, that schematic content reveals [ACCURATE INFORMATION BY TAKING NOTES] lexical concepts. To conclude, those lexical concepts show a semantic representation as follows [N/NP1(government’s representative) has recorded (take notes activity) NP2(accurate information)].

The adjective collocates confirmed

- (20) 2020, Italy reported only three **confirmed** cases of the Coronavirus.
- (21) These **confirmed** cases of Coronavirus not cooperating with health care officials/police should be handled under the National Security Act
- (22) blamed for the sudden spike of **confirmed** positive cases of Corona Virus Disease -19 cases in Malaysia.
- (23) **confirmed** cases of Corona Virus in New York are of Asian descent

Table 6.8: Schematic content associated with closed-class vehicles “confirmed”

Closed-class vehicles	Schematic semantic content
Lexical class: verb (reported)	Designates the entity’s activity in informing something to someone.
Lexical class: adj (confirmed)	Designates entity firmly fixed.
Lexical class: prep (in)	Designates something or someone is inside a container, place, or area.
Lexical class: prep (of)	Designates entity’s possession or belonging.
Lexical class: prep (under)	Designates entity is experiencing something.
Grammatical relation: subject (Italy, cases of Coronavirus)	Designates entity being the primary or focal entity in a designated relationship
Grammatical relation: object (only three confirmed cases of Coronavirus; the National Security Act; Asian descent)	The secondary entity in a designated relationship
Declarative word order	Speakers know the situation is to be true and assert it to the hearer

Table 6.9: Rich content associated with open-class vehicles

Open-class vehicles	Rich semantic content
Italy	Proper name functions as a collective noun referring to the place and people who have the authority.
Asian descent	Proper nouns to designate the specific races.

The closed-class vehicles “confirmed” schematic content shows the lexical concept [FIRM INFORMATION]. Based on the rich content associated with open-class, the participant who announces the event refers to the government’s representative or the authorized institution. Therefore, it reveals the [AUTHORIZED INSTITUTION INVOLVED] lexical concept. The second participants belong to the patients. As a result, it shows [PATIENTS’ INFORMATION] lexical concept. To conclude, that lexical concept reveals a semantic representation [confirmed(adj)(firm information) (patients’) (authorized institution involved)].

The adjective collocates suspected

- (24) Coronavirus in Sri Lanka Two **suspected** cases of Coronavirus in Sri Lanka # Written by Staff Writer #January 25n 2020
- (25) For **suspected** serious cases of the Corona, employers are strongly advised to notify the public health department
- (26) for doctors and medical staff to treat **suspected** cases of Corona: An allowance!
- (27) by the Institute of Infectious Diseases with **suspected** cases of Corona Virus infections being reported from Sri Lanka.

Table 6.10: Schematic content associated with closed-class vehicles “suspected”

Closed-class vehicles	Schematic semantic content
Lexical class: adj (suspected)	Designates the information that is believed to be true.
Lexical class: noun (two)	Designates number or amount
Lexical class: noun (Sri Lanka)	Designates proper place
Lexical class: noun phrase (cases of Coronavirus; doctors and medical staff; the Institute of Infectious Diseases; the public health department)	Designates to describe the entity as modified by the adjective
Lexical class: to inf (to notify)	Designates to inform the entity about something
Lexical class: prep (in)	Designates something or someone is inside a container, place, or area.
Lexical class: prep (of)	Designates entity’s possession or belonging.
Lexical class: prep (from)	Designates the place where the entities start.
Declarative word order	Speakers know the situation is to be true and assert it to the hearer

The schematic content associated with the closed-class vehicles “suspected” shows the entity’s information that is believed to be true. As a result, it reveals [POTENTIAL STATUS] lexical concept. That lexical concept shows the semantic representation [N(number) suspected(adj)(potential status) NP(the caused)]; [to-inf(action) suspected(potential status) NP(the caused)].

The adjective collocates positive

- (28) several cases of corona-**positive** patients have been found
- (29) Meanwhile, the total cases of Corona **positive** have crossed three thousand in the country.
- (30) We have received confirmation of two more cases of Corona; the two have **tested positive** as a result of coming into contact with
- (31) from #Mohali was **tested positive** for Corona.

Table 6.11: Schematic content associated with closed-class vehicles “positive”

Closed-class vehicles	Schematic semantic content
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Lexical class: adj (positive)	Designates the entity's test result and is approved officially by formal test.
Lexical class: noun (patients)	Designates entity's condition
Lexical class: noun (Corona)	Designates proper name
Lexical class: noun phrase (several cases of Corona; the total cases of Corona; the two; as a result of; three thousand; the country)	Designates to describe the entities as modified by the adjective
Lexical class: a passive form of the verb phrase (have been found)	Designates to describe the agent finds the entity
Lexical class: a passive form of the verb phrase (was tested; have been found)	Designates the event, not from the perspective of the agent
Lexical class: verb phrase (have tested)	Designates a discovery of the entity's condition
Lexical class: verb phrase (have crossed)	Designates the entity goes one side to another side
Lexical class: prep (in)	Designates something or someone is inside a container, place, or area.
Lexical class: prep (for)	Designates to show the entity's purpose or the entity's intention
Declarative word order	Speakers know the situation is to be true and assert it to the hearer

The schematic content associated with the closed-class vehicles "positive" refers to the test's result, examined by an official institution. Therefore, it reveals [MEDICAL TEST RESULT], [OFFICIAL INFORMATION], and [NEGATIVE EVALUATION] lexical concepts. That lexical concepts show semantic representation [NP V(event)(active form) Adj(medical result)], [NP V(event)(passive form)(official information)], [N V(event)(passive form) (negative evaluation) for(pre) N(result)].

4.2. The Lexical Concept of Outbreak and Its Semantic Representation

The noun collocates outbreak

- (32) The minister said more than 70 billion on a daily basis since before **the outbreak of Corona Virus**
- (33) **After the outbreak of Corona**, Contagion started trending and became the 'Most Demand Film' in the
- (34) **Another outbreak of Corona Virus** was suspected at Zoom HQ in China as many workers there were found
- (35) in a bid to help combat **the deadly outbreak of the Coronavirus** in mainland China.
- (36) The Islands are **in fear of an outbreak of Corona**, so Pacifica is no brained [sin] to cancel

Table 6.12: Schematic content associated with closed-class vehicles "outbreak"

Closed-class vehicles	Schematic semantic content
Lexical class: noun (outbreak)	Designates the dangerous, unpleasant entity (usually disease) begins all of a sudden
Lexical class: determiner, pronoun (another)	Designates additional or one more entity
Lexical class: adj (deadly)	Designates to describe the entity which caused to death
Lexical class: prepositional phrase (in fear of)	Designates the entity's feelings
Lexical class: prep (before)	Designates to describe the agent finds the entity
Lexical class: a passive form of the verb phrase (was tested)	Designates the action conducted by the agent
Lexical class: verb phrase (have tested)	Designates a discovery of the entity's condition
Lexical class: verb phrase (have crossed)	Designates the entity goes one side to another side
Lexical class: prep (in)	Designates something or someone is inside a container, place, or area.

Lexical class: prep (for)	Designates to show the entity's purpose or the entity's intention
Declarative word order	Speakers know the situation is to be true and assert it to the hearer

The schematic content associated with the closed-class vehicles “outbreak” refers to disease, dangerous events that occurred without notice in advance, violence, caused to death. Therefore, it reveals [QUANTIFIER] lexical concept such in “Another outbreak of Corona Virus /.../” see (data 35), [TERRORIZING] lexical concept such in “the deadly outbreak of Coronavirus” see (data 36), [TERRIFYING EVENT] lexical concepts such in “in fear of an outbreak of Corona” see (data 37).

4.3. The Lexical Concept of Patients and Its Semantic Representation

The noun collocates treatment

- (37) first prototype of hospital isolation coach for the **treatment** of corona patients
- (38) also ensure complete guidance to Pakistani doctors regarding the **treatment** of corona patients in Punjab.
- (39) to the need for the staff providing **treatment** to the corona patients.
- (40) No hospital can refuse to admit patients for corona **treatment**, and if anyone is found doing it, legal action will be taken

Table 6.13: Schematic content associated with closed-class vehicle “treatment”

Closed-class vehicles	Schematic semantic content
Lexical class: noun (treatment)	Designates the way the entity is considered and examined.
Lexical class: determiner (the)	Designates to particular things, people, places
Lexical class: preposition (for)	Designates the intention of someone to give something.
Lexical class: preposition (to)	Designates the action will happen later.
Lexical class: preposition (of)	Designates to show possession, belonging, or origin.
Lexical class: preposition (in)	Designates something or someone is inside a container, place, or area.
Lexical class: noun phrase (the treatment of corona patients)	Designates how the entity is examined concerning medical care.
Declarative word order	Speakers know the situation is to be true and assert it to the hearer

The schematic contents associated with closed-class vehicles “treatment” refer to medical treatment due to Coronavirus; this medical treatment was done by someone who had a medical, educational background. Therefore, it reveals [EDUCATIONAL NEEDS] lexical concepts such as “/.../ coach for the treatment of Corona patient” see (data 38), and “also ensure complete guidance to Pakistani doctors regarding the treatment of corona patients in Punjab” see (data 39). Furthermore, the lexical concept [EXAMINATION SUPPLY] such in “to the need for the staff providing treatment to the corona patients” see (data 40) and “No hospital can refuse to admit patients for corona treatment, and if anyone is found doing it, legal action will be taken” see data (41).

This coronavirus corpus is data collected from 20 different English countries. Therefore, we can conclude that this Coronavirus corpus represents the 20 English countries. Furthermore, through F and MI, the three words “cases,” “patients,” and “outbreaks” most frequently occur in this Corpus. Therefore, this LCCM theory has demonstrated significant feasibility in analyzing collocation cases, patients, and outbreaks. Through vehicles “has confirmed,” “confirmed,” “are confirmed,” “have been reported,” “recorded,” “confirmed,” “suspected,” “positive,” “outbreak,” and “treatment,” it reveals that those vehicles result in a semantic representation that all the information is coming from “the authorized institution,” “the official approval or official agreement,” and “the government’s representatives”. In the passive form, the information of the entity's condition is foregrounded, and they are agentless informational assertions. The information content is accurate and firm and describes the potential status and medical evaluation test result. In other vehicles, “outbreak” and “treatment” reveal a semantic

representation of “quantifier,” “terrorizing,” and “terrifying events”; it also describes the “educational needs” and “examination supply.”

Through LCCM theory, the current researchers have a very fruitful insight into revealing the meaning construction of the collocation of “cases,” “patients,” and “outbreak” lexical concepts. Since the previous research discussed Coronavirus and Covid-19 from Semantic Cognitive through Metaphor; Metaphor, Nominalization, Appraisal from the perspective of Critical Media Discourse Analysis and Corpus Driven from the perspective of Critical Discourse Analysis.

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Determining the Physical Fitness of Individuals with Autism in Early and Middle Adolescence Period

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Abstract

The aim of this study is to determine the physical fitness levels of individuals with autism by comparing them with individuals in the early and middle adolescence periods with normal development and the needs of the individuals with autism in terms of physical fitness. This study is carried out at the Selçuklu Autism Foundation, which is the largest autism education center in Turkey. It is carried out in this center with autistic individuals aged 10-17 who have received sports training for at least one year, and randomly selected individuals between the ages of 10-17 who do not do sports and show normal development. In this study, the cross-sectional survey model, one of the survey models, is used. The physical fitness levels of individuals with and without autism participating in the research are determined by the Brockport Physical Fitness Test developed by the State University of New York and some motoric test batteries. The t-test for the difference between arithmetic means in independent groups is used. The other measurement is the non-parametric Mann Witney U test. According to the study findings, a high level of significant difference is found between BMI, triceps, calf, right and left hand grip, back strength, trunk lift, long jump and one mile running values in both t-test and Mann-Whitney U results in early and middle adolescence periods. As a result, according to Brockport test values, it shows that all values of individuals with autism are physically behind the individuals with normal development. These results show that individuals with autism are shorter in stature, have higher body weights and have higher BMI values than individuals with normal development.

Keywords: Autism, Physical Fitness, Early Adolescence, Middle Adolescence

1. Introduction

Autism is a disorder that appears in the early developmental stage and manifests itself with limited regenerative behaviors, inadequacy in social interaction and communication skills (Edition, 2013). According to data from the US Department of Health, one out of every 88 school-age children is diagnosed with autism today. The incidence of autism is 3-4 times higher in boys than in girls, and today one out of every 54 boys is at risk of autism. Considering the data of the Autism Platform, it is accepted that there are approximately 550,000

individuals with autism in Turkey and around 150,000 children with autism in the 0-14 age group (ODFED, 2018).

Individuals with autism usually have delays in their movement skills (Reid & Collier, 2002). The weak movement skills seen in people with ASD may negatively affect various emotional, social and behavioral developments of these individuals. However, low mobility skills can reduce participation in physical activity and different components of physical fitness (Haga, 2008; Lopez-Williams et al., 2005). While reducing the inactive lifestyle that causes health problems in children with ASD, it is important to increase the variety of activities in order to improve the physical activity levels, motor skills and physical fitness levels of these children (Pan, 2011). Individuals with autism may have serious deficiencies in fine and gross motor skills (Obrusnikova & Miccinello, 2012). Exercise improves the motoric features of individuals with autism, reduces repetitive behaviors, increases eye contact and provides benefits in many areas such as social interaction. It positively affects the life skills of the individual, reduces attention deficit and prevents tantrums (Beyoğlu, 2017; Obrusnikova & Miccinello, 2012; Otizmvakfi, 2021; Tohumotizm, 2018, 2020). Considering all these benefits, it is seen that sports and education are a positive alternative in most aspects for children with autism in adolescence (Erol & Akçın, 2018).

Adolescence; biological and physical development, social and mental maturation, physical growth, and sexual development are the transition period from childhood to adulthood (Aslan & Koç, 2018; Parlaz et al., 2012). Adolescence periods have been defined in certain age ranges in some studies. According to the World Health Organization, the age group of 10-19 years is determined as "adolescence" (WHO, 2003). UNICEF, on the other hand, defined the early adolescence period as between the ages of 10-14 and the late adolescence period as between the ages of 15-19 (UNICEF, 2011). However, the most accepted definition of adolescence emerged by dividing adolescence into three parts. Adolescence is divided into three main parts as early, middle and late adolescence (Ekeland et al., 2005; Pawlowski, 2008). They determined the age range of early adolescence as 11-13 years old for girls and 12-14 years old for boys; the middle adolescence period as 13-16 years old for girls, 14-17 years old for boys, and the late adolescence period as 16-19 years old for girls and 17-19 years old for boys (Pawlowski, 2008). The popularity of studies on early and middle adolescence has been increasing in recent years (Erten, 2021; Turan, 2021; Uzun et al., 2020; Yuan et al., 2022).

Early adolescence includes a process that causes rapid physiological and physical changes (increase in body mass, increase in height, development of secondary sexual characters) and physical differences (Arıkan et al., 2013). Intense height growth in males occurs between the ages of 13-15.5 and an increase of 10-16 cm occurs per year. During the growth spurt, males may increase in height by 26-28 cm in total (Republic of Turkey, Ministry of Health, 2009). In males, there is usually a 14-month delay in the greatest body weight gain followed by the greatest height increase. This delay is the reason why the pre-adolescent growth period is two years longer in boys (Filiz, 2004). This shows that early adolescence (11-14 years) can be considered as the period in which physical characteristics change the fastest (Uzun & Boyalı, 2020). In the middle adolescence period, however, the increase in height leaves its place to weight gain and the growth rate starts to balance. The ability to learn strength and movement gained at this age again provides the optimal conditions necessary for success in sports. Middle adolescence is the period when motoric features are trained most intensively, coordinate and conditional skills are taught intensively in equal weight. While the change in body weight is similar in girls and boys until the age of 15, there are differences between the ages of 15-16. After the age of 16, the body weight of boys increases at a higher rate than girls. A slight increase in body fat ratios up to the age of 16 in boys and a slow decrease between the ages of 16-17 are observed. In girls, it is stated that there is a rapid increase between the ages of 14-15 and differences after the age of 16 (Ziyagil et al., 2010). While there is a rapid increase in height between the ages of 14-15 in boys and girls in middle adolescence, similar increases are observed between the ages of 15-16. Especially in early and middle adolescence periods, physical activity and sports have a very important effect on the physical development of adolescents (Uzun & Boyalı, 2020).

Physical activity is very important for individuals who do not show as much as individuals with normal development to lead a healthy life. (Rimmer & Braddock, 2002; Strong et al., 2005; Awamleh & Woll, 2014; Huettig & Connor, 1999). Children and young people are required to participate in at least 60 minutes of

moderate-intensity physical activity per day (Roehr, 2013). Participation in physical activities reduces body fat in children, contributes to bone development, increases socialization, reduces depressive symptoms, increases physical-physiological health and motor skills (Janssen & LeBlanc, 2010; Stanish et al., 2015). The measurement of body functions, including daily physical activity and performance, is determined by physical fitness. Body composition includes flexibility and muscular fitness (muscular endurance-muscle strength), aerobic fitness (endurance-aerobic capacity). Therefore, physical fitness tests allow us to accurately check the functional state of all these systems. Physical fitness is considered among the most important health-related information tools (Ortega, 2008; Tyler, 2014).

It is stated that the physical activity and physical fitness levels of individuals with ASD are lower than their ND peers, and the physical activity levels of individuals with ASD decrease more with increasing age (Pan et al., 2016). Especially when compared to normally developing children, individuals with autism have more problems with balance, gait, flexibility and movement speed (Dewey et al., 2007; Green & Tobin, 2009; Manjiviona & Prior, 1995; Pace & Bricout, 2015). It is seen that the majority of 16 theses and 33 articles on the physical activities of individuals with ASD in the world between 2004-2014 are concentrated in 9 countries such as the USA, Turkey, Taiwan and Canada (Görgün & Melekoğlu, 2016). It is seen that most of the studies on individuals with ASD are studies in the social field and generally applied to parents. Most other studies are limited to physical activities and not physical fitness. For this reason, it is an important need to determine the physical fitness of individuals with autism and to determine the differences between individuals with normal development. The aim of this study is to compare the individuals with autism with the individuals in the early and middle adolescence periods showing normal development and to determine the physical fitness levels and the needs of the individuals with autism in terms of physical fitness.

2. Method

The research is designed in quantitative research methods. This study is carried out with the approval of the ethics committee of Necmettin Erbakan University from the meeting numbered 03 on 18.12.2020 with the decision number 2020/135.

2.1 Research Group

The research is carried out in Selçuklu Foundation for Individuals with Autism, which is the largest autism education center in Turkey. It is carried out with individuals with autism between the ages of 10-17 who have received sports training for at least one year at the Selçuklu Foundation for Individuals with Autism and randomly selected individuals between the ages of 10-17 who show normal development and do not do sports. In this study, the cross-sectional survey model, one of the survey models, is used. The physical fitness levels of individuals with and without autism participating in the study are determined by the Brockport Physical Fitness Test developed by the State University of New York and some motoric test batteries.

2.2. Data Collections

Brockport Physical Fitness Test: BPFT is developed by the State University of New York, supported by the United States Department of Education, Office of Special Education and Rehabilitation Services, and as a product of the "Project Target" (1993-1998). It consists of twenty-seven different tests. A personalized test battery can be created according to disability and age groups. This test, which provides information about the health-related physical fitness of individuals, is developed for children and youth between the ages of 10-17 with and without disabilities. BPFT offers a wide variety of options for people with cerebral palsy, intellectual disability, congenital deformity, spinal cord injury, amputation and visually impaired people. BPFT mandates two tests for back and abdominal muscles to measure general muscle strength in children with mental or mild physical disabilities. It is recommended to select some tests among the required test groups for body composition, aerobic function and musculoskeletal function. Generally, 4-6 tests are considered sufficient for an individual to measure physical fitness (Winnick & Short, 1999). In BPFT, musculoskeletal function (muscle strength, endurance and flexibility), aerobic function and body composition can be evaluated and three or six

tests are selected from each part. In this study, from BPFT Batteries; Age, height, weight, body mass index, skinfold (triceps+calf) measurement, dominant hand grip strength for muscle strength, one mile run/walk test for endurance, sit-reach and trunk lift tests are applied for flexibility abilities.

Height Measurement: The heights of the individuals participating in the study are measured with a height scale with a precision of 0.01 cm. In the anatomical position, the bare feet are measured with the heels of the feet together, their breath held, the head in a frontal plane, and the overhead tray at the vertex point. The measurement taken is recorded in cm (Mackenzie, 2005).

Determination of Body Mass Index: The body mass index (BMI) formula (Body weight / Height²) will be used to determine the body mass index (Mackenzie, 2005).

Skinfold Measurements: Triceps skinfold measurement is taken over the triceps muscle between the shoulder tip and the elbow, and the calf skinfold measurement is taken from the inside of the leg from the highest level of the calf, with the knee flexed to 90° and placed on a raised surface (Winnick & Short, 1999).

Hand Grip: It is designed to measure hand and arm strength. During the test, the participant grasped the dynamometer at a 45° angle from the body. The participant performed 3 trials and 30 seconds were given between trials. The best score (kg) is recorded (Winnick & Short, 1999).

Trunk Lift: It is designed to measure flexibility and trunk extension. The participant is lying on the mat in a prone position. With his feet on the ground at a certain point and his hands on the ground under the thigh, the participant lifted his body above the ground. The movement is applied very slowly and in a controlled manner, with the chin parallel to the ground. The person administering the test held the ruler 2.5 cm ahead of the line on the ground at the level of the chin. The participant is given 2 attempts and the best score (cm) is recorded (Winnick & Short, 1999).

Sit-Reach: It is designed to measure flexibility in the hamstring muscle. The participant is seated on the bottom of the testing apparatus. The two legs are taut, the feet are positioned straight across at the end of the box. The participant tried to make the highest degree on the measuring ruler with his arms tense palm facing down. At least 1 second is waited for each stretch, and then the measurement is recorded. For this test, the measurement is taken with a 30x30 flexibility test apparatus, which is the best shape. The participant is given 1 trial. Score (cm) recorded (Winnick & Short, 1999)

Shoulder Stretch: It is designed to measure upper body flexibility. The participant extends one arm over his shoulder to his back and tried to touch the fingertips of both arms with the cross arm coming from below from behind. In the measurement, basically, the right or left arm is moved backwards over the shoulder. If the participant touches their fingertips, it is considered valid, and if they cannot, it is considered insufficient. When necessary, physical assistance and verbal instructions are given and the application is made (Winnick & Short, 1999).

Standing Long Jump Test: Standing on the non-slip floor, feet at the same level and behind the exit line of the toes, an explosive move is made by bringing the arms forward in a horizontal manner, with the knees bent at 45 degrees, by jumping the farthest to balance the arms. It is realized that the athlete's feet fell together without losing his balance. This test is repeated 2 times and the best result is recorded. The distance between the starting line and the fall is evaluated as cm (Şipal, 1989).

Leg-Back Strength Test: Takkei mark back and lift dynamometer are used in the measurements. After warming up for five minutes, the athletes placed their feet on the dynamometer bench with their knees bent and, with their arms stretched, their back straight and their body slightly bent forward, pulled the dynamometer bar, which was grasped with their hands, vertically using their legs with maximum force. This movement is repeated three times and the best result (kg) is recorded for each athlete (Saygin et al., 2005).

One-Mile Run Test: This test measures aerobic endurance. The goal of the test is to complete a mile in the shortest possible time. For those who desire, walking is interspersed with running, but they are encouraged to cover the distance as quickly as possible. The time is noted and completed in minutes and seconds (Winnick & Short, 1999).

2.3. Data Analysis

SPSS 21 package program is used for all statistical analyses. Descriptive statistics are used to determine group characteristics. The t-test for the difference between arithmetic means in independent groups is used. The other measurement is the non-parametric Mann Whitney U test. In addition, the percentage difference in the groups is examined.

3. Results

Descriptive statistics and analysis results of the data obtained in the study are presented in tables.

Table 1: Comparison of physical feature measurements of individuals with normal development in early adolescence (1) and groups of individuals with autism (2).

<i>Variables</i>	<i>Group</i>	<i>N</i>	<i>Mean</i>	<i>S.D</i>	<i>S.H</i>	<i>Min.</i>	<i>Max.</i>	<i>X1-X2</i>	<i>t.</i>	<i>P</i>	<i>Mann-Whitney U</i>	<i>P</i>	
Age (year)	1	23	11,39	1,07	,224	10	13	-0,18	-,054	,95	251,500	,972	
	2	22	11,41	1,14	,243	10	13						
Height (cm)	1	23	148,00	11,44	2,38	128	169	1,81	,603	,55	245,000	,855	
	2	22	146,18	8,50	1,81	126	164						
Body weight (kg)	1	23	40,73	11,63	2,42	21,90	62,30	-6,24	-	1,662	,10	187,500	,137
	2	22	46,97	13,52	2,88	23,40	70,00						
BMI (kg/m²)	1	23	18,27	3,57	,746	13,17	26,61	-3,32	-	2,790	,00**	144,000	,013*
	2	22	21,59	4,38	,935	14,74	28,89						

** <0,01, * <0,05

According to the study findings, a high level of significant difference is found between BMI values in both t-test and Mann-Whitney U results (table 1).

Table 2: Comparison of subcutaneous fat and paw strength measurements of individuals with normal development in early adolescence (1) and groups of individuals with autism (2).

<i>Variables</i>	<i>Group</i>	<i>N</i>	<i>Mean</i>	<i>S.D</i>	<i>S.H</i>	<i>Min.</i>	<i>Max.</i>	<i>X1-X2</i>	<i>t.</i>	<i>P</i>	<i>Mann-Whitney U</i>	<i>P</i>
Triceps	1	23	14,33	5,61	1,17	5	25	-3,583	-2,139	,03*	162,000	,03*
	2	22	17,91	5,62	1,19	8	27					
Calf	1	23	14,33	5,28	1,10	5	23	-4,765	-2,793	,00**	143,500	,01*
	2	22	19,09	6,14	1,31	9	33					

Right hand	1	23	19,09	4,77	,99	7,70	28,9	8,210	6,310	,00**	42,000	,00*
	2	22	10,88	3,88	,82	5,60	17,6					
Left hand	1	23	18,26	5,07	1,05	8,40	28,0	8,002	5,741	,00**	56,000	,00*
	2	22	10,26	4,20	,89	5,20	16,7					

** <0,01, * <0,05

According to the study findings, a high level of significant difference is found in the triceps, calf, right and left hand grip values in both the t-test and the Mann-Whitney U results (table 2).

Table 3: Comparison of flexibility, strength and endurance measurements of individuals with normal development in early adolescence (1) and groups of individuals with autism (2).

<i>Variables</i>	<i>Group</i>	<i>N</i>	<i>Mean</i>	<i>S.D</i>	<i>S.H</i>	<i>Min.</i>	<i>Max.</i>	<i>X1-X2</i>	<i>t</i>	<i>P</i>	<i>Mann-Whitney U</i>	<i>P</i>
Sit-Reach	1	23	20,17	7,05	1,47	1	31	2,58	1,161	,25	192,000	,16
	2	22	17,59	7,86	1,67	5	33					
Back Strength	1	23	53,91	16,82	3,50	23	100	26,68	6,629	,00**	36,000	,00**
	2	22	27,23	8,76	1,86	20	50,5					
Trunk Lift	1	23	30,09	4,96	1,03	20,0	38	9,49	5,350	,00**	68,000	,00**
	2	22	20,59	6,83	1,45	10	37					
Long Jump	1	23	124,39	24,00	5,00	73,0	172	73,25	10,575	,00**	4,000	,00**
	2	22	51,14	22,38	4,77	13	94					
One-Mile Run	1	23	12,24	1,66	,34	8,7	15	-3,89	-5,003	,00**	69,500	,00**
	2	22	16,13	3,32	,70	12,3	24					

According to the study findings, a high level of significant difference is found in the t-test and Mann-Whitney U results in back strength, trunk lift, long jump and one-mile running values (table 3).

Table 4: Comparison of physical feature measurements of individuals with normal development in middle adolescence (1) and groups of individuals with autism (2).

	<i>Group</i>	<i>N</i>	<i>Mean</i>	<i>S.D</i>	<i>S.H</i>	<i>Min.</i>	<i>Max.</i>	<i>X1-X2</i>	<i>t</i>	<i>P</i>	<i>Mann-Whitney U</i>	<i>P</i>
Age (year)	1	14	15,35	1,15	,30	14	17	-,07	-,169	,867	94,000	,849
	2	14	15,42	1,08	,29	14	17					

Height (cm)	1	14	169,64	4,46	1,19	162,0	176,0	2,71	1,006	,324	72,500	,240
	2	14	166,92	9,05	2,42	151,0	184,0					
Body weight (kg)	1	14	63,85	7,78	2,08	44,0	71,5	-6,68	-1,391	,187	81,000	,434
	2	14	70,53	16,2	4,33	50,0	105,2					
BMI (kg/m²)	1	14	22,14	2,28	,60	16,56	25,19	-3,12	-1,994	,057	48,000	,022*
	2	14	25,26	5,40	1,44	18,73	41,09					

** <0,01, * <0,05

Normal and autistic groups are compared in middle adolescence. Accordingly, a significant difference is found in BMI values in Mann-Whitney U results (table 4).

Table 5: Comparison of subcutaneous fat and paw strength measurements of individuals with normal development in the middle adolescence (1) and groups of individuals with autism (2).

<i>Variables</i>	<i>Group</i>	<i>N</i>	<i>Mean</i>	<i>S.D</i>	<i>S.H</i>	<i>Min.</i>	<i>Max</i>	<i>X1-X2</i>	<i>t.</i>	<i>P</i>	<i>Mann-Whitney U</i>	<i>P</i>
Triceps	1	14	18,03	5,07	1,35	9,0	24,0	-,82	-,399	,693	89,000	,43
	2	14	18,85	5,80	1,55	9,0	28,0					
Calf	1	14	19,42	4,32	1,15	11,0	26,0	-,92	-,443	,662	81,000	,43
	2	14	20,35	6,54	1,74	8,0	32,0					
Right hand	1	14	28,92	4,62	1,23	20,3	35,8	11,37	5,502	,000**	16,000	,00**
	2	14	17,55	6,19	1,65	9,6	30,0					
Left hand	1	14	29,67	3,97	1,06	23,0	34,0	12,43	5,55	,000**	16,500	,00**
	2	14	10,26	7,37	1,97	6,8	33,3					

According to the study findings, a high level of significant difference is found in the right and left hand grip values in the t-test and Mann-Whitney U results (table 5).

Table 6: Comparison of the flexibility, strength and endurance measurements of the groups of individuals with normal development in middle adolescence (1) and individuals with autism (2).

<i>Variables</i>	<i>Group</i>	<i>N</i>	<i>Mean</i>	<i>S.D</i>	<i>S.H</i>	<i>Min</i>	<i>Max.</i>	<i>X1-X2</i>	<i>t.</i>	<i>P</i>	<i>Mann-Whitney U</i>	<i>P</i>
Sit-Reach	1	14	12,85	6,53	1,74	2,0	20,0	1,42	-,704	,487	92,500	,80
	2	14	14,28	3,85	1,02	5,0	22,0					
Back Strength	1	14	92,03	18,99	5,07	57,0	121,5	59,10	10,548	,000**	26,000	,00**
	2	14	32,92	8,87	2,37	22,0	49,5					

Trunk Lift	1	14	22,57	4,39	1,17	16,0	30,0	2,32	1,096	,283	66,500	,14
	2	14	20,25	6,58	1,76	11,0	34,0					
Long Jump	1	14	145,07	34,41	9,19	72,0	188,0	81,21	6,117	,000**	11,000	,00**
	2	14	63,85	35,82	9,57	14,0	119,0					
One-Mile Run	1	14	10,96	1,95	,52	8,70	15,70	-2,92	-2,260	,032*	50,000	,02*
	2	14	13,88	4,42	1,18	8	25,50					

** <0,01, * <0,05

According to the study findings, a significant difference is found in one mile running values, a high level of significant difference in back strength and long jump values in the t-test and Mann-Whitney U results (table 6).

4. Discussion and Conclusion

In this study, it is aimed to determine the physical fitness of individuals with autism (ASD) by comparing individuals with autism in the early (10-14 years) and middle adolescence (14-17 years) periods with those with normal development (ND).

In the study, it is found that the mean height of ND individuals in the 10-17 age range, in the early and middle adolescence period, is higher than the individuals with ASD. In terms of body weights, it is seen that ASD individuals have much higher values than ND individuals in both early and middle adolescence periods. This difference is significantly higher in the body mass index means among those with ASD. Moreover, it is seen that individuals with ASD progress towards obesity with the middle adolescence period. According to Taner (2020), development is a whole in individuals with ASD, as in individuals with ND. While this situation is slow in individuals with ASD, it is experienced rapidly in individuals with ND. It has been reported that the mean height of ND 202 individuals aged 10-12 is 141 cm (Saygin et al., 2005) and the mean height of boys with an mean age of 13,1 years is 155,2 cm (Saygin & Karacabey, 2004). In 30 male individuals aged 10-16 years with ASD, the height is determined as 139,50 cm (Şimşek, 2017). In the study findings, when the height values are examined, it is seen that there is an increase in height depending on age in both groups, and the mean height of individuals with ASD is 2 cm in early adolescence and 3 cm in middle adolescence than ND individuals. In the light of these findings and in the literature, it is seen that individuals with ASD are shorter than their age groups. Şimşek (2017) reported that the body weight of 30 male individuals aged 10-16 with ASD is 41,45 kg. In the study, when the body weight values are examined, it is seen that there is an increase in body weight values depending on age in both groups, and the body weight of individuals with autism is heavier than their peers with normal development in both early and middle adolescence. BPFT, according to the preferred general standard norms, the body mass index value is expressed as 23,75 kg/m² for males aged 10-17, 22,3 kg/m² for males aged 10-14, and 25,75 kg/m² for males aged 14-17. (Winnick & Short, 2014). In a study conducted with 30 males individuals with ASD aged 10-16 years, BMI was 20,72 kg/m² (Şimşek, 2017), and the BMI value of ND individuals between the ages of 10 and 12 is 18,58 kg/m² (Saygin et al., 2005). When the body mass index values are examined, it is seen that there is an increase in the body mass index depending on the age and height values in both groups, and the mean body mass index of individuals with ASD is higher in both early and middle adolescence than their ND peers, but lower than the standard values. It is thought that the reason why it is lower than the standard values is that our study group consisted of individuals with autism who have been exercising for at least a year. It is also observed that BMI values of individuals with ASD begin to rise above the normal limits towards the middle adolescence period.

In the study, the fat measurement level of ND individuals in early adolescence (triceps+calf) is 28,66 mm, that of individuals with ASD is 37 mm, and in middle adolescence, the level of fat measurement (triceps+calf) of ND individuals is 37,45 mm, and individuals with ASD is 39,2 mm. BPFT, according to the preferred general

standard norms, the mean skinfold (triceps+calf) value is expressed as 33 mm in 10-17 males. (Winnick & Short, 2014). It has been observed that as the age increases, the subcutaneous fat values of both normally developing and autistic individuals increase. In the current study, when body weight, BMI and skinfold measurements are examined, it is found that individuals with ASD are more overweight and fatter, especially during middle adolescence, compared to individuals with ND. According to Karaküçük (2012), one of the main problems of individuals with ASD is being overweight. Excess weight caused by nutritional disorders and antipsychotic drugs creates a state of obesity, which causes many disorders. Very selective eating habits of children with autism cause many vitamin and mineral deficiencies (Kałużna-Czaplińska et al., 2011). In the study of Çiftçi (2020), in which the anthropometric measurements of 50 individuals diagnosed with ASD are evaluated, the mean age of the children, 36 of whom are boys and 14 of whom are girls, is 11.49 ± 4.51 . Considering the BMI values, 4% of the individuals are underweight, 36% are normal, 18% are slightly obese and 42% are obese. It has been determined that individuals with ASD are slightly overweight and overweight. The results in the literature support the present study.

The hand grip strength measurement level (right hand + left hand) of ND individuals in early adolescence (10-14 years) is determined as 38,16 kg and 21,14 kg for individuals with ASD. In middle adolescence (14-17 years), the claw strength measurement level of ND individuals (right hand + left hand) is 58,59 kg, and 27,81 kg for individuals with ASD. According to the preferred general standard norms of BPFT, the dominant hand grip strength of 10-17 years old males is specified as 38,62 kg. Dominant hand grip strength is given as 31 kg for the age of 10-14, and 49 kg for the age of 14-17. There is an mean increase in value parallel to the increase in age (Winnick & Short, 2014). The hand grip strength is found to be 18,91 kg in ND individuals aged 12 years (Saygin et al., 2005). Considering the results of the study, it is determined that hand grip strength increased with age, as in the current study. In a study conducted with 12 children with autism, it is determined that there is a significant difference in the mean of the claw strength pretest and posttest (Cerrahoğlu et al., 2017). In the present study, right hand strength is higher than left hand strength in both groups, and an increase in hand grip strength of 8 kg is observed in middle adolescence. It is thought that the reason why the grip strength of children with autism (right hand + left hand) is lower than those with ND is due to the low active use of motor skills.

In the study, the mean back strength in early adolescence is 53,91 kg in individuals with ND and 27,23 kg in individuals with ASD. In middle adolescence, the mean back strength is found to be 92,03 kg in individuals with ND and 32,92 kg in individuals with ASD. Individuals with autism may exhibit serious deficiencies in gross and fine motor skills (Arslan, 2019). Although individuals with autism seem agile and have a high level of physical fitness, they may not be sufficiently motivated to complete motor tests or may not fully understand the purpose of the test (Levinson & Reid, 1993). It is thought that the reason why right hand strength, left hand strength and back strength are low in individuals with autism is that the use of hand dynamometer and back dynamometer is difficult and learning takes place later in individuals with autism than in individuals with ND.

In the study, the mean sit-to-reach in early adolescence is 20,17 cm in individuals with ND and 17,59 cm in individuals with ASD. In middle adolescence, the mean sit-to-reach is determined as 12,85 cm in individuals with ND and 14,28 cm in individuals with ASD. According to the preferred general standard norms of the Brockport Physical Fitness Test, the mean sit-to-reach flexibility value for males aged 10-17 is 20 cm (Winnick & Short, 2014). In a 12-week study, a 6-11 year old male individual with ASD is measured and flexibility pre-test is 20,22 cm and post-test is 24,78 cm (Kara et al., 2019). In a study conducted with 30 males individuals aged 10-16 years with ASD, flexibility is reported as 3 cm (Şimşek, 2017). In a study conducted with 6 individuals with autism aged 16-23, flexibility is found to be 2,83 cm in the pre-test and 6,33 cm in the post-test (Taner, 2020). In the present study, there is a decrease in the flexibility value depending on the increase in age. This supports the studies in the literature.

In the study, the mean trunk lift in early adolescence is 30,09 cm in individuals with ND and 20,59 cm in individuals with ASD. In middle adolescence, the mean trunk lift is found to be 22,57 cm in individuals with ND and 20,25 cm in individuals with ASD. According to the preferred general standard norms of BPFT, the lower limit accepted in the mean of trunk lift test results in mentally retarded individuals aged 10-17 is 23 cm, and the upper limit is 30 cm (Winnick & Short, 2014). When we look at our trunk lift and sit-reach measurement

results, we see that the values of individuals with autism are lower than the standards. It is thought that low strength and flexibility in individuals with autism are due to poor daily living skills and sedentary lives.

In the study, the mean long jump in early adolescence is 124,39 cm in individuals with ND and 51,14 cm in individuals with ASD. In middle adolescence, the mean long jump is measured as 145,07 cm in ND individuals and 63,85 cm with ASD. In a study conducted on 6 adult individuals with autism, 4 boys and 2 girls, aged 16-23, the pre-test standing long jump score mean in the standing long jump study group is $20,67 \pm 16,00$; the post-test mean score is found to be $93,50 \pm 48,14$ (Taner, 2020). In the current study, it can be said that the low long jump values of individuals with ASD are due to the difficulties experienced by individuals with autism in characteristics such as jumping, balance, and explosiveness.

In the study, the mean running time of one mile in early adolescence is 12,24 minutes in individuals with ND and 16,13 minutes in individuals with ASD. In middle adolescence, the mean one-mile running time is 10,96 minutes in individuals with ND, while it is 13,88 minutes in individuals with ASD. BPFT, according to the preferred general standard norms, the value of running a mile for 10-17 years is 9,68 minutes. The 10-14 age running value is 10,38 minutes and the 14-17 age running value is 8,72 minutes (Winnick & Short, 2014). In the current study, there is an increase in running speed depending on age, but the values we found after our measurement are seen to be very low compared to accepted standards. It can be said that the reason for this is that the subjects do not exercise for 45 minutes once a week and do not do long-term exercises.

According to the findings of the study, it is observed that there are differences between individuals with autism and those with normal development in terms of physical fitness. As a result, according to the Brockport test values, it is seen that all the values of individuals with autism are physically behind those with normal development. These results show that individuals with autism are shorter in stature, have higher body weights and have higher BMI values than individuals with normal development. It has been concluded that individuals with autism gain more weight, especially during middle adolescence, and that more time should be devoted to aerobic exercises in this period. In the light of these results, it has been seen that the implementation of a long-term physical activity program in a professional environment is an important requirement for the physical development of children with autism in both early and middle adolescence. For this reason, it has been determined that it is insufficient for children with autism to take sports lessons once a week.

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The Skills of Turkish Teacher Candidates to Use the Functions of Language in the Narrative Texts

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Abstract

Communication is an important part of our life. The realization of the communication and the achievement of its purpose is possible by understanding the function of the linguistic units used by the speaker or the text producer. In this case, the communication functions of the language, which is an important part of communication, must be known/recognised. Linguists, sociologists, and psychologists have taken different approaches to classify the functions of language. One of these approaches is the classification made by Roman Jakobson from the Prague linguistics school. Jakobson considers exchanging information between addresser and addressee as an essential element in communication. He also states that language has six functions: expressiveness, referent, call, relationship, metalanguage function and artistic function. In this research, the narrative texts of Turkish teacher candidates were examined in terms of the functions of the language by using Jakobson's approach. The model of the research is case study as it covers both the collection of field-based data, and the process is related to evaluations. Data were collected through documents during the process. The documents of the research are the narrative texts prepared by the 2nd year Turkish Language Teaching students studying at a state university within the scope of the linguistics course. The results of the study showed that there is a significant difference between the pre-service teachers' use of language functions in the narrative texts they wrote before learning Roman Jakobson's classification of language functions and the narrative texts they wrote after learning.

Keywords: Turkish Education, Functions of Language, Teacher Candidates

1. Introduction

1.1 Introduce the Problem

Communication constitutes vital part of our life. It is an undeniable fact that the role of language in the communication process, which carries the real world into the borders of the fictional world, by means of signs that are a part of its magical system.

Communication is to influence the people we live with through certain signs, for a certain purpose; while trying to make this impact, it is to ensure that the other party can realize a reason worth being influenced. Therefore, the basis of communication is the sense of activating the receiver by influencing it. This purpose can only be achieved with a properly selected and formatted function.

The realization of the communication and the achievement of its purpose is possible by understanding the function of the linguistic units used by the speaker or the text producer. Communication is to influence the people we live with, through certain signs, for a certain purpose; while trying to make this impact, it is to ensure that the other party can realize a reason worth being influenced. (Keller, 1994'ten akt. Yücel, 2009: 515) Therefore, the basis of communication is the feeling of activating by influencing the receiver. This purpose can only be achieved with a properly selected and formatted function. The realization of the communication and the achievement of its purpose is possible by understanding the function of the linguistic units used by the speaker or the text producer. In this case, the communication functions of the language, which is an important part of communication, must be known/recognised.

Although it is thought that the most important function of language is to communicate between people and / or societies, the main function of language before communication is "to establish a relationship between human and object and transfer the real world to the fictional world". (Börekeçi, 2009) People feel the need to produce and concretize messages only as they begin to make sense of the real world/world of objects/environment and establish relationships. This need is also the basis of the use of language, which can be described as the act of being conscious of its existence and conveying this consciousness to others. Language use is the result of the process of recognizing, recognizing, establishing relationships, forming thoughts, and sharing one's thoughts, and is a part of linguistic communication. In other words, the use of language is an indicator of the attitude that a person takes in the face of the reality of which one is a part and / or not. The correct analysis of linguistic production in terms of the functions of communication is the first step to be understood correctly.

Determining the communication functions of language is closely related to Saussure's (2001) language/word opposition. The basis of the word is language. This feature can be explained by its principle of being social and transforming into words with individual use. "Language is a social phenomenon and is based on the need for communication. The most important component of language ability is that human beings can represent beings and objects with signs (Erkman-Akerson, 2007: 40).

Concepts, which are the designs of the beings in the external world reality in the human mind, are represented by language indicators in the world of language. The concept in our minds is the signified, and the syntax consisting of the sounds we embody it is the signifier. The relationship between the signified and the signifier constitutes the language sign. Language is also a structure made up of signs. This structure is the syntax in which lexical morphemes in the language meet with syntactic morphemes and form a whole. The signs in the language gain value with this sequence.

Language, which is a closed system in itself, is a social phenomenon and turns into individual use with the words that individuals create using the signs in the language. The feature that makes language indispensable for society is its use. Just as the internal logics and principles of language are regulated by grammatical rules, the use of language for communication is directed through social rules. These rules are not related to the language itself, but to how it can be used by individuals and are based on common consensus. The individual who speaks/writes and wants to be understood by others must comply with this common agreement (Gökdayı, 2008: 94). In that case, the purpose for which language is used is effective in interpreting and gaining value of the transmitted message. Language gains meaning when it is interpreted according to the purpose determined in the mind of the individual who uses the language. Searle argues that linguistic meaning and communication are not born with random meanings that people attribute to words, but from the unity of words that carry semantic content appropriate to the thoughts and intentions in the mind (Büyükkantarçioğlu, 2006: 47). Every language use has a purpose, and this purpose determines the function of the language. Language takes its meaning from the context in which it is used, that is, language, but some functions are loaded when it is used (Kılıç, 2007: 126). Functions of language refer to the purpose of people to communicate verbally or in writing (Guntermann & Phillips, 1982;

Laine, 1985; Deniz & Çekici, 2019). The purpose of the speaker/producer of the text determines the language uses, and the difference in language usage is parallel to the different functions of the language in the communication process.

Linguists, social scientists, and psychologists have taken different approaches to classify the functions of language. One of these approaches is the classification made by Roman Jakobson from the Prague linguistics circle. Jakobson considers information as basis of communication and states that language has six functions: expression, referent, call, relationship, metalanguage function and artistic function (Jakobson, 1960; Senemoğlu & Vardar, 1999; Huber, 2008; Günay, 2013).

According to Jakobson (1960: 3), language should be studied in all its functions, and this requires a brief examination of the constitutive factors in any speech event/any verbal communication act. The addresser sends a message to addressee. For a message to function, it requires a context to which it is referred, which can be grasped by the recipient, and which can be expressed orally or in writing context; a common code for the addresser and addressee of the message (for the encoder and decoder of the message), and finally, a physical channel and psychological link between the addresser and addressee of the message that allows both to communicate and stay in touch. Jakobson (1960: 3) schematized the elements/factors that are inseparably involved in verbal communication as follows:

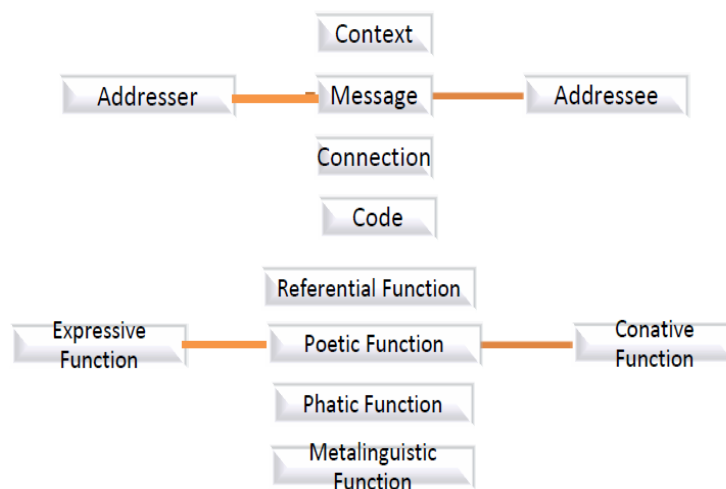


Figure 1: Jakobson's communication diagram

Each of these six factors that ensure the realization of the communication performs a separate linguistic function and the linguistic structure of the statement depends on the function that carries weight in that statement (Rifat, 1990: 29; Senemoğlu & Vardar, 1999: 209).

The so-called "emotional" or "expressive" function focuses on the addressee, is aimed at a direct expression of the speaker's attitude towards what she/he is talking about. It tends to create the impression of a certain emotion, whether real or fake (Jakobson, 1960: 4). The expressive function focuses on the speaker is about expressing all kinds of emotions and explaining thoughts. What matters in this function is the presence of the speaker, and the speaker makes this presence felt (Günay, 2013: 398) and evaluates the quality of the referent. The expressive function can be expressed with adjectives, adverbs, exclamation marks, the arrangement of words in the syntax, emphasis, punctuation indicators, or gestures and mimics that have expressive value, in addition to the personal noun I/WE (Kıran and Kıran, 2018: 101).

Recipient orientation, the "conative function" (activation), finds its purest grammatical expression in the call and command that deviates syntactically, morphologically, and often even phonologically from other nouns and verbal categories. (Jakobson, 1960: 4) Since the purpose of this communication is to bring about a response or change in behaviour of the addressee, the conative function defines the relationships between the addresser and

the addressee (Kıran & Kıran, 2018: 104). In the conative function, the use of second person singular or plural pronouns or other linguistic elements that determine these pronouns is dominant (Günay, 2013: 401).

There are messages that primarily serve to establish, prolong, or interrupt communication, to check if the channel is working (Hello, do you hear me?), to attract the attention of the recipient, or to confirm their continued attention. The addresser or addressee using such messages focuses on the channel when they need to check whether they are using the same code (Jakobson, 1960: 5). This channel-oriented function is the "phatic function" that enables the establishment and maintenance of communication between the addresser and the addressee (Kıran & Kıran, 2018: 105).

When it comes to the "poetic function" of language, the key is to use unconventional associations. Unusual associations are one of the most important features of poetic language, and this feature is related to the poetic function, one of the six functions Jakobson has identified (Aksan, 2005: 3). The two essential features inherent in the poetic function are selection and combination. While selection is produced on the basis of equivalence, similarity and difference, synonymy and contrast, the formation and combination of the sequence is based on contiguity. The poetic function reflects the equivalence principle from the axis of choice to the axis of association. At the same time, this function is not the only function of oral art, it is only dominant, determining function and it encourages the sensibility of signs (Jakobson, 1960: 7). On the other hand, the linguistic analysis of the poem cannot be limited only to the poetic function. The features of various poetic genres require the participation of other functions with a certain gradation in parallel with the dominance of the literary function. For example, heroic poetry in the third person often uses the referent function; The first-person lyric poem reflects the function of enthusiasm, the second person poem reflects the conative function (Senemoğlu & Vardar, 1999: 214). The aim of the artistic/poetic function, which focuses on the message itself, is to make the word effective and different with extraordinary reconciliations. For this reason, the poetic function is not only specific to poetry, but includes all kinds of literary texts, but can also be seen in daily language uses, advertising texts and in newspaper.

The "metalingual" function performs the function in which the speaker provides information on the language he or she is using. Discourse focuses on code whenever the speaker and/or recipient deems it necessary to test whether they are using common code. Thus, discourse fulfils a meta-linguistic function (Senemoğlu & Vardar, 1999: 212). Any language learning process, especially children's acquisition of the mother tongue, makes extensive use of such metalinguistic processes (Jakobson, 1960: 6). This function is intended to indicate the meaning of signs that are thought to be incomprehensible to the recipient, in other words, it is the explanation of language with language (Kıran & Kıran, 2018: 110).

Wittgenstein said, "The meaning of a word is its use in the language" (Lyons, 1983: 367) Language, in which the way we perceive the world, and our personal/interpersonal experiences are transformed, and the meanings are shaped by various structures, is a usage. In other words, it is an action, and the system of a language is embodied in the form of text. Thus, the text creates its own context (Halliday & Matthiessen, 2004: 25). The meaning of a literary text is an act that oscillates between its formal expression and its content, which is intended to give all the meanings that the text is supposed to reflect, and it aims to create different concrete values for emotion, excitement, enthusiasm, or the human spirit (Günay, 2013). Different types of texts address different functions of language. Selecting and combining actions in the text are performed according to the determined linguistic function. For this reason, for linguistic communication to take place in a healthy way, the produced message/text must be correctly analysed/understood in terms of the functions of the language. This is an act of discovery, constructing meaning, and this skill should be structured in individuals from an early age. However, although the achievements determined at each grade level in the Turkish Language Curriculum (MEB, 2019) are presented to the students through texts, there is no gain for teaching the functions of the language in the program. The absence of an explanation stating that the program was prepared on the basis of functional language education and the absence of any function list also indicates that it was not prepared according to functional language education (Deniz & Demir, 2021: 40). According to the high school Turkish Language and Literature Curriculum (MEB, 2018), activities related to the acquisition in the field of Oral Communication stated as "*Communication and its elements are explained, their functions are emphasized*" are organized in the 9th grade

textbooks. In the Turkish Language Teaching undergraduate program, Roman Jakobson, one of the theorists who adopted the Structuralist approach, and his classification of the functions of the language were included in the content of the Linguistics course given in the fifth semester. Through this course, Turkish teacher candidates are expected to have the ability to analyse literary texts in terms of language functions. The knowledge of the subject will turn into the ability of students to consider the texts in terms of the dominant function used and to determine their type and/or to write different texts of the same type. Acquiring the achievements of understanding, analysing, interpreting texts, teaching genre knowledge and subjective/objective judgments in the Turkish Language Curriculum (2019) also depends on the assimilation of knowledge about the functions of language. Raising awareness in this direction is, of course, possible if Turkish teachers can know and correctly use the communicative functions of the language. The aim of this study is to examine the sentence-level linguistic units used by Turkish teacher candidates in narrative texts in terms of functions of the language by using Jakobson's approach and to determine the diversity of using functions.

2. Method

2.1. Research Design

The research is qualitative research based on the case study. In the research, this method was chosen because it was aimed to reveal the situations in which the pre-service teachers could use the functions of the language in the narrative texts they wrote before and after learning the subject related to the functions of the language within the scope of general linguistics course.

Case study is a system whose boundaries can be defined. In qualitative research, in which the researcher reveals one or more situations in detail (Christen, Johnson & Turner, 2015), collecting information about one or more individuals, groups, institutions, societies or a specific phenomenon, situation or event, in-depth examination. The studies that aim to make and provide rich explanatory information (Davey, 1990; Merriam, 2013; Yin, 2017; Kaleli Yılmaz, 2019) are case studies. Definiteness, descriptiveness, and intuitivism are explained as the most important features of case study (Merriam, 2013). In line with these features, the research was based on the examination of the products obtained before and after the learned subject, the products were tried to be described in terms of the use of the functions of the language and these limits were not exceeded. The data obtained were analysed based on the literature and the results were systematically presented.

2.2. Study Group

While forming the study group of the research, convenient sampling (Merriam, 2013), one of the purposive sampling methods, was used. The participants in the study are 33 second-year students studying in the department of Turkish education at the faculty of education of a state university and taking the general linguistics course. All the participants were recruited from among the volunteers without considering their demographic characteristics.

2.3. Data Collection

The data of the research is based on the document analysis method. One of the many methods used to collect data in case studies is document review. In cases where it is not possible to collect data through direct observation and interview in qualitative research, the documents provide a rich data source and provide information to the researcher about many unobservable situations (Patton, 2014: 293). Within the scope of the study, participants have written a narrative text with the theme of "This city and me" without explaining the subject of "Functions of Language". The narration of a plot by the narrator with a certain point of view in a certain time frame and in a certain sequence order are important features that make a text narrative (Günay, 2013: 137). In other words, different functions of language can be included due to features such as the sequence of events and situations in the narrative in time and the interaction of the narrators with each other. At the same time, clauses stand out in surface structures, as narrative texts carry cause, effect, intention, goal attainment and time relations. This feature enables the use of different functions of language throughout the narrative

(Dilidüzgün, 2017: 99). Considering the usability of different functions of language in narrative texts, the participants were asked to write a narrative text in the research. According to the content of the linguistics course, participants examined and discussed the six functions of language in the communication process defined by Roman Jakobson from the Prague Linguistics circle. In the following week, various examples of the functions of language were presented and practices were carried out in the form of determining the functions in the texts given with the participants / writing different examples suitable for the functions. Two weeks after the exercise, the participants wrote a narrative text again on the same theme. The first and second narrative texts written were analysed and evaluated in terms of language functions, using Jakobson's approach, and the use of language functions in the narrative texts of the participants was identified.

2.4. Data Analysis

Case study analysis requires an in-depth description of the situation under investigation (Creswell, 2015: 199). The data of the research were analysed according to the descriptive analysis approach, as they were interpreted according to the themes that were previously created in the literature and direct quotations were made while writing the results. The purpose of descriptive analysis is to present the findings to the reader in an organized and interpreted form (Yıldırım & Şimşek, 2013: 256).

While analysing the data of the research, the narrative texts of the participants were named as representative, the first texts were given codes as “K1a, K2a, K3a...” and the second texts as “K1b, K2b, K3b...”. In the determination of the functions in the narrative texts, units at the sentence level were chosen. Speech-action theory was considered in the selection of sentences as the unit of analysis. According to the speech-action theory, the speaker/sender produces separate sentences when s/he wants to convey his intention to the listener/receiver. The utterance, which is the basic unit of speech-action theory, is a sentence said by a certain person at a certain time and space (Kılıç, 2007: 127). The sentence is the basic unit of the text. The discourses in the narratives, which are directly transferred using colons and quotation marks, and the indirect transfers in which the discourse is presented not as it is, but by transferring it into an utterance (Korkut, 2017: 124) were also accepted as a sentence and examined in terms of the functions of the language. It would not be correct to say that only one function of the language is used in any linguistic unit. Functions co-exist and each can participate in a sentence to varying degrees. Multiple functions of the language can be used in a sentence, but one function is dominant over the others depending on the type of communication and/or the speaker's intention (Kılıç, 2007; Kıran & Kıran, 2018). For this reason, the point of view of the narrative text was taken as a basis in marking the dominant functions in the sentences, and attention was paid to how the narrator positions self throughout the narrative.

The coding made to ensure the validity of the research was checked by a field expert other than the researcher. In addition, direct quotations from the narrative texts of the participants in the study group (Yıldırım & Şimşek, 2013) were included in the data analysis process. In terms of the reliability of the research, the consistency between the coders was checked. 40 sentences selected from the data were coded in terms of dominant function by a field expert other than the researcher. Miles and Huberman's (2015) reliability formula as $\text{Reliability} = \frac{\text{Number of consensus}}{\text{Total agreement} + \text{Number of disagreements}}$ was used for the percentage of agreement of the coders. It was concluded that the coders reached a consensus of .87 percent.

3. Results

The first and second texts of the participants were examined in terms of the functions of the language and the number of sentences that included all functions as the dominant function is presented in Table 1.

Table 1: Number of Dominant Functions Used by Pre-Service Teachers in the First And Second Narrative Texts

Participant	Text	Referential Function	Expressive Function	Conative Function	Phatic Function	Poetic Function	Metalinguistic Function
		<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>
K1	First	4	9	-	-	6	-

	Second	25	16	1	1	7	-
K2	First	56	61	10	4	3	-
	Second	66	47	11	8	5	-
K3	First	32	3	7	-	-	-
	Second	55	7	11	4	-	-
K4	First	28	3	-	-	7	-
	Second	27	4	1	3	6	-
K5	First	11	3	3	-	-	-
	Second	15	3	3	2	-	1
K6	First	34	5	3	3	-	-
	Second	24	5	10	5	3	1
K7	First	32	-	-	-	2	-
	Second	30	1	-	2	2	1
K8	First	53	6	3	7	3	-
	Second	60	4	-	6	4	-
K9	First	74	7	10	8	5	-
	Second	48	15	10	5	6	-
K10	First	35	7	4	7	1	-
	Second	32	9	7	5	1	-
K11	First	24	6	3	-	-	-
	Second	21	7	6	3	-	-
K12	First	24	-	-	-	1	-
	Second	31	3	1	3	-	-
K13	First	29	-	-	1	-	-
	Second	27	-	2	2	-	-
K14	First	35	3	-	3	2	-
	Second	42	4	1	5	2	-
K15	First	102	5	3	10	4	1
	Second	104	15	6	7	2	2
K16	First	50	-	1	1	3	-
	Second	52	7	6	3	3	-
K17	First	109	11	6	10	3	-
	Second	108	12	5	11	3	-
K18	First	17	22	11	-	26	-
	Second	15	22	12	-	30	-
K19	First	72	7	4	9	4	-
	Second	42	-	4	6	1	-
K20	First	70	9	3	1	4	-
	Second	21	1	1	1	4	-
K21	First	37	2	1	2	-	-
	Second	39	-	2	1	-	-
K22	First	31	-	4	-	2	-
	Second	23	-	4	1	5	-
K23	First	20	-	-	-	4	-
	Second	25	2	7	4	-	-
K24	First	2	-	1	-	14	-
	Second	6	1	2	-	11	-
K25	First	48	-	2	1	-	-
	Second	62	5	5	3	-	-
K26	First	47	9	7	5	1	-
	Second	47	9	8	4	1	-
K27	First	82	29	17	13	7	-
	Second	82	34	16	17	7	-
K28	First	30	7	2	2	-	-
	Second	34	4	5	4	-	-
K29	First	76	-	-	-	2	-
	Second	76	-	-	-	2	-
K30	First	21	-	10	-	2	-

	Second	22	5	8	1	3	-
K31	First	37	-	5	5	-	-
	Second	33	1	2	3	-	-
K32	First	38	4	3	2	-	-
	Second	36	8	3	1	1	-
K33	First	25	-	-	-	2	-
	Second	23	-	-	-	2	-

In Table 1, the number of functions used by the participants in their first and second texts is given separately. In how many sentences the functions are used as dominant functions, they are presented one by one according to the first and second texts. The referent function was mostly used in the second texts of the participants coded K1, K2, K3, K5, K8, K12, K14, K15, K16, K21, K23, K24, K25, K28 and K30. The number of sentences in which K1 coded participle referential function is dominant changes from 4 to 25, K2 from 56 to 66, K3 from 32 to 55, K8 from 53 to 60, K12 from 24 to 31, K14 35 from ' to 42, K25 from 48 to 62. For example, participant K1 inserted another narrative into his second text. Sentences with referential functions are more intense in this inner narrative, which is conveyed from an observer's point of view.

K1b. *In one of the countries, there was a palace with all kinds of plants in it and a huge pool in the middle. A beautiful girl lived in this palace. One day, she got very bored and went out of the palace and started to wander.*

...

Sentences with referential functions were used more in the second text of the participant coded K2, which included more details than the first text.

K2b. ... *Splashing mud and branches hitting my face, a hut appeared. A very small hut with only one room, with three walls. One wall is missing. There was a child inside, a lonely child. The woman came to the boy, gave him the bread, and then kissed him. The boy took the bread and began to eat it. ...*

Participants with the codes K4, K6, K7, K9, K10, K11, K13, K17, K18, K19, K20, K22, K31, K32, K33 decreased the number of sentences in which the referent function was dominant in their second text. The participant coded K6 reduced this number from 34 to 24, K9 from 74 to 48, K19 from 72 to 42, K20 from 70 to 21, and K22 from 31 to 23. In the second texts of K4, K6, K9, K10 and K22, the number of sentences in which other functions are dominant has increased. This situation can be considered as the reason why the referent function is used less. The following part, taken from both texts of participant K22, shows that he tends to use different functions in the second text:

K22a. *"One morning, while opening his shop, he saw a man lying in front of the shutters. It was a ragged beggar covered in a scraggle. Beyzi, enraged by the sight she encountered, said, "What are you doing here?" The beggar walked away without saying anything, feeling the coldness of the air in his entire being, with just an innocent smile. Beyzi opened his shop after the man left and began to sweep in front of his. His customer closed his shop after a day and went home under heavy blizzard.* (First text)

K22b. *"One day, once again, he saw a man lying down on the icy cobblestones as if to say 'not to care' while he was lifting the shutters, supposedly to serve people. The wrinkled face, his clothes torn to pieces, the wretched man was nothing more than a beggar. Beyzi angrily said to him, "What are you doing here? Get out of here quickly!" said. The man walked away with only an innocent smile on his face. After the man left, Beyzi opened his shop and started to clean the front. After a day without customers, he closed his shop and set off with the aim of reaching his home by getting lost among the misty streets as they reached the earth with a rhythm resembling the rhythm of snowflakes* (second text)

In both texts of participants with codes K26, K27 and K29, the number of sentences in which the referent function is dominant is equal.

Findings related to expressiveness function, In the second texts of participants coded K1, P3, K4, K7, K9, K10, K11, K12, K14, K15, K16, K17, K23, K24, K25, K27, K30, K31 and K32, presented increased number of sentences with expressive function. The participant with the code K1 increased this number from 9 to 16, K9 from 7 to 15, K12 from 24 to 31, K15 from 5 to 15, and K16 from 0 to 7. For example, participant K15 preferred the observer point of view in his/her first text, and the narrator is "I" in the second text. This choice has increased the use of the expressiveness function in the second text.

K15a. she was in two minds and unsettle. *Was this the person he wanted to be, didn't he believe in things, or did he ignore them? Everyone in the minibus seemed to know what he was going through. He started to get bored. loosened his tie. He didn't like minibuses since they started working anyway. ...* (first text)

K15b.

I was so bored; I couldn't calm down. I was trying to name my feelings. Was this the person I wanted to be, weren't the things I believed in or was I ignoring them? It was as if everyone in the minibus knew what I was going through. I am getting bored. I loosened my tie. I didn't like the minibus since I started working anyway. ... (second text)

Participants with the codes K2, K8, K20 and K28 included less expressive sentences in their second texts. While the participants coded K19 and K21 used the expressive function in their first texts, they did not use it in their second texts. The participant coded K21 directly conveyed the narratives of the narrators in the "I" language in her first text, and in the second text the participant translated these narratives into indirect transmission.

K21a. ... *He went to the President's office. She greeted him very cordially at the door. They got right to the point. "We're asking you for a mission that we haven't asked for before. We don't know how ready you are for this." ...* (first text)

Participants K13, K22, K29, K33 never used the expressive function in both their first and second texts. In both texts of P5 (3), P6 (5), P18 (22) and K26 (9) participants, the number of sentences in which dominant expressive function is equal. The number in parentheses next to the participant codes is the number of sentences used in this function. In the first text of the participant coded K18, the narrator is "we" and in the second text, it is "me". The narrator intensely reflects his emotions. For this reason, there are many sentences in which the expressive function and the poetic function are dominant.

K18a. *Without considering the depth of the lines drawn on our faces, we watch the smiles trying to show themselves under the drooping cheeks. Deep inside we are forced to step into the leaves of the past. Then the smell of hungover darkness falls on us. Like our secrets that we cannot carry, we breathe at night without losing our sincerity. ...* (first text)

K18b. *Without considering the depth of the lines drawn on our faces, we watch the smiles trying to show themselves under the drooping cheeks. I find it hard inside to step into the leaves of the past. Then the smell of hungover darkness falls on me. Like our secrets that we cannot carry, I breathe at night without losing my sincerity. Although I want some happiness alongside the sadness, I feel the empty heart like a piece of paper stuck in my hand....* (Second text)

Findings regarding the conative function revealed the number of sentences with a conative function in the second texts of the participants coded K1, K2, K3, K4, K6, K10, K11, K12, K13, K14, K15, K16, K18, K21, K23, K24, K25, K26 and K28. shows an increase. The participant coded K3 increased the number of sentences in which the conative function was dominant from 7 to 11, K6 from 3 to 10, and K16 from 1 to 6. While the participant K23 did not use the conative function in first text, compared to 7 sentences in the second text. It can be said that the increase in the number of sentences with a conative function in the second texts is related to the direct transfers of the participants from the narrators.

K16a. ... *After they both left the classroom and walked for a while, the principal took Semih aside and said that he received a phone call, that his mother was sick and that he was in intensive care.* (First text)

K16b. ... *Suddenly, the door of the classroom opened more hastily than ever before. It was the principal who entered. The principal said in a worried tone:*

- *Semih, come with me quickly. We need to talk.*

After they both left the classroom and walked for a while, the principal pulled Semih aside.

- *Semih, I have something to tell you now, but please do not worry. I just got a call from the hospital. ...* (second text)

K23a. ... *The old man perched on the side of the curb, thinking that he had already exhausted his strength to climb the hill at that moment. From where he was sitting, he started to watch the afternoon rush of the people in the neighbourhood on the one hand, and the last few minutes of pleasure efforts of the children, who were covered in sweat, from their games, on the other. Then he remembered the childhood he spent on these streets. ...* (first text)

K23b. ... *He sat down on the curb, thinking he needed some strength to climb this hill today. At that time, one of the children on the street said to his friend, "Ahmet, we are waiting for you. Come out!" he called. The old man thought about his childhood years. He used to run and play in these streets seventy years ago...* (second text)

The number of sentences in which the conative function is dominant in the second texts of the participants coded K17, K27, K30 and K31 is less than in the first texts. The participant K8 used the covenant function in 3 sentences in the first text but did not include this function in the second text.

Participants with the codes K5 (3), K9 (10), K19 (4), K22 (4) and K32 (3) use the conative function in both texts equally, while participants with the codes K7, K29 and K33 did not include the conative function in both their first and second texts.

According to the findings related to the phatic function, the participants with the codes K1, C2, K3, K4, K5, K6, K7, K11, K12, K13, K14, K16, K17, K22, K23, K25, K27, K28 and K30 used the phatic function more in their second texts. The P2 coded participant increased the number of sentences in which the phatic function was dominant from 4 to 8, K23 from 0 to 4, and P27 from 13 to 17.

K27a. ... *"You will not prove me right and go, and I will not be able to get used to a happy life without you." he said, pulling the door, giving concreteness to his desire to let himself out. He quickly went down the stairs ...* (first text)

K27b. ... *"You will not prove me right and go, and I will not be able to get used to a happy life without you. he said, pulling the door, giving concreteness to his desire to let himself out. Goodbye." He could say. Would the woman be able to say goodbye? He hurried down the stairs...* (second text)

Participants coded K8, K9, K10, K15, K19, K21, K26, K31 and K32 used the phatic function more in their first texts. Participants K18, K24, K29, K33 never used the phatic function in both their first and second texts. The participant coded K20 included this function in only one sentence in both texts.

Findings regarding the poetic function show that the number of sentences in which this function is dominant in the second texts of the participants with the codes K1, C2, K6, K8, K9, K18, K22, K30 and K32 increased. K6 increased the number of sentences from 0 to 3, K18 from 26 to 30, K22 from 2 to 5.

K18b. ... *"Will the accumulated summers melt the winters in the last moments of the ignited fire? While the whites are burning in our bodies, on the last day they will seek our ashes in a handful. Take a good look at those palms, the picture that will come to your mind as you look, will you?*

I'm looking into your eyes, / Without hearing hell. / I'm listening to your words, / without knowing your smell / My pages are dusty now / from not being able to tell / my whites are black / My visible mountains are snowy / like sky / you too ... (second text)

Participants with the codes K15, K19 and K24 included more in the sentence in which the poetic function was dominant in their first texts. The participant K12 used the poetic function in 1 sentence in the first text, and the participant K23 used the poetic function in 4 sentences. These participants did not include any poetic function in their second texts.

K24a. *lonely and tired sea... He looks at the sky like his hand is with a whip. Weak birds fly in the sky. The sky is pale, the sky is helpless, the sky is lonely today. The sea is watching with the greatest pain that a hijra can give.* ... (first text)

Coded K7 (2), K10 (1), K14 (2), K16 (3), K17 (3), K20 (4), K26 (1), K27 (7), K29 (2), K33 (2) participants used the poetic function in an equal number of sentences in their first and second texts. On the other hand, participants coded K3, K5, K11, K13, K21, K25, K28 and K31 did not use the artistic function in both texts.

The metalanguage function is one that is almost never included in the texts of the participants. It can be said that the reason for this situation is closely related to the fact that the texts are narrative texts. The participant coded K15 used the metalanguage function in a sentence in the first text.

Participants with the codes K5, P6, K7 used the metalanguage function in 1 sentence in their second text, and the participant with the code K15 in 2 sentences. Other participants did not include this function in both their first and second texts.

K6a. ... *"My dear children, do not play with coyotes, they are not your kind. Besides, they're very cunning. The baby parrot said, "Mother, what do you mean it's not your kind?" she asked. "Not the same sex as us, meaning no parrot, no bird, baby" ...* (second text)

K7b. ... These robots surrounded the world like a swarm of locusts.

A robot is a machine that cleans, looks at its dirty basket without programming what to do, washes the laundry if it is full, does the ironing, cooks if the pot is empty, and waters the flowers... (second text)

K15b. ... *I woke up from the dream as the statues around me were coming towards me. It was dawn time. It is the time between predawn and sunrise. I washed my hands and my face. I remembered what the boy said...*
(second text)

When we look at the use of functions in the narrative texts written by the pre-service teachers before and after learning the subject about the functions of the language, it is seen that the functions are used more in the second texts. The findings regarding the issue are presented in Table 2.

Table 2: Frequency and Percentage Analysis of Functions Used by Pre-service Teachers in Their First and Second Texts

Functions of language	First text		Second text	
	<i>f</i>	%	<i>f</i>	%
Referential	1385	71,7	1353	67,6
Expressiveness	218	11,3	251	12,5
Conative	123	6,3	160	7,9
Phatic	94	4,8	121	6
Poetic	108	5,5	111	5,5
Metalanguage	1	0,05	5	0,24
	1929		2001	

The number of sentences in which the dominant function was examined in the participants' first texts was 1929. Looking at the functions one by one, the referential function is used as the dominant function in 71.7%, the expressive function in 11.3%, the Conative function in 6.3%, the phatic function in 4.8%, the poetic function in 5.5%, and the metalanguage function in only 1 sentence. The number of sentences in which the dominant function was examined in the second texts of the participants was 2001. In this issue, the referent function was used as 67.6%, the expressive function 12.5%, the conative function 7.9%, the phatic function 6%, the poetic function 5.5%, and the metalanguage function was used as the dominant function in 5 sentences. When we look at the usage rate of functions in the first and second texts, there is a decrease in the use of the referent function and an increase in the use of other functions.

4. Discussion

In the study, in which the narrative texts written by 33 Turkish teacher candidates before and after teaching the functions of language were examined in terms of their ability to use the functions, it was concluded that the referent function was used less in the second texts, while the use of other functions increased in the second texts. The results regarding the use of functions in the first and second texts are as follows:

1. The number of sentences with referential function increased in the second text of 15 participants compared to the first text. In the first text of 15 participants, the number of sentences in which the referent function is dominant is high. 3 participants used an equal number of referential sentences in their first and second texts. The act of language is performed in the context of a discourse and only gains meaning in this context (Syal, 2018: 59). In the sentences in which the referent function is dominant, not the reality of the external world, but the context of the text in which the external world is represented and the interlinguistic referent is taken into consideration. According to A. J. Greimas, intralinguistic referent is the language elements that the discourse is based on, that it creates within itself, that has no referent in the outside world, that creates a referent in the discourse (Kıran & Kıran, 2007: 113). A written, completed text is a concrete object and forms a self-enclosed whole (Uçan, 2006: 44). At the same time, in such texts, language creates its own content or referent with a unique arrangement. It does not always have to be directed towards a referent in the non-linguistic world (Göktürk, 1986: 27). For this reason, it is possible to say that the referent function is intense in the first and second texts of the participants compared to other functions.

The type of text can often be regarded as a feature that determines which linguistic function will be used predominantly. In this research, the participants were asked to write a narrative text, considering that different functions of language could be used. The texts have not been analysed in terms of narrator and point of view, but it is seen that these concepts have an effect especially in the use of referential and expressive functions. The narrator and the narrated are the people who take place in the language and find their existence in the context of the text. The narrator's way of telling the events also explains his way of seeing, and the reader perceives the events in the narrative with the narrator's way of seeing. When the narration is told using the third person singular, the narrator speaks of the narrator as "he-she" (Günay, 2013: 142). The narrative is presented by an observer when the point of view is someone other than the characters of the narrative. The use of language by this narrator is a reference to the context in the narrative, as it conveys the events in an impartial way (Günay, 2013: 145). This use of language, in which the narrator does not state his own feelings, intentions, and ideas, is also closely related to the referential function. It is thought that the use of language determined by the preferred point of view is a reason why the referent function is used more than other functions in both the first and second texts.

The results regarding the use of functions in the first and second texts in terms of the general participants show that the referent function is used less in the second texts than in the first texts. It can be argued that the use of the referent function has decreased in parallel with the increase in the use of other functions of the language in the second texts.

2. The expressiveness function was used more in the second text of 19 participants than in the first texts. On the other hand, five participants reduced the expressiveness function in their second text. Four participants never used this function in their second text. Two participants used the expressive function in their first text, but not in their second text. When the narrator is one of the heroes of the narrative and tells a story about himself according to his position in the event, tells about the events that he has gone through, or tells everything from his own point of view, instead of conveying the conversations of other people in the narrative indirectly, when he leaves the word to the protagonist speaking at that time, the first person pronoun "I" is used (Günay, 2013: 142; Ögeyik, 2006: 119). utterances called "I" language with a psychological approach, are speaker/sender oriented. In speaker/sender-oriented discourses, the expressiveness function affects the syntax and utterances in which the speaker is the subject are produced (Börekçi & Ekinci Çelikpazu, 2011). This feature draws attention in the sentences in which the "I" language is used in the first and second texts of the participants and therefore the expressive function is dominant. In terms of the functions, the results show that the use of the expressiveness function increases in the second texts compared to the first texts. It is seen that one of the reasons for the increase in the expressiveness function in some of the second texts is related to the narrator and his point of view. The language use shaped by the perspective of the external narrative narrator preferred in the first text left its place to the language use of the internal narrative narrator in the second text.

3. The conative function was used more in the second text of 19 participants than in the first texts. In the second text of six participants, the use of the conative function decreased. Five participants used the conative function in an equal number of sentences in their first and second texts, and three participants never used this function in both their first and second texts. One participant used the conative function in the first text, but not in the second text. The results of the general use of functions in the first and second texts show that the conative function is used more in the second texts than in the first texts. There is a case of calling out in sentences in which the conative function is dominant, which drags the receiver to an act or behaviour (Dilidüzgün, 2017: 45). In this way, the speaker used language that attracts the attention of the receiver and prompts him to perform an activity/behaviour in this usage, the "you/you" discourse is prominent. It is possible to talk about the effect speech act, especially in sentences where the conative function is dominant. In the effect speech act, the speaker invites the receiver to think with an inquiry, forces them to think or asks them to act (Günay, 2013: 401). Participants generally preferred the conative function in such sentences, where it aims to make an impact on the person being called.

4. As with the conative function, the phatic function was used more frequently in the second text of 19 participants. In the second text of nine participants, the use of this function decreased. Four participants never

used the relation function in both texts. One participant used it once in both texts. Malinowski points out that the sole or primary function of many of our utterances is not to convey information, to give orders, to convey hopes, wishes or wishes, or to express feelings, but to establish and maintain social solidarity. In certain contexts, the socially determined "Hello, how are you?" such utterances fulfil the phatic function. Mobility in speech is linked to other utterances based on relational utterances (Lyons, 1983: 373). The use of the phatic function in narrative texts is aimed at establishing, prolonging/sustaining/not interrupting communication, and keeping communication channels open (Mera, 2017: 37). It was concluded that the use of this function for the stated purposes increased in the participants' second texts.

5. The use of poetic function increased in the second text of nine participants. In the second text of three participants, the use of this function has decreased. Two participants used the poetic function in the first text but did not include it in the second text. Ten participants included a poetic function in an equal number of sentences in both texts. Eight participants did not use this function in both their first and second texts. Overall, the results show that the usage rate of the poetic function is equal in terms of the first and second texts. In the poetic function, language indicators function as a stimulus that creates various designs, images, associations, and different emotions (İşeri & Demirgüneş, 2008: 502), and describe the aesthetic function based on the effect (Bati, 2007: 3). In their narratives, the participants included unusual associations in which the aesthetic function was dominant/intense. Particularly, both the first and the second text of the participant coded K18 exhibit the feature of "rhetorical text in which the expression style that aims to create emotional intensity by appealing to the spiritual side of the person is preferred" (Günay, 2013: 291). These language uses, in which the enunciation subject's actions turn into linguistic metaphorical structures (Lakoff & Johnson, 2015), focus on how he says rather than what he says, and these language uses with intense different images, have an impact on the receiver and draw attention to the intensity of the targeted emotional state. The poetic function for the message itself is realized by giving importance to the inner worlds, feelings, principles, and dramas of the heroes in the narrative texts (Mera, 2017: 41).

6. Among the functions, the most limited one in terms of its use in the narrative text is the metalanguage function. This function was used one time by only one participant in the first texts. Four participants used the metalanguage function in their second text, 28 participants did not use it in both texts. The results of the general use of the metalanguage function in terms of the first and second texts show that the use of this function in the second texts has increased. The meta-language function, which we can encounter especially in the instructional texts, was used in the second narrative texts of the participants.

The results of the study showed that pre-service teachers were able to transform their knowledge of Jakobson's Classification of Language Functions into conscious use skills in the second narrative texts they wrote. Six functions in Jakobson's (1960) classification of the functions of language in the communication process are an integral part of a literary text. The type of text, the purpose of writing, the preferred narrator and point of view determine which function will be used dominantly in that text. Especially in narrative texts, functions are used together. Mera (2017), in her research in which she analysed the poem "Milasao's Songs" introduced in high school textbooks in terms of functions of language, drew attention to the intertwined use of functions. The results of this research confirm the same fact.

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Children's Perceptions of Basketball through Metaphors and Drawings

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Abstract

In order to improve the performance of children, their physical needs as well as their mental needs should be known. The aim of this study is to reveal the perceptions of basketball concepts of athletes attending basketball sports schools with the help of metaphors and drawings. A total of 57 athletes who trained in basketball sports schools in Ankara participated in this study. It was used qualitative research approach in this study. In obtaining the data, a personal information form was applied to each athlete and "basketball it is like this; because ..." and were asked to draw a picture reflecting their thoughts on the concept of basketball. All participants took part in the study on a voluntary basis. The data were analyzed by content analysis technique. As a result; it was seen athletes draw on the theme of basketball as "sports, being an element of gain and emotion."

Keywords: Basketball, Sport, Metaphor, Perception, Sport Schools

1. Introduction

The concept of sports is associated with social, economic, political and cultural aspects (Ergun, 2003). Sports are known to be adopted as tools that involve not only competition but also activities such as voluntarily participating in games and dance in terms of entertainment and sports activities. While the individual's physical structure develops healthily thanks to the sports activities in which he or she participates before and after puberty, positive changes occur in her or his mental development at the same time (Yazarer et al., 2004). In this regard, sports can also be defined as a social event that contributes to the physical and mental development of individuals through a variety of positive effects (Doğan, 2007). Since sports play a significant role in the socialization of individuals, the phenomenon of sports, which allows children to be more social, is approached from a positive perspective by families, and children are encouraged to turn to the areas they are interested in (Çakmaklı, 2002).

Basketball, a sports discipline that requires constant mobility and concentration of the body and intelligence together (Bektaş et al., 2007), with high physical, technical-tactical, biomotoric and psycho-mental characteristics, contributes to the shaping and development of the existing motoric features of individuals as well

as their technical skills (Drinkwater et al., 2008; Kılınç, 2008). Young athletes who endeavour to fulfill their responsibilities in the specific discipline are expected to be the athletes who can perform physically well, apply technique effectively, and are in good mental shape. Triggs et al. (2011) emphasized that metaphors can be applied to overcome the challenges brought by changing conditions in both daily life and career.

Saban et al. (2006) define metaphor as a powerful mental tool that individuals can use to comprehend and explain a highly abstract, complex or theoretical phenomenon, on the other hand, Kesić and Muhić (2013) describe sports metaphors as the intersection of collective thought and wisdom obtained with a concise and metaphorical expression. According to Schmitt (2005), metaphors can be used to clarify multiple heterogeneous pieces of information with complex meaningful structures and transform this complexity into structured models. Visual metaphors/drawings, on the other side, are described as 'simple' yet powerful ways to obtain in-depth information about significant experiences in order to better comprehend conceptual perceptions (Tidwell & Manke, 2009).

When the literature is analyzed, there are different metaphor studies for concepts such as sports, sports disciplines, physical education and sports, physical education teacher and game (Arpa, 2014; Ayyıldız, 2016; Dursun Karakaya & Salici, 2016; Gülay et al., 2010; Hohepa et al., 2006; Koç et al., 2015; Pekel et al., 2019; Şirin et al., 2012; Tok, 2018; Triggs et al., 2011). Studies that identify players' perceptions about their own sports discipline concepts are rare in sports disciplines. Şirin et al. (2012) conducted research to examine the metaphorical perceptions of rafting participants towards the notion of rafting. Arpa (2014) investigated the reasons why secondary school sportsman students in Turkey were interested in karate and taekwondo, as well as their expectations from these sports. Dursun Karakaya and Salici (2016) conducted a study with the goal of determining the metaphorical perceptions of 11-14 age group students studying in Isparta towards popular sports disciplines.

Even though there are rare studies in which the perceptions of athletes about concepts and metaphors are determined in terms of disciplines, no metaphor study in basketball has been conducted through drawings. Given that metaphor is one of the tools to be used to measure and/or evaluate children's emotions and perceptions about participation in basketball, the study will contribute to the literature in terms of the approach of coaches and families to young athletes, the guidance of metaphor analysis in determining their needs, the approach to young athletes, and federations and families' meeting the needs when necessary. Hence, the aim of this study is to ascertain the metaphorical perceptions and drawings of 7 to 12 year old basketball players toward the concept of basketball.

2. Method

2.1. Research Design

A phenomenology design, one of the qualitative research methods, was used in this study to determine the perceptions of children who receive basketball training in sports schools through metaphors and drawings. This research method aims to reveal perceptions and events in a realistic and holistic way in their natural environment (Yıldırım & Şimşek, 2006).

2.2. Participants

In this study, the research sample was chosen by the convenience sampling method. A total of 60 athletes, 41 boys and 19 girls, between the ages of 7 to 12, attending basketball sports in Ankara in the 2020-2021 season participated in this research. Nevertheless, data analyses were performed on 55 participants as a consequence of the elimination of the forms of those who did not want to participate in the study, whose metaphors did not make any sense or whose forms were empty.

2.3. Data Collection Technique

The data collection tool was applied by the researchers themselves with the permission of the parents and club trainers. Additionally, all participants were involved in the study on a voluntary basis. The data collection tool comprised of two sections. While, in the first section, demographic characteristics of the participants such as gender, class and age which will contribute to the interpretation of the research's findings were included; in the second section, in order to determine the perceptions of the children who receive basketball training in the sports schools participating in the research about the concept of basketball through metaphors, research data were collected through the children's completing the sentence "Basketball is like/similar to; because" and drawing a picture reflecting their thoughts on the concept of basketball in the space given. Athletes were asked to explain their metaphor logically with the phrase "because" and were also given sufficient time to complete their drawings. Athletes were not restricted with their usage of pencils and paint. Special care was taken not to utilize any guiding expressions while explaining what to do to the participants.

2.3.1. Data Evaluation

The data in this study was evaluated using the content analysis technique. Content analysis is the process of coding and quantization (digitization) what people say and write according to clear instructions (Patton, 2014). The metaphors and drawings collected for the data analysis were numbered from 1 to 55 and analyzed one at a time. The coding was done by considering the explanations about basketball. During the coding, a code list was created based on the meanings of the metaphors. Thus, by examining the relationship between these codes, it was attempted to make the data meaningful by reaching the categories that could best explain the feature. Metaphors are frequently used in qualitative research due to their features such as helping to deal with the diversity of research data (easiness of creating categories), establishing connections between data and presenting the data to the reader (Sadik & Sari, 2012). Methods of submitting the data and analyses to the control of the participants as well as consulting the interpretations of the data and analyses to experts were used to assure the validity and reliability of qualitative research (Ekiz, 2009). Besides, the themes, developed by two experts from outside of the research and the researcher who conducted the research, were compared; and the numbers of consensus and disagreement were determined in the comparisons, and the reliability of the research was calculated using the formula ($\text{Reliability} = \frac{\text{Consensus}}{\text{Consensus} + \text{Disagreement}}$) proposed by (Miles & Huberman, 1994). In qualitative studies, a desired level of reliability is achieved when the consistency between expert and researcher evaluations is 90% or higher (Saban, 2008). The percentages of consistency of the drawings were found to be gathered under the same themes at a rate of 91. As another reliability method, direct quotations were made by including the expressions of athletes used to explain the metaphors.

2.3.2. Statistical Analysis

The data was analyzed using Microsoft Excel database programs. Frequency and percentage values were calculated for the themes found. Pictures with similar meanings were grouped into five themes: being an element of achievement, element of emotion, element of entertainment, element of socialization and being an element of sports. Personal information indicating which participant the drawings belong to was numbered below the examples. As a consequence of the analysis, the metaphors were classified into relevant themes based on their differences and similarities and transformed into tables. Also, the drawings created by children attending basketball schools regarding the concept of basketball were evaluated under certain codes and themes according to their common features, and numerical data about them was presented.

3. Results

A few samples of the drawings are given. Table 1 shows the conceptual themes of the drawings. It was observed that there were the same codes under certain themes (Table 1). Since the metaphors in these codes had varied meanings, they were placed in different themes. For instance, the code was included in the theme of "Element of Achievement" as participant 25 pointed out the "life" metaphor with the explanation "Basketball is like/similar to life because we always have to strive to achieve something, even if we can't achieve, we must strive."

Participant 35 used the metaphor of “life” with the explanation that “Basketball is like/ similar to life because it is a part of you, you can sleep with it and wake up with it, your future depends on it”; therefore, the code was included in the theme of “Element of Emotion.”

Table 1: Conceptual themes of the drawings made by the athletes for the concept of basketball

Conceptual Themes	f	%
Element of achievement	14	25
Element of emotion	12	21
Element of entertainment	7	12.5
Element of socialization	6	10.9
Element of sport	16	29
Total	55	100

3.1. Basketball as an Element of Sport

It was observed that children drew mostly on the themes of “Element of Sports” (f=16, 29%) and the least on the themes of “Element of Friendship” (f=6, 10.9%) (Table 1). The “Sports” theme had 16 drawings (29%) (Figure 1). In the concepts of sports, the theme most frequently drawn by children, it has been found that children who play basketball were in constant touch with the team, the players and the materials specific to the basketball that they love, and they draw the ball figure that they associated with basketball.

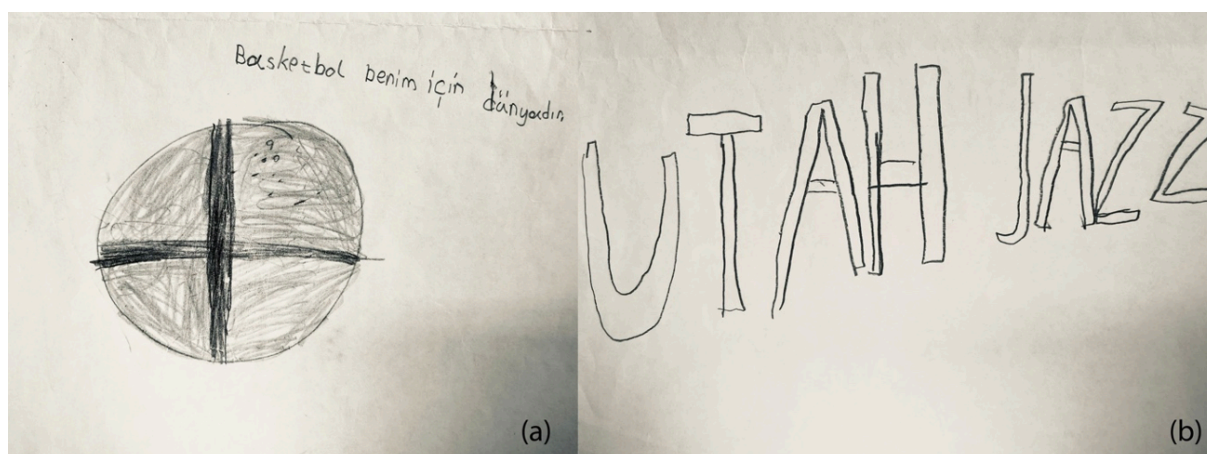


Figure 1(a-b): Drawings on the Theme of Sports Element

Participant 33 (Figure 1a) not only demonstrated how significant basketball was in the athlete’s life but also, they added the note “Basketball is the world for me.” to the participant’s drawing, indicating its meaning in her or his life. Additionally, participant 37 (Figure 1b) drew the name of her or his favorite team, which they loved watching, and remarked on how important it was to her or him.

3.2. Basketball as an Element of Achievement

Aside from the physical development provided by movement and high heart rate exercise, the contribution to psychological and personal development was emphasized in this element (Malm et al., 2019). In fact, this development was noticed not only by the participant but also by the people around them such as parents who witness this process closely. Some examples of metaphors created by children were as follows:

“Basketball is like/similar to a test; because you study diligently to get a good score in an exam, and the same goes for basketball.” (Participant 49)

“Basketball is like/similar to success; because in basketball believing is more than half of the success. If we believe in ourselves, we can achieve it; even if it is difficult.” (Participant 50)

“Basketball is like/similar to school; because basketball does not just teach you to play sports and basketball, it is like school that teaches you the life. I am sure that knowing about success and failure as well as being a team will help us in our lives.” (Participant 29)

14 (25%) drawings were included in the achievement theme (Table 1).

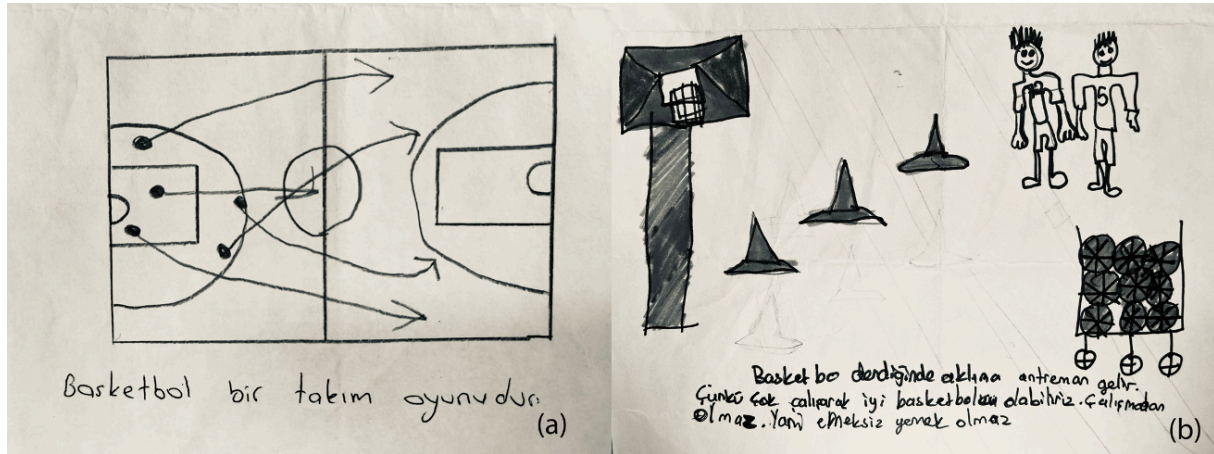


Figure 2(a-b): Drawings on the Theme of Achievement Element

Participant 34 (Figure 2a) illustrated the features of the basketball court and that basketball is a team game and it has a strategy with the help of arrows in the drawing. Participant 32 (Figure 2b) reflected the practice drills during basketball training, her or his knowledge of the variety of basketball training and the importance of working hard to achieve it by putting a note under the drawing.

3.3. Basketball as an Element of Emotion

Aside from the individual benefits, doing sports can help individuals enhance their self-confidence and better comprehend the meaning of life by balancing work and daily life, which affects the individual psychologically and sociologically (Roy, 2016). Some examples of metaphors created by children were as follows:

“Basketball is like/similar to calming; When I come here, I feel calm, happy and excited.” (Participant 2)

“Basketball is like/similar to an enjoyable sport: as when I come to the basketball court, the desire to win makes me proud, that’s why I love basketball.” (Participant 24)

“Being an Element of Emotion” was noted in 12 (21%) drawings of children (Table 1). Children described the concept of basketball as a time when they feel happy with their friends and experience the emotions of success.

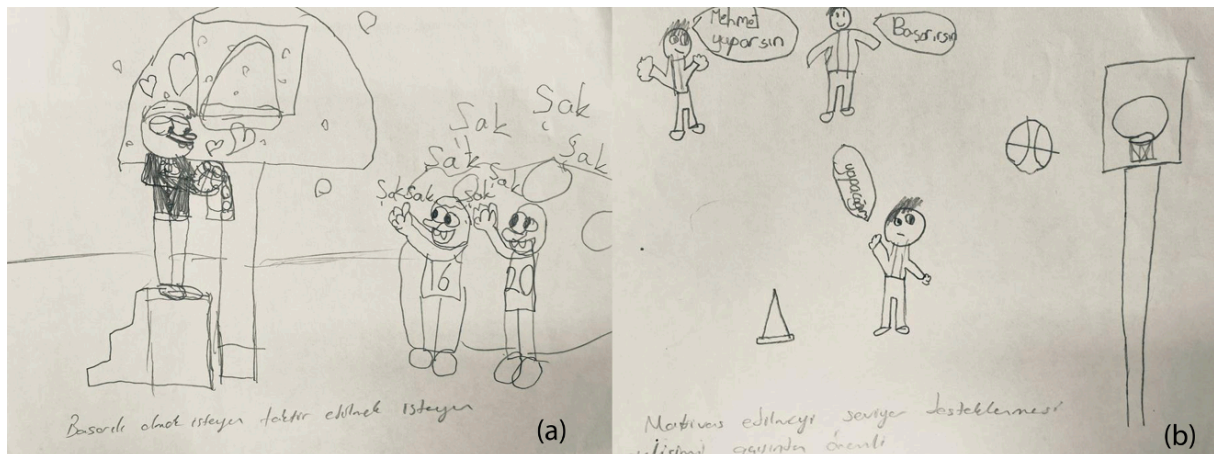


Figure 3(a-b): Drawings on the Theme of Emotion Element

Participant 14 (Figure 3a) drew children figures to demonstrate the happiness brought by the success they achieved at the end of the struggle with her or his friends. Participant 50 (Figure 3b) drew a picture of himself

and his coach speaking during the basketball training. When we observe the drawing carefully, we can see concretely how motivating the participant vocally benefits her or him.

3.4. Basketball as an Element of Entertainment

The drawings were noticed to be centered on the pictures of happy children playing basketball. It has been observed that children view the concept of basketball as a time when they enjoy playing and feel happy. Some samples of metaphors created by children are given below.

“Basketball is like/similar to entertainment because I feel free when I go there.” (Participant 6)

“Basketball is like/similar to playing a game; because it is a very fun sport and important sport for height growth.” (Participant 1)

In children’s drawings, “Being an Element of Entertainment” was seen in 7 (12,5%) drawings (Table 1).



Figure 4(a-b): Drawings on the Theme of Entertainment Element

Upon examining the drawings of participants 40 and 49 (Figures 4a and 4b), it can be seen that they drew figures of children having fun while playing basketball. We can state that the happy facial expressions of the characters in drawings are concrete examples of how playing basketball entertains them.

3.5. Basketball as an Element of Socialization

6 (10,9%) drawings were included in this theme (Table 1). According to the evaluations, the drawings were mostly under the element of fun and friendship. Participant 9 stated in the metaphor that “Basketball is like/similar to friendship for me; because I learned basketball while playing with my friend, I always play basketball with her/him and I have a lot of fun.” In their drawings, the children depicted basketball as the time when they felt happy as they were having fun with their friends.

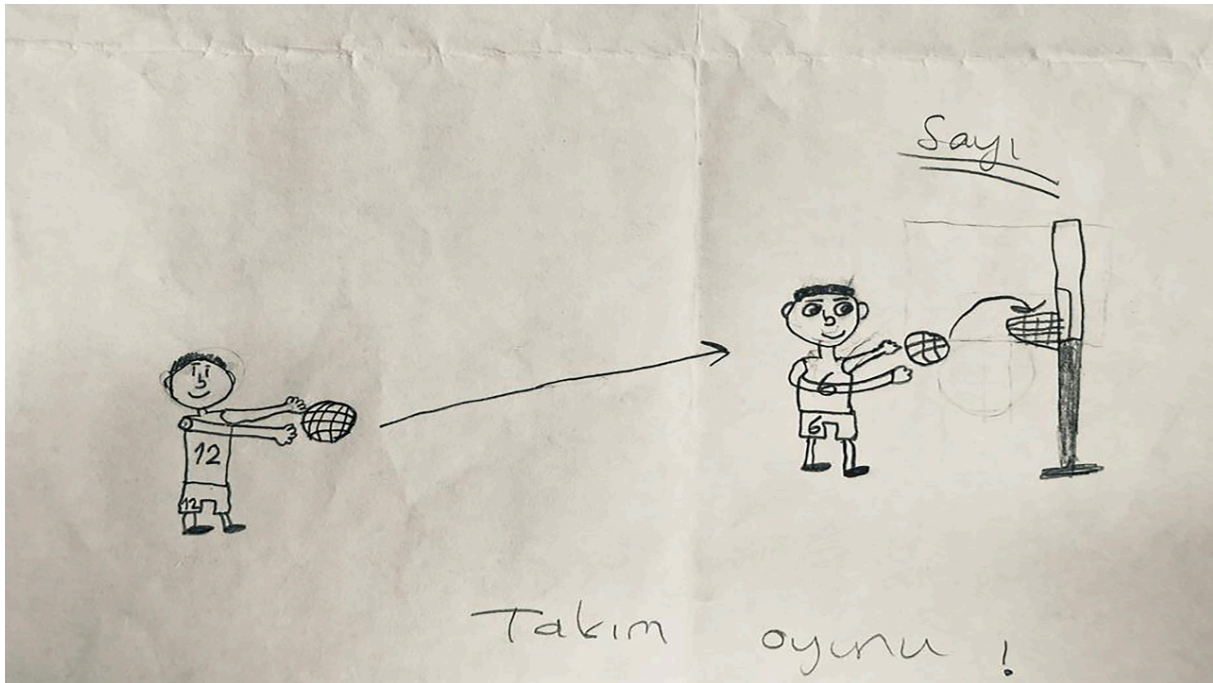


Figure 5: Drawings on the Theme of Socialization Element

Participant 31 (Figure 5) wrote the “Team game” note under the drawing they made. Similarly, participant 26 can be said to consider basketball as a socialization tool, recognizing that it is a team sport, with the metaphor of “Learning how to play basketball is like/similar to a game, those who know how to play can play it on the computer or with friends face-to-face.” and also think of digital game platforms as a tool for their socialization nowadays.

4. Discussion and Conclusion

The feelings and thoughts of 7- to 12-year-old children attending basketball sports schools concerning the concept of basketball were investigated in this study using metaphors and drawings used by researchers and educators to serve different purposes.

While drawings containing materials used for the specific basketball were usually observed in the drawings of the participants, happy human figures playing games with their peers and having fun were encountered in these drawings, as well. Thus, with the support of the size of the materials they draw and the figures including positive energy such as the sun, children, who have to spend most of their time in front of electronic devices such as computers, tablets and televisions at home due to the global epidemic, define basketball as a relaxing activity that takes away from the cognitive fatigue of lessons and daily life. Similarly, through metaphors, they indicated that students accepted sports as a tool for a healthy life, a valuable element and a significant factor in their socialization (Koç et al., 2015) and associated it directly with life as sports disciplines are a part of life (Şirin et al., 2012).

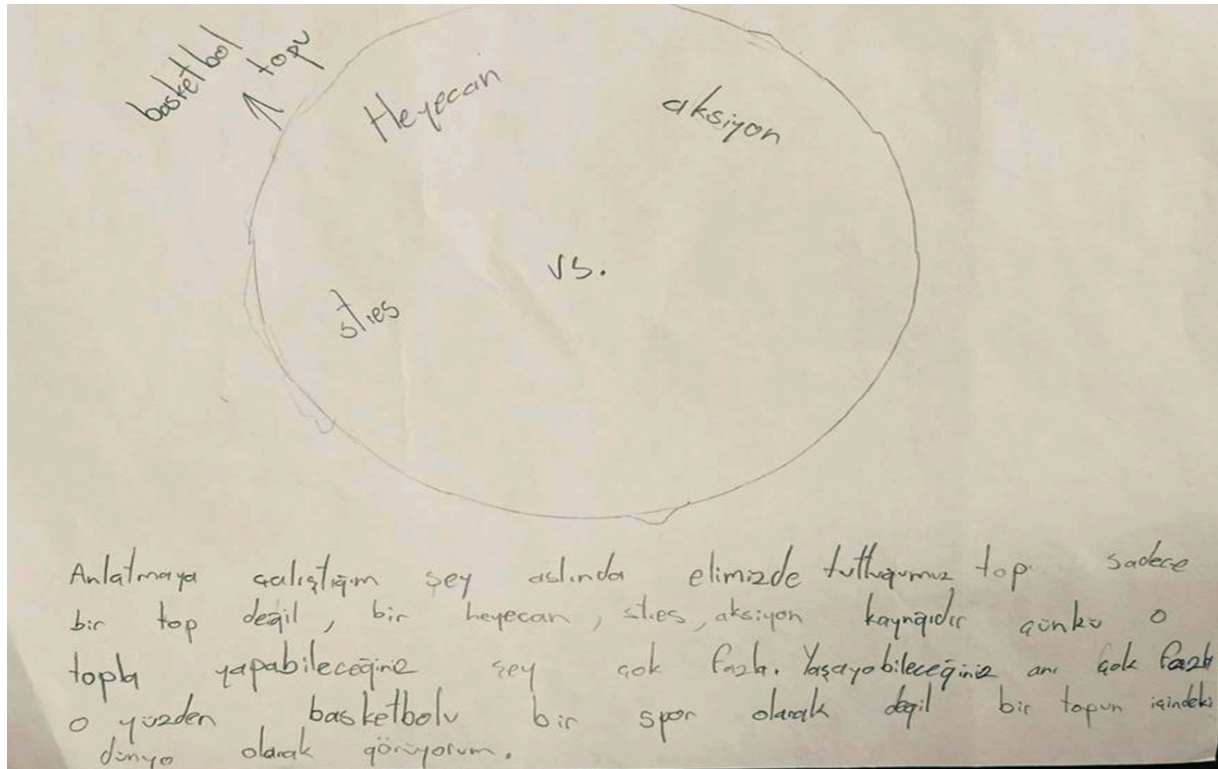


Figure 6: Drawings on the Theme of Socialization Element

Upon the explanation of Participant 38 (Figure 6) “What I am trying to explain is not a ball we hold in our hands, but a source of excitement, stress and action because there is so much, we can do with that ball, I see basketball as a world inside a ball, rather than a sport.”, it can be stated that basketball not only supports the physical development of children’s lives but also supports them socially and mentally. In a study conducted by (Triggs et al., 2011), it was concluded that since young athletes had the chance to express their thoughts and feelings through metaphors, a positive development was achieved in terms of communication and that the athletes were able to create meaning against changing conditions, which supports the findings of our research. Participating in sports provides a wide range of psychological, social, emotional and physiological benefits (Crocker, 2015; McArdle et al., 2010). It also offers individuals the experiences such as establishing good relationships, obeying rules and decisions along with the socialization process (Newcomb & Bagwell, 1995; Rubin et al., 2006). The studies support the findings of our research. Pekel et al. (2019)’s study with 58 gifted students stated that they combined the concept of game and sports, they were happy because they did sports while playing the game, they offered physical development and spending time with their friends made them happy. Another study found that secondary school students viewed physical education lessons as a playground and entertainment area where they can do sports (Karaşahinoğlu & İlhan, 2019). The physical education lesson, which is the primary application point of basketball in schools, is in line with the studies that students perceive the sports activities they do in the lesson as a field of play and entertainment. Upon observing the findings of another research, the emphasis on the socializing aspect of the physical education lesson confirms the results of our research (Hohepa et al., 2006). Basketball has a significant contribution to many areas of development, especially physical health. When the metaphors of the participants were observed, under the theme of achievement, children’s basic knowledge of the basketball, its similarities with different sports disciplines and the impact of basketball on learning with metaphors such as exam and mathematics were also emphasized. The fact that children highlighted this concept of basketball demonstrates that they have an awareness of this issue. Basketball is primarily an educational tool as well as it is a game and physical development tool. This educational tool is an element that is frequently used in various fields from the past to the present in transferring any emotion or thought to individuals and plays an active part in life skills (Gedik & Tekin, 2015; Sheridan et al., 2010). In the drawings, we can observe that children learn the concepts given under values education in schools by experiencing them through applied training thanks to sports. The results of the study conducted by Demiral and Demir (2018) confirms the achievement of values education through applied training in this

research. As children cannot play enough games during the day, it is important to arrange basketball and other areas where they practice sports activities in a way that attracts the athletes' attention, meets their expectations and keep their interests alive. Moreover, it is advised to direct children to any clubs where they can play basketball.

It has been observed that children try to explain the concept of basketball by using affective images. It is worth noting that metaphors such as "art, proving ourselves, life, fun, enjoy, happiness, chameleon, excitement, happiness, peace, calming" were used to express the concept of basketball. For instance, participant 9 noted that "Basketball is like/similar to art since it is also done with love." Goleman (2017) defines the role of emotions and states that emotional intelligence inspires not only to achieve better but also to begin an activity enthusiastically, even if it is a challenging task. Regarding the structural characteristics of basketball, the fact that children feel some emotions at a high level while playing basketball can explain the frequent use of these metaphors.

Because of the current global epidemic, in addition to the sedentary lifestyle and digital phenomena that children are exposed to, it is highly recommended to increase other social activities in which children can participate in their spare time and direct them to physical activities. It has been highlighted that the family's commitment to sports, as well as athletes' participation in training, are crucial for development (Ferguson et al., 2019). Furthermore, Balaguer et al. (2012) indicated that changes in athletes' perceptions of their coaches' behaviour predict changes in athletes' well-being. Given the significance of sports to all individuals, it is thought that the study will contribute to trainers and federations, not only as a means of physical development, but also enabling children to reveal their potential with their mental development and desires, and also to define what they anticipate from the sport. It is encouraged to examine different sport disciplines and conduct various studies with different age groups and licensed athletes in sports by doing wider research on this issue in order to benefit from the positive impacts it provides.

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The Analysis of Problems and Needs of Educational Information Technology of Thailand National Sports University

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Abstract

The objectives of this study were to 1) investigate the problems surrounding the use of information technology in education at Thailand National Sports University Chon Buri Campus and 2) determine the university's information technology needs. The quantitative method was used to investigate the problems and needs associated with the use of information technology in education at Thailand National Sports University Chon Buri campus. A questionnaire was used to collect data from 92 individuals who worked at Thailand National Sports University's Chon Buri Campus as executive administrators, lecturers, and support staff. The study's findings indicated that the priority was placed on the design of educational technology that aided in teaching and learning. Following that, there was a need in designing educational technology to support research and educational technology designed to support academic services.

Keywords: Problems in the Use of Information Technology for Education, The use of Information Technology for Education, Higher Education Institutions

1. Introduction

The importance of developing a knowledge base of Information and Communication Technology (ICT) in society has become widespread over the last decade due to economic and social activities associated with globalization's push to become an intelligent society. There is a need for the development and intelligent use of information and communication technology to support economic and social development in order to create a more sustainable and stable knowledge and innovation base. These changes have resulted in increased national and global awareness and the allocation of resources to the management of the social affairs in order to keep up with the changes (Jonathan, Charles and Isak, 2013).

The Twelfth National Economic and Social Development Plan (2017-2020) focuses on strengthening national immunity in order to prepare people, society, and the country's economic system to adapt appropriately to the effects of change. Additionally, Thai society has access to resources and benefits from equitable economic and

social development, as well as the creation of economic opportunities through knowledge, innovative technology, and creativity, all of which contribute to Thai society's development for sustainable happiness in accordance with the sufficiency economy philosophy.

The significant problems and impediments to the development of people and society in Thailand are the current educational problem, which discovered that the current need for information technology in higher education institutions is to prioritize the development of materials and equipment over the use of content in technology media and information for teaching. The media used are out-of-date and low-quality. There is a shortage of personnel with the necessary knowledge and ability to use technology to develop teaching materials and organize the learning process for teachers and students to apply knowledge of educational technology to the teaching and learning process. Additionally, higher education institutions lacked adequate support for information technology-related activities such as media creation and development. This was in conflict with teachers' and students' self-study at Thailand National Sports University Chon Buri Campus. There is a policy in place to encourage the continuous development of information technology for educational purposes in order to develop into a higher education institution capable of producing graduates with the expertise and skills necessary for employment after graduation (National Sports University Development Plan, 2022).

Therefore, it is critical to investigate the issue and the necessity of utilizing information technology in education at Thailand National Sports University Chon Buri Campus. The findings can be used to guide future development of Thailand National Sports University Chon Buri campus's use of information technology for education.

2. Objectives

1. To investigate the problems surrounding the use of information technology in education at Thailand National Sports University Chon Buri Campus.
2. To determine the information technology needs of Thailand National Sports University Chon Buri Campus.

3. Scope

Population and Sample Group

1. The population consisted of 117 individuals who worked at Thailand National Sports University Chon Buri Campus as executive administrators, lecturers, and support staff.
2. The research sampled 92 individuals who worked at Thailand National Sports University Chon Buri Campus as executive administrators, lecturers, and support staff. They were selected using a simple random sampling technique. Krejcie and Mogan (1970) table was used to determine the sample size (1970).

3. Research Method

The study was a survey research aiming to identify the problems and needs surrounding the use of information technology in education at Thailand National Sports University Chon Buri Campus. The data from the questionnaire were collected, analyzed, summarized in order to ascertain the educational needs for the use of information technology at Thailand National Sports University's Chonburi Campus.

4. Research Instrument and Data Collection

The questionnaire contained questions on a rating scale. They were closed-ended questions and open-ended questions with a consistency index of 0.91 in order to use the results of the Thailand National Sports University Chon Buri Campus's analysis of problems and needs in the use of information technology for education as a guideline for providing promotion and support (Boonchom Srisaat, 2010).

5. Conclusion

The following summarizes the findings of the study on "Problems and Needs for the Use of Information Technology in Education at Thailand National Sports University Chon Buri Campus":

In terms of hardware, issues with the use of information technology for education are minor. However, the specifications of the computers distributed by the government are out of date. Sufficient funds were allocated for software used in teaching and learning to promote the use of information technology. However, it continues to lack a support system for online teaching and learning, particularly in the realms of augmented reality and ubiquitous learning.

In terms of Peopleware, the use of information and communication technology for educational purposes at Thailand National Sports University Chon Buri Campus will be unsuccessful without personnel who possess the necessary knowledge, abilities, and skills to apply them to the benefit of educational institutions and students. The findings indicated that Thailand National Sports University Chon Buri Campus personnel continue to lack knowledge and understanding of how to use information technology systems that support teaching and learning. The majority of personnel had between one and five years of experience using information technology and communication for educational purposes.

According to the findings of a study on the need for educational technology, the majority of personnel at Thailand National Sports University Chon Buri Campus are focused on the design of educational technology to support teaching and learning. This was followed by the design of educational technology to aid in research and the design of educational technology to aid in academic services.

The study's findings are presented as follows: Designing educational technology to aid in teaching and learning was considered, it was determined that the majority of staff members require officers to provide guidance, solve technical problems, followed by the need to support the use of information technology specifically for teaching and learning, as well as the desire to establish a unit dedicated to educational technology support.

In terms of educational technology design to support research, the findings indicated that personnel had the greatest need for research and database support, followed by the need for search support programs, the ability to analyze and process research, and the need for technology support in consulting and exchanging research knowledge between researchers inside and outside the university.

In terms of educational technology design to support academic services, the study's findings indicate that personnel had an urge for educational technology that supports academic services that are most relevant to their target group. This was followed by the requirement for educational technology that supports academic services that adhere to the policy and the establishment of a system for monitoring academic services both inside and outside of Thailand National Sports University Chon Buri Campus.

6. Result and Discussion

According to the study on "Problems and Needs in the Use of Information Technology for Education at Thailand National Sports University Chon Buri Campus," the discussion can be drawn on several critical issues.

6.1. Problems with the use of information technology in education at Thailand National Sports University Chon Buri Campus

6.1.1 Information technology hardware and software are insufficient to meet user needs and are incompatible with teaching-learning management in the modern era, which requires the use of information technology systems for teaching-learning management.

6.1.2 Competent personnel and management skills; employee use of digital media, including Google for Education; use of technology in the virtual world combined with augmented reality and ubiquitous learning in teaching and learning; and application of technology was at a moderate level.

Thus, educational institutions must be aided and assisted in these five areas: hardware, software, personnel information, and operating procedures. Personnel involved in educational information technology is critical to the success of an information system. The more knowledgeable individuals are about educational information technology, the greater their opportunity to utilize information systems and computer systems to their full potential and cost. For group-level information systems and complex organizations, computer-related personnel must be directly involved in the development and maintenance of the system. Operating procedures are something that must be understood in order to function properly, as it is critical to have a clear operating system for the user or the personnel involved (Ministry of Education, Permanent Secretary's Office, 2011).

6.2. The need for the use of information technology for education at Thailand National Sports University Chon Buri Campus

6.2.1 At Thailand National Sports University Chon Buri Campus, there is still a need to encourage the development of educational technology to assist with teaching and learning. This is because learning and the use of educational technology to facilitate teaching and learning are still in their infancy. As a result, agencies and personnel are required to provide guidance and solutions for the effective use of educational technology to support teaching and learning. This is consistent with Heritage's (2010) assertion that teaching management through the use of modern technology has created a slew of difficulties for teachers. However, resolving the issue will require experts to provide guidance and counseling on the use of educational technology in order for teachers to comprehend and effectively apply it to teaching and learning.

6.2.2 In terms of educational technology design needs to support research, the university employees should be supported in research and search databases in browsing Support Program Requirements, analyzing and processing research. This includes technology support, consulting and knowledge exchange between researchers inside and outside the university. These are critical issues for the advancement of research in tertiary institutions. According to Bailey and Heritage (2008), research at the university level requires database support and knowledge exchange as a driving force in the creation and development of research results in order to obtain current research results. It contributes to the development of a learning society through its primary mission as a higher education institution (McMillan, 2008).

6.2.3 In terms of educational technology design to support academic services, personnel require educational technology that enables academic services tailored to the target group. The requirement for educational technology that enables policy-compliant academic services and building a method for internally and externally monitoring the results of academic services. Academic service is another primary mission of the development of higher education institutions (Office of the Permanent Secretary, Ministry of Education, 2011), which drives academic services that require developing educational technology to support academic service at the Academic Service database for easy tracking and planning of future academic services (McMillan, 2008).

7. Recommendation

The findings of this research indicate that the examination of educational challenges and the demand for information technology at Thailand National Sports University Chon buri Campus takes place at the campus level. Further research at the university level may be conducted in the future to serve as a guide for policymakers concerned with the development of educational technology.

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A Metaphorical View Regarding the Career and Sports Perceptions of University Students

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Abstract

A career is a process in which people prepare themselves for a higher level in their professional life by gaining certain experiences and knowledge in their professional life and direct proportion to the increase in their knowledge. Sports are activities that socialize people through certain physical activities, reveal their performance and contribute to the development of people emotionally. This study aimed to reveal the perceptions of the faculty of sports sciences students about the concept of career and sports through metaphors. The study group of the research consisted of 61 students studying at Bandırma Onyedli Eylül University Faculty of Sports Sciences, physical education and sports teaching department. In the study, the metaphorical perceptions of the 1. grade students studying in the department of physical education and sports teaching, and coaching education in the fall semester of the 2021-2022 academic year regarding the concept of "Career and Sports" were examined by qualitative data collection method. In the study, data were collected after the participants completed the statements "Career is like ... because..." and "Sport is like ... because...". By using the word "like" in the metaphor, an attempt was made to establish a connection between the subject and the source, and the phrase "because" was asked to be completed to obtain other information. In the study, phenomenological design and qualitative research techniques were used. For the solution and explanation of metaphors, the study was performed by revealing the metaphors, classifying the metaphors, categorizing them, and determining their validity and reliability. As a result of the information gathered, the participants wrote 42 metaphors in 7 categories following 60 themes related to the concept of career, and they wrote 43 metaphors in 5 categories following 60 themes for the concept of sports. As a result, when the metaphorical perceptions of university students towards the concepts of career and sports were investigated, it was seen that the students had the most variability category for the concept of "career" and the psychological impact categories for the concept of "sports."

Keywords: Career, Sport, Metaphor

1. Introduction

Due to the gradual change in technology and the differentiation of working environments in the world, the choices, expectations and needs of individuals vary. This change also affects the career choices that have an important place in the lives of individuals. Therefore, for future professions to have the necessary knowledge and sufficient equipment, the education they prefer gains importance. Because education is a process that includes the preparation process for the future professions (Yazıcı, 2009). In this direction, following the changes in the world, there have been differences in the career understanding of individuals. Today, the understanding of career has become a force that directs the individual to innovation and specialization (Özdemir, 2013). Therefore, the career perceptions of individuals, their university choices and the courses they take can affect this process.

According to the TDK, when the origin of the concept of career is examined, it has entered the Turkish literature by using the word "career" in English and "carrière" in French, and it includes the meanings of individuals to rise to the next level in their professions throughout their lives, to have better personal rights and to specialize (TDK, 2017).

In its general meaning, the concept of career is explained as the life-long experience of the individual about work and self-development (Tüz, 2003). Career seems to be a concept related to business life; however, it is known that it is related to the characters of individuals and human-centred. That is, it may differ from person to person. While some people describe the career as a job specialization, for others it means a steppingstone for personal development (Dinçer, et al., 2013, Özler, 2009).

In the developing and changing world, today's career perception has also changed. While working in an institution for many years in the past, we come across meanings such as promotion, seniority, and wages; In today's career perception, we can come across with having various experiences in different institutions, self-development, what they want to do and a satisfactory job has gained importance (Misican, Bedir, 2017; Öztürk, 2017).

When it comes to the career perceptions of the students studying at the faculty of sports sciences, how they perceive sports may also be important for this process. Because sports are very important for both the individual and the society as it closely concerns the lives of individuals who constitute every part of the society. For this reason, sports are considered as integrative activities in human life (Sunay, 2003). In this context, the sport is expressed as "conscious and planned activities that are the main source of the growing generations, aiming at the physical, mental, social and emotional developments of human beings, and appear as an integral and complementary part of general education" (Yıldıran and Yetim, 1996). In another definition, sports are expressed as activities that enable the individual to develop as a whole, by exerting physical effort, overcoming his/her opponent, interacting with society, and psychologically at the same time (Erdemli, 2002). Therefore, sports are very important in terms of the physical, psychological and social gains of students (Ilgar & Cihan, 2018).

Sports must be perceived correctly, especially by future generations who will create a career related to sports. In this direction, metaphor, which is a concept used to determine the perception of career and sports, is explained as reflecting the meaning formed in our minds with different words, apart from the original meaning of a concept (Güneş, Fırat, 2016). In another definition, metaphor is expressing the same concept with different words by developing people's imaginations about a concept (Bakırcıoğlu, 2012). When we look at the general studies on metaphor; It is seen that it consists of studies on obtaining information about the structures of metaphors and revealing their formations, studies on how to teach any subject, and studies on the subjective thoughts of individuals (Yalçın et al., 2016).

When literature is examined, Hazar, Tekkurşun and Dalkıran (2017) have examined the perceptions of traditional games and digital games in their study for secondary school students, Kurtipek (2019) has examined metaphorical perceptions to determine perceptions of sports club members in their study. Moreover, Yetim and Kalfa (2019) have conducted a study to determine the metaphorical perceptions of university students to determine their metaphorical perceptions about sports in their study, Baydar-Arıcın (2021) has determined their

metaphorical perceptions of the concept of the game and physical activity in their study for university students, and Koç (2020) has compared university students' metaphorical perceptions about the concept of physical education. Cihan et al. (2021) examined the metaphorical perceptions of the students of the faculty of sports sciences regarding the concept of recreation. In this context, it is seen that there are no studies examining the career and sports perceptions of sports science students using the metaphor method.

Career steps are very important in planning the lives of university students. It is very important to organize seminars on career plans to raise awareness, to adapt career planning courses to curricula, to introduce students to which programs they can participate in career steps in their university life, and to be informed by experts what job opportunities they will enter when they graduate (Kozak and Dalkıranoglu, 2013). While forming the career steps of the students of the faculty of sports sciences during their education, they can create different goals with exchange programs such as Erasmus, Mevlana and Farabi. As students start their professional life in general graduation departments such as trainers, managers and teachers, they can continue their careers in many professions such as the ministry of national defence, the general directorate of security, higher education institutions and athletic performance coaching. In this direction, the university is an important process that can help students increase their maturity level to reach their career goals, improve themselves in their current position and prepare themselves for the next step, realize their potential and make certain plans, and decide where, when, how and by which methods they can reach their goals.

It is thought that it will contribute positively to career orientation, career choices and career planning in determining the metaphorical perceptions of sports sciences faculty students regarding the concept of "career" and "sport." It is important for the study to determine the sports perception of the university students entering the faculty of sports sciences with a higher education exam score and choosing a university where there is no ability test in sports and the students who did not have a sports branch background. This study was performed to determine the career and sports perceptions of students who did not have any sports background and preferred the sports sciences faculty in their university preferences, and to determine under which categories these metaphors were gathered.

2. Method

In this section, the research model, research group, data collection tools and data analysis were included

2.1 Research Group

In this study, phenomenological design, one of the qualitative data collection techniques, was used. This pattern creates a suitable environment for studies that aimed to research and reveal certain concepts and knowledge that the person had (Yıldırım & Şimşek, 2013).

2.2 Participant (Subject) Characteristics

A total of 61 students, 22 females and 39 males, studying at Bandırma Onyedi Eylül University Faculty of Sport Sciences in the fall semester of the 2021-2022 academic year, participated in the study voluntarily.

Table 1: Research Group

	Variables	N	%
Gender	Male	39	63,93
	Female	22	36,07
	Total	61	100

2.3 Data Collection Tools

Qualitative data collection methods were used in the study. The study group was given information about the study before the career planning lesson and at the end of the career planning lesson, and it was applied to the

people who wanted to participate voluntarily. The study group was asked to complete the sentences “Career is like... because...” and “Sport is like... because...” to reveal the metaphors related to the concept of career. Participants were given a form, and they were asked to see the concept of career as an animate or inanimate object and to interpret this as well. To help them interpret the concept of "like" with a single word in the research, they were asked to explain the metaphors they produced for the concept of "because" in a certain pattern. Compliance of the research with ethical principles was approved by the decision of Bandırma Onyedi Eylül University Ethics Committee dated 14.01.2022 and numbered 2021-1.

2.4. Data Analysis

The analysis of metaphors, revealing metaphors, classification of metaphors, categorization, determination of validity and reliability and data analysis studies were performed. Content analysis was used for the analysis and interpretation of the metaphors. In the study, firstly, numbers were given starting from 1 for each participant. After the numbers were given, content analysis was applied to collect the data in certain categories. The forms were examined, and the incomplete forms were removed, the forms were numbered, the metaphors were recorded, the categories were created by looking at the explanations for the metaphors, the validity and reliability analysis was performed, and various stages were applied with the interpretations (Saban, 2008).

2.5. Revealing Metaphors

To create metaphors, understandable, clear and not confusing codes are given. Sample metaphor steps were created for the representation of metaphors in the research.

2.6 Categorization

Metaphors for common aims were separated categorically and certain clusters were created for similar ones. Metaphors consisting of the concepts of career and sports of the participants in the study were divided categorically.

2.7. Determination of Validity and Reliability

In determining the validity and reliability of the research, it was checked whether the common metaphors reached the common categories and the level of belonging to this category in terms of concept. In terms of the reliability of the study, the categories were organized by experts and the representation power of the given codes was examined. Considering the reliability of the content analysis, it was determined by the formula $[\text{Consensus}/(\text{Agreement}+\text{Disagreement}) \times 100]$ (Miles & Huberman, 1994). A total of 61 metaphors were reached in the study, and 1 (blank) metaphor was out of view. When we look at the Huberman (1994) study, it was accepted that the studies with a reliability rate of 70% and above and above were reliable. Considering the reliability of this research, it was seen that the rate was 98%.

3. Results

In this section, the metaphors written by the students who continue their education in the first grade of physical education and sports teaching about the concept of career and sports, the categories that emerged as a result of the metaphors and the concepts revealed by the categories were expressed in tables.

Table 2: Distribution of metaphors created by students for the concept of "career" according to categories

Categories	Metaphors	Metaphor Frequency	Numberof Metaphors	%
Variability	Stairs (3), Trip (3), Lift (2), Life (2),	14	8	23,00

	Indescribable (1), Skyscraper (1), Hair (1), Tree (1)			
Rise	Stairs (5), Ladder (3), Domino (1), Lift (1), Mountain (1)	11	5	18,00
Tool	ID (2), A new page (2), Stairs (1), Mirror (1), Light (1), Backpack (1), Pen (1), Iron (1)	10	8	17,00
Effort	Climbing (2), Palm (1), Grassland (1), Sculptor (1), Sea (1), Wall (1), Road (1), Self-Realization (1)	9	8	15,00
Achievement	Stairs (2), Dream (1), Life (1), Road (1), Game (1), Ramp (1)	7	6	12,00
Life	Life (3), Future (1), Trip (1), Painting (1)	6	4	10,00
Influence	Steering (1), Medicine (1), Future (1)	3	3	5,00
	Total	60	42	100

When Table 2 was examined, categories belonging to metaphors were created and information was given about the number of metaphors and frequency values. The categories in which the concept of "career" was represented in Table 2, it was seen that it consisted of 7 categories, 60 metaphor frequencies and 42 metaphors under the headings of variability, rise, tool, effort, achievement, life and influence.

In Table 2, the category of "variability" consisted of (14) metaphor frequency and (8) metaphor number as stairs (3), trip (3), elevator (2), life (2), indescribable (1), skyscraper (1), hair (1), tree (1). Moreover, it was determined that the category of "Rise" consisted of the metaphor frequency (11) and the number of metaphors (5) as Stairs (5), Step (3), Domino Stone (1), Elevator (1), Mountain (1).

For Variability

According to Table 2, it was determined that 14 people and 8 metaphors represented this category. Example statements for the category of variability:

“Career is like stairs. Because climbing is not enough, conditions can bring you down, the balance of the stairs can be disturbed and you can fall, or it is the way to the top (K6).”

“Career is like life. Because sometimes there are ups and downs. It does not always continue the same (K10).”

“A career is like a skyscraper. Because a career can grow when added to the top. It can also be destroyed with a small mistake (K34).”

For Rise

“Career is like a ladder. Because we start from zero and go higher (K7).”

“A career is like a ladder. Because as we know, there are continuous steps on the stairs and career is like the last point of that step. We constantly rise, increase steps, and when we look back, we will be in a successful position (P22).”

“Career is like a mountain. Because the mountains are high, you can reach the top by climbing (K26).”

According to Table 2, it was determined that 11 people and 5 metaphors represented this category. Example expressions for the Rise category:

While the “tool” category consisted of values which was metaphor frequency (10) including identity(2), a blank page(2), ladder(1), mirror(1), light(1), backpack(1), pen(1), iron(1), and the number of metaphors consisted of (8), it was found that the “effort” category consisted of the metaphor frequency (9) and number of metaphors, including climbing(2), palm(1), field(1), sculptor(1), sea(1), wall(1), road(1), self-realization(1) and the number of metaphors (8).

For Tool

This category was represented by 10 people and 8 metaphors. Example expressions;

“Career is like identity. Because it reflects who we are, what we are and what we do (K28).”

“A career is like a backpack. Because you meet your needs with the things you fill itself with, and you get help to reach your goals (P44).”

For Effort

This category was represented by 9 people and 8 metaphors. Example expressions;

“A career is like a field. Because as you sow, you reap (K14).”

“A career is like a sculptor. Because you have a pattern, it is clear what you want to be. You shape it by making certain efforts, you carve it, or you add it on top and you make some corrections to give it the shape you want (KÖ17).”

It was determined that the achievement category consisted of values the metaphor frequency (7) which were including ladder (2), dream (1), life (1), road (1), game (1), slope (1) and the number of metaphors (6); life category is consist of the metaphor frequency which were life (3), future (1), trip(1), painting(1), metaphor frequency (6) and the number of metaphors (4).

For Achievement

This category was represented by 7 people and 6 metaphors. Example expressions;

“A career is like a road. Because in this way, we add something to ourselves, we gain success (K41).”

“Career is like a computer game. Because as soon as we are successful, we want to go to the next level (P43).”

For Life

This category was represented by 6 people and 4 metaphors. Example expressions;

“Career is like life. Because career means learning and rising, just like in life. It constantly teaches us something similar to it in life (P16).”

“Career is like life. Because life consists of a career (K54).”

For Influence

This category was represented by 3 people and 3 metaphors. Example expressions;

“Career is like medicine. Because it cheers people up in their career, relieves their pain and makes them relax (K57).

Table 3: Distribution of metaphors created by students for the concept of "Sports" according to categories

Category	Metaphor	Metaphor Frequency	Number of Metaphors	%
Psychological Impact	Therapy (3), Rushing Like Child (2), Happiness (2), A Blank Page (1), Breath (1), Hour (1), Fruit tree (1), Treatment (1), Energy (1), Escape Route (1), Medicine (1), Entertainment (1), Flashlight (1), Star (1), Life friend (1), Game (1), Feeling Good (1), The meaning of life (1)	22	18	36,00
Basic need	Food (4), Water (2), Work (1), Lifestyle (1), House (1), Weather (1), Oxygen (1), Miner (1)	12	8	20,00
Life	Life (6), Tree (2), Step (1), Job (1)	10	4	17,00
Passion	Ring (2), Pepper (1), Amusement centre (1), Life (1), Teacher (1), Game (1), War (1), Star (1)	9	8	15,00
Physical Benefit	Medicine (2), The mind of the Body (2), Healthy lifestyle (1), Healing (1), Agriculture (1)	7	5	12,00
Total		60	43	100

When Table 3 was examined, categories belonging to metaphors were created and information was given about the number of metaphors and frequency values. The categories in which the concept of "sport" was represented in Table 2; It was seen that it consisted of 5 categories, including psychological effect, basic need, life, passion and physical benefit, 60 metaphor frequencies and 43 metaphors.

"Psychological impact" category in Table 3 was consisted of number of metaphors (18) and metaphor frequency (22) including therapy(3), rushing like a child(2), happiness(2), a blank slate(1), breath(1), clock(1), fruit tree(1), cure(1), energy(1), escape route(1), medicine(1), fun(1), flashlight(1), star(1), life partner(1), game(1), feeling good(1), meaning of life(1).

For Psychological Impact

In Table 3, 22 people and 18 metaphors represent this category. Example statements regarding the psychological impact category:

"Sport is like therapy. Because it solves our problems and gives happiness to the person spiritually (P6)."

"Sport is like breathing. Because when we do sports, it gives us life, takes the stress and relaxes our mind (P7)."

"Sports is like energy. Because it makes people feel good and fit, and it makes the person feel energetic (K15)."

"Sports is like a game. Because we have fun while doing sports, and when we have fun, we become more spiritually resilient (P58)."

It was seen that the "basic need" category has consisted of metaphor frequency (12) including food(4), water(2), work(1), a lifestyle(1), home(1), air(1), oxygen(1), miner(1), the number of metaphors (8); life category consisted of the frequency of metaphors (10) and the number of metaphors (4), including life (6), tree (2), step (1), occupation (1).

For Basic Need

This category was represented by 12 people and 8 metaphors. Example statements regarding the basic need category:

"Sport is like water. Because water is indispensable in people's lives, since water is needed to sustain human life, it means this for human life in sports (K22)."

"Sport is like air. Because we cannot live without doing sports, just as we cannot live without breathing (P32)."

For Life

This category was represented by 10 people and 4 metaphors. Example expressions related to the life category:

"Sport is like life. Because just like in life, there are ups and downs in sports (K30)."

"Sports is like a way of life. Because, like life, sports should be continuous and give direction to one's life (P48)."

It was seen that the passion category consists of values that the number of metaphors (8) and the metaphor frequency (9) included circle (2), pepper (1), entertainment centre (1), life (1), teacher (1), game (1), war (1), star (1); physical benefit category has consisted of values that the number of metaphors (5) and metaphor frequency (7), including medicine (2), the body's mind (2), healthy life (1), healing (1), agriculture (1).

For Passion

This category was represented by 9 people and 8 metaphors. Example expressions for the passion category:

"Sport is like pepper. Because even if it is sweet or bitter, you cannot leave it because you love it (P8)."

"Sports is like a game. Because even if you win or lose, you don't give up and you keep going until the end (K40)."

For Physical Benefit

This category was represented by 7 people and 5 metaphors. Example statements regarding the physical benefit category:

"Sports is like healthy life. Because, thanks to sports, the individual increases his physical capacity as he is constantly active (K18)."

"Sport is like the mind of the body. Because it contributes to our muscle development and health development by doing sports (K23)."

4. Discussion

The study was aimed to determine the perceptions of the students studying at the faculty of sports sciences about the concepts of "career" and "sport." It was understood that the participants created different metaphors for the concepts of career and sports. It was seen that many metaphors related to the concept of career have been put forward in the literature (Inkson, 2004). When the categories of metaphors related to the concept of career were examined in the study, it was seen that the most used category was "variability" with 14 metaphor frequencies and 8 metaphors. It was seen that the meanings that the research group generally identifies with the concept of career vary according to the ordinary flow of life and represent career. In another study, career perceptions were expressed as capital, and it was named as the changes that occur in the working lives of people. In the study of Terjesen (2005), it was seen that people need to invest in knowledge and skills that would positively affect their careers to be successful, and Inkson and Arthur (2001) call knowledge and skills as capital. In the study conducted by Hallett, Slapleton, and Sauder (2019) on the concept of career, the participants defined career as a "come-and-go" that has a periodic temporality and reflects how they change. Yung (2021) describes career as "temporary" in his study, and Filiz et al. (2022) in his study on high school students; the career was categorized by the participants as "process, progress, daily life and power/control."

When the categories of metaphors related to the concept of the sport were examined, it was seen that the most used category is the "psychological effect" category with 22 metaphor frequencies and 18 metaphors. It was seen that the meanings that the research group generally identifies with the concept of sport emerge as the psychological representation of sport as it relaxed the person spiritually, gives happiness due to the secretion of the hormone serotonin, and increases life energy. Similarly, studies showed that those who did sports were psychologically relaxed, happier, and got away from anxiety and depression. (Filbay et al., 2019; Sharma et al., 2009; Zukerman et al. 2020).

When the metaphor studies about sports were examined, on the students studying in the faculties of sports sciences; It was observed that there were studies on the concepts of physical activity, games, sports clubs, sports managers, sports organizations, and physical education (Baydar-Arıcın, 2021; Koç, 2020; Kurtipek and Güngör, 2019; Kurtipek and Sönmezoğlu, 2018; Yetim and Kalfa, 2019). While in a study of Baydar and Arıcın (2021) physical activity was mostly categorized as "need" by the participants, In the study of Koç (2020), "physical education" was defined by the participants as health, need and recreational. Moreover, In the study conducted by Kurtipek and Sönmezoğlu (2018), "sports" was categorized as the most basic need by the participants. Similarly, in our study, the basic needs category was seen as the most-used category by the users after the psychological effect category. In the study of Yetim and Kalfa (2019), it was revealed that "sports" was categorized by the participants as movement and health.

In sum, when the metaphorical perceptions of university students regarding the concepts of career and sports were examined; It was found that they were aware of the ups and downs in their lives regarding the concept of "career", and that when life continues, there would not only be continuous progress, but also sometimes there would be variability in their perceptions that this progress would be interrupted, or they would go backwards. Following the concept of "sports," it was found that sport was not an activity that only increases one's physical capacities but has a greater psychological effect as it was created a mood that improves the person spiritually and makes the person happy by giving pleasure. It was recommended that the study should be applied to students studying in different faculties as well as in the faculty of sports sciences. Besides, collecting data from faculties

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Primary School Teachers' Educational Thoughts

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Abstract

Every science exists on a philosophical basis / thought and becomes functional. As in all sciences, philosophy forms a necessary basis for the educational science. The need for philosophy, emanated from the need to make learning environments meaningful, as well as to find answers to the questions of why and how education should be done. The basic purpose of this research is to investigate educational philosophies of primary school teachers who are still working in a medium-sized province in Turkey within the framework literature. Quantitative survey design was employed in the study. The study group is comprised of 225 primary school teachers working in primary schools within a medium-sized Anatolian city in terms of demographic structure. The "Educational Thoughts and Practices" scale was used to collect the research data. The variance was conducted parametric one-way analysis. One of the significant results of the study is that the primary school teachers participating in the study mainly adopt popular educational thoughts and practices. Given the overall results of the study, it is seen that the scores close to each other in the popular and traditional dimensions. It can thus be implied that teachers are aware of the attractiveness of the creative learning environment ensured by student-centered learning, however, they do not give up on their duties and habits of transferring knowledge.

Keywords: Philosophy of Education, Education Science, Primary School Teacher, Traditional Thought

1. Introduction

Thinking, which is a major human activity based on needs and curiosities, has to be consistent within itself. This consistency is ensured by philosophy and mathematics. In this sense, it can be argued that philosophy (Magee, 2007) and mathematics lie at the root of all kinds of conscious - purposeful human activities.

Science might be the most significant conscious-purposeful human activity. This might be because science promotes self-awareness and allows the individual to comprehend and influence the environment he/she lives in. However, before producing scientific knowledge, there are questions that need to be addressed and issues that need to be clarified. First, the questions why and how science will be done, how the obtained scientific knowledge will be different from other knowledge (artistic, religious, daily, etc.) should be answered from a philosophical perspective.

In the process of producing scientific knowledge, it is seen that the first answers to these questions are related to the positivist philosophy. In this context, it is the positivist thought that created modern sciences. According to Weber (1998: 1), "the theory of knowledge becomes 'positive philosophy' or 'positivism' when it abandons metaphysical thinking and is satisfied with being a synthesis of mathematics and experimental sciences." However, in the following century, it was seen that positivist thought, which would be used in experimental and engineering studies, was insufficient in explaining and generalizing social events. Particularly in the field of Social Sciences, the fact that questions such as correct and accurate information, the role of the researcher in this process, the generalizability of the obtained information, and the context cannot be answered by a positivist understanding (Ozden & Simsek, 1998) have led to the weakening of positivism and the emergence of post-positivist constructivist approaches. As a result, every science exists on a philosophical basis / thought (Magee, 2007) and becomes functional. In Weber's words, in a sense, philosophy and science are inseparable, and when they are separated, they no longer live in each other's pockets. In a similar vein, according to Weber (1998: 2), 'science without philosophy; is a lifeless body.

One of the sciences that philosophy gives meaning to life is education. Education is one of the sciences that strive to understand people, such as psychology and sociology (Osler, 2013; Zierer, 2009; Murphy, Mufti, & Kassem, 2009). Education, which attempts to find the laws of how to change human behaviors in a consistent way or how to gain the desired behavior, has become one of the important scientific-intellectual endeavors. As in all sciences, philosophy forms a necessary basis for the educational science. The need for philosophy, like other sciences, emanated from the need to make learning environments meaningful, as well as to find answers to the questions of why and how education should be done. The effect of philosophy on the emergence of learning environments and teacher behaviors is visibly tangible (Orstain & Hunkins, 1988; Winc, 2012; Gosselin, 2007). In fact, one might find a philosophy addressing to questions of why and how education should be done concerning the teacher who walks between the benches of the students with an authoritative stare and checks the course book and notebook. Likewise, another educational philosophy encourages John Dewey (Dewey, 2008) to go for shopping for educational tools.

Although there are many mainstream philosophies and educational philosophy movements that have implications for the educational process, it is possible to divide the philosophical movements into two main groups according to their perspectives on knowledge, teachers and students. While Idealist, Realist, Perennial and Essentialist movements form one group, Pragmatic, Progressive, Reconstructive, Existential and Humanist movements form the other group (Kumral, 2015, 74).

The philosophical thoughts in the first group put the teacher in the center. It is the teacher who is in charge in the classroom while students are passive. The teacher is the only person who talks and directs what and how the student will learn and how the student will think and behave. For instance, according to Gutek (2014), an idealist teacher is professional, experienced and skilled, cultured and has a strong and versatile personality. The duty of the school in realist education is to inform students about the real world (Demirhan, 2003). Experiments and observations are made, and the results are objectively and independently evaluated (Erkılıç, 2013). While perennialism is based on the idea that the basic reality in the universe is absolute and unchanging (Sonmez, 2017; Gokbulut, 2019; Bakir, 2020); Essentialism holds the view that the individual should grasp the absolute truth and adapt it to life (Turgut, 1991; Sonmez, 2017; Gokbulut, 2019; Dag, 2020).

The philosophical thoughts in the second group put the student in the center. It is the student who will build the knowledge in the classroom. The teacher is the student's assistant in this process. According to Dewey (2008), education is valuable as long as it brings students face to face with real life problems and produces solutions. In this process, students will learn through their own experiences and acquire new information. Students can gain skills in making connections in the learning process, comprehending relationships, and producing solutions (Gutek, 2014; Noddings, 2016). The progressive movement prioritizes development and change and argues that education should be designed in a way that allows the individual to keep pace with changing conditions. From this point of view, a student is not one who keeps up with life, but the person who directs and develops it (Cevizci, 2016; Sonmez, 2017; Ergun, 2018; Keskin & Sahin, 2018; Kalafatoglu, 2019; Bakir, 2020). Reconstructionism claims that the primary purpose of education is to rebuild society in order to overcome the

cultural crisis of our age, and regards education as a major tool to achieve this (Cevizci, 2016; Sonmez, 2017; Aslan, 2017; Akpınar, 2017). According to Existentialism, which includes prominent existentialist thinkers such as Soren Kierkegaard, Karl Jaspers, Jean Paul Sartre and Martin Heidegger, education is the process of self-realization of all human beings. Education will be valuable to the extent that it enables people to exist (Sartre, 2010; Yapici, 2013; Ergün, 2018).

Teachers are not only role models for their students but also play a vital role in raising a generation since they enable students to gain cognitive, affective and psycho-motor knowledge and skills. The importance of the teacher's role remains unchangeable at every stage of education from pre-school education to higher education. However, primary school education and primary school teachers have a more permanent effect on the individual, from acquiring primary reading skills to behavioral training. Senemoğlu (1992: 43) asserts that the primary school teacher has a crucial importance in the cognitive, emotional and social development of the individual. Additionally, "... the teacher is like a sculptor who gives shape and form to an unshaped object. For this reason, many teachers (in Turkey), and especially primary school teachers, commonly use the term "dough" or "mud" when describing a student, waiting to be shaped and formed" (Ozden and Simsek, 1998: 76). The primary purpose of this research is to investigate educational philosophies of primary school teachers who are still working in a medium-sized province in Turkey within the framework of the above-mentioned literature. Specifically the study sought answer to the following question:

- 1- Which major philosophical movements do primary school teachers mostly adopt considering their educational thoughts and practices?
- 2- Does primary school teachers' educational philosophies significantly differ by gender variable?
- 3- Does teachers' educational philosophies significantly differ by seniority variable?
- 4- Does teachers' educational philosophies differ by teaching level?

2. Method

In this section, the research model, study group, data collection and analysis, validity, and reliability information are included.

2.1. Research Model

Quantitative survey design was employed in the study. "Basically, surveys deal with research question of What is? with, possibly, some emphasis on attempting to explain what is." (Wiersma, 1985: 139). Cross-sectional survey was used to identify the educational thoughts of primary school teachers working in primary school.

2.2. Study Group

The study group is comprised of 225 primary school teachers working in primary schools within a medium-sized Anatolian city in terms of demographic structure. Primary education in Turkey lasts four years. Table 1 contains information on teaching levels (1st Grade, 2nd Grade, 3rd Grade and 4th Grade), gender characteristics and years of seniority of the primary school teachers participating in the research.

Table 1: Demographic information about the sample

Gender	Seniority	Grade in Charge				Total
		1	2	3	4	
Female	1-10 year	5	6	4	3	18
	11-19 year	13	7	17	10	47
	20 year>	17	16	16	11	60
	Total	35	29	37	24	125
Male	1-10 year	0	0	0	6	6
	11-19 year	7	9	3	11	30
	20 year>	20	14	15	15	64
	Total	27	23	18	32	100

2.3. Data Collection Tool

The “Educational Thoughts and Practices (ETP)” scale developed by Kumral (2014) was used to collect the research data. The validity and reliability of the scale were ensured by using exploratory and confirmatory factor analysis. The scale seeks to determine the views of teachers or pre-service teachers about the education process, to provide an insight into how they organize classroom learning environments, and as a result, to name their educational thoughts and practices in the context of philosophy of education. The scale consists of 42 items. The 21 items on the scale are called “Traditional” and the remaining 21 items are called “Popular” and have the construct validity and scale reliability that can reveal the educational thoughts of teachers or pre-service teachers (Kumral, 2014). The traditional sub-scale indicates that teachers’ thoughts and practices are mainly based on Realism, Perennialism and Essentialism in terms of educational philosophy. In the popular sub-scale, on the other hand, teachers’ thoughts and practices regarding the educational process are mostly related to Pragmatic, Existential and Constructivist approaches along with a progressive and reconstructive educational philosophy.

2.4. Data Analysis

Prior to performing any analysis, the variables were first tested to determine whether they had a normal distribution. Since the sample size was higher than 50, the normality tests, namely, Kolmogorov-Smirnov and Shapiro-Wilk were performed. Consequently, the distribution of variables was found to be normal [$p > .05$] (Table 2). For this reason, parametric one-way analysis of variance was conducted.

Table 2: Test of normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Traditional	,048	225	,200	,990	225	,119
Popular	,037	225	,200	,992	225	,297

For multiple comparisons, homogeneity of the distribution of variances was also tested. Parametric tests were used since it was found that the distribution was homogeneous [Levene test: $p > .05$] (Table 3).

Table 3: Test of homogeneity of variances

	Levene Statistic	df1	df2	Sig.
Traditional	,489	3	221	,690
Popular	2,058	3	221	,107

2.5. Validity and Reliability

As mentioned previously, the scale used in the study is a valid data collection tool. The reliability values of the scale are tabulated in Table 4. Based on these values, it can be argued that the present study is reliable.

Table 4: Reliability statistics

	N of Items	Cronbach's Alpha
All Scale	42	,809
Traditional	21	,839
Popular	21	,856

2.6. Ethical Permissions of Research

Ethical permission was obtained from Pamukkale University Social and Human Sciences Research and Publication Ethics Committee (23.03.2022-G06) for this research.

3. Results

To understand the educational philosophy of the primary school teachers participating in the research, variance analysis was performed. The first analysis revealed the educational philosophies adopted by each participants. The results are shown in Table 5.

Table 5: Educational thoughts of primary school teachers

	N	Minimum	Maximum	Mean	Std.D.	df	t	p
Traditional	225	29	95	68,02	11,512	224	3,295	,001
Popular	225	42	97	71,72	11,401			

Given Table 5 which entails the average scores obtained from the sub-dimensions of the ETP Scale, it is seen that the primary school teachers participating in the research have mostly popular educational thoughts and practices, and there is a statistically significant differentiation when compared to teachers' traditional thoughts and practices ($p < .05$).

The second variance analysis conducted to determine educational philosophies of the primary school teachers is related to the gender variable. The results of the analysis performed to find out whether the gender of the primary school teachers had a significant effect on their educational thoughts and practices are detailed in Table 6.

Table 6: Gender and educational thoughts of the primary school teachers

	Gender	N	Mean	Std.	df	t	p
				Deviation			
Traditional	Female	125	66,70	10,996	223	1,925	,050
	Male	100	69,66	11,979			
Popular	Female	125	71,12	11,342	223	,889	,375
	Male	100	72,48	11,486			

From Table 6, which reveals whether the gender variable has a significant effect on educational thoughts and practices, it is seen that the mean scores of male teachers in the traditional dimension are higher than that of female teachers, and the mean scores differ significantly. In this respect, it can be contended that being a male teacher is effective in creating a more teacher-centered environment in the classroom. In the popular dimension, the mean scores of female teachers are higher than that of male teachers. However, no significant gender differences are found in the popular dimension.

The study also investigated whether the years of seniority of the primary school teachers participating in the study had a significant effect on their educational thoughts and practices. To this end, the Levene test was applied to see whether the distribution of scores was equal or not. As a result of the test, it was found that the scores for both groups had a homogeneous distribution ($p > .05$). Further, the Anova test performed showed that the seniority of the participants made a statistically significant difference ($p < .05$) in the traditional dimension. The least significant difference (LSD) test was employed to reveal significant pairwise difference among the variables. The results are reported in Table 7.

Table 7: Seniority and educational thoughts of the primary school teachers

	Seniority	N	Mean	Std.D.	df	F	p	Mean Difference
Traditional	1-10 year	24	68,92	13,803	2/222	3,397	,035	C-B
	11-19 year	77	65,29	11,849				
	20 year>	124	69,54	10,573				
Popular	1-10 year	24	68,17	11,177	2/222	1,916	,150	--
	11-19 year	77	71,04	11,652				
	20 year>	124	72,84	11,200				

Note. A: 1-10 year; B: 11-19 year; C: 20> year

When the analysis results shown in Table 7 are examined, it is seen that primary school teachers with 20 years or more seniority tend to create a more traditional learning environment than teachers with lesser tenure. Although there is no difference, interestingly, those who are in the first 10 years of the teaching profession also tend to adopt traditional teaching methods. It may be argued that while teachers create more traditional learning environments to discipline students in the early years, they intend to create a more democratic learning environment as they gain experience, and eventually they adopt traditional learning environments again with the effect of their seniority.

The study also examined whether the teaching level variable had a significant effect on the primary school teachers' educational thoughts and practices. To this end, the Levene test was applied to see whether the distribution of scores was equal or not. As a result of the test, it was found that the scores for both groups had a homogeneous distribution ($p > ,05$). Further, the Anova test performed showed that the teaching levels of the participants made a statistically significant difference ($p < ,05$) in the traditional dimension. The least significant difference (LSD) test was employed to reveal significant pairwise difference among the variables. The results are shown in Table 8.

Table 8: Teaching levels and educational thoughts of the primary school teachers

	Grade	N	Mean	Std.D.	df	F	p	Mean Difference
Traditional	1	62	64,44	12,023	3/221	2,874	,037	1-2 1-3 1-4
	2	52	69,06	10,986				
	3	55	69,25	10,355				
	4	56	69,80	11,914				
Popular	1	62	72,66	11,327	3/221	,429	,733	--
	2	52	70,33	9,538				
	3	55	71,55	11,468				
	4	56	72,16	13,059				

From Table 8, which reports whether the teaching level variable had a significant effect on the primary school teachers' educational thoughts and practices, it is understood that the difference in the traditional dimension is between the 1st grade primary school primary school teachers and the teachers at the other three grade levels. In the light of the findings obtained, it can be argued that as the grade level increases in primary school, the knowledge to be transferred also increases, and the idea of creating subject-centered learning environments as well as student-centered education comes to the fore.

4. Conclusion and Discussion

One of the significant results of the study is that the primary school teachers participating in the study mainly adopt popular educational thoughts and practices. Previous studies in the literature yield similar results as well. In a study conducted by Altinkurt, Yilmaz and Oguz (2012), it was seen that teachers frequently agreed on the following sub-dimensions, respectively: existentialism, progressivism, perennialism, reconstructionalism and essentialism. Kanatli and Schreglman' study (2014) reports that the primary school teachers mostly adopt progressivism in their instruction. Similar results are also observed in Aslan's study (2017). Accordingly, primary school teachers prefer more contemporary educational philosophies whereas they prefer less traditional educational philosophies. In a similar vein, Oksuz's study (2020) exhibited that primary school teachers tended to adopt more progressive and reconstructive educational philosophies, whereas they tended to adopt less essentialism.

Likewise, studies on educational philosophies conducted with teachers from different fields yielded similar results. The results of the research carried out by Dag (2020) concluded that the philosophical approaches of school principals, assistant principals and teachers are existentialism, progressiveness, perennialism, reconstruction and essentialism respectively. Further, it is seen that the philosophical approaches adopted do not differ according to the task variable. Demir and Aktı-Aslan (2021) sought to determine the education philosophies adopted by teachers in terms of different variables. According to the results of the research,

teachers adopted these education philosophies respectively: Existentialism, Progressivism, Perennialism, Reconstructionism, and Essentialism.

The studies on pre-service teachers also obtained very similar results. Kumral (2015) examined the tendencies of pre-service teachers to educational philosophies. As a result of the research, it was determined that most pre-service teachers adopted the popular education philosophy. The findings of the aforementioned study revealed that pre-service teachers studying in Preschool Teaching, Primary school Teaching and Social Studies Teaching departments were more inclined to traditional education philosophies. The results also denoted that pre-service teachers studying in English Language and Turkish Language teaching programs mostly adopted a post-positivist and constructivist approach. Hayırsever and Oguz's study (2017) included pre-service teachers attending Pedagogical Formation Programme. The results of the study showed that pre-service teachers' educational beliefs were based on progressivism on first level and on essentialism on last level. Kozikoglu and Erden's study (2018) revealed that the educational philosophies frequently adopted by the pre-service teachers are Existentialism, Progressivism, Reconstructionism, Perennialism and Essentialism, respectively.

It is also important to note that the gender variable did not have a significant effect on the primary school teachers' educational philosophies in the present study. Similarly, Altinkurt, Yilmaz, and Oguz (2012) obtained the same result. Additionally, Aslan (2017) found female teachers were more inclined to adopt progressivism and existential education. Oksuz (2020) found no statistically meaningful difference on the teachers' opinions of the Perennialism, Progressivism, and Reconstructionism educational philosophies in terms of gender whereas there was statistically meaningful significance in the Essentialism subscale in favor of males. Ilengiz (2019) investigated social studies teachers' beliefs in educational philosophy, and accordingly it was found that male teachers tended to adopt perennial philosophy of education more than female teachers. Likewise, Dag's study (2020) illustrated that male teachers adopted essentialism more than female teachers. According to the study done by Demir and Akti-Aslan (2021), male participants only adopted essentialism philosophy more when compared to females and in terms of the gender variable, there was no meaningful difference in other education philosophies.

In addition to that, there are other studies arguing that women adopt popular educational philosophy more. For instance, according to Kumral's study (2015), male pre-service teachers adopted traditionalist thought whereas female pre-service teachers mostly adopted popular education philosophy. According to Kozikoglu and Erden (2018), male teachers scored higher on perennialism, essentialism and existentialism, and female teachers scored higher on progressivism.

The study also revealed that the seniority variable had a significant effect on the primary school teachers' educational philosophies. In this respect, it is seen that primary school teachers with 20 years and more seniority are more inclined to create a traditional learning environment compared to their colleagues with less seniority. A similar result is also observed in Aslan's study (2017). As the professional seniority of the teachers increased, they tended to adopt perennialism more. Thus, as the years of seniority in the profession increased, teachers adopted the teacher-centered traditionalist education approach. Ilengiz (2019) found that teachers with 16-20 years of seniority adopted perennialism more than teachers with less than 10 years of seniority. Further, teachers with 21 years and more seniority adopted perennialism more than teachers with 15 years or less seniority. Teachers with 16 years or more seniority adopted essentialism more than those with 6-10 years of seniority. Oksuz's study (2020) also highlighted that, on the basis of the age variable, older primary school teachers (over 40 years old) are more inclined to the essentialism in education. According to the study conducted by Demir and Akti-Aslan (2021), teachers with 16 years and more seniority tended to adopt perennialism more than those with 5 years or less seniority. Additionally, teachers with 21 years and more seniority were found to be more inclined to adopt perennialism educational philosophy than those with 6-15 years seniority. Other previous studies, on the other hand, yielded opposite results. To illustrate, Kanatlı and Schreglman's study (2014) demonstrated that the more teachers' seniority increases, the more their educational philosophies change from perennialism to progressivism.

The final result of the study is that there is a statistically significant difference in the traditional sub-dimension in terms of the teaching level of the primary school teachers. The difference was found between the 1st grade primary school teachers and the teachers at the other three grade levels. Given the overall results of the study, it is seen that the scores close to each other in the popular and traditional dimensions. It can thus be implied that teachers are aware of the attractiveness of the creative learning environment ensured by student-centered learning, however, they do not give up on their duties and habits of transferring knowledge. Further studies might clarify the major problems contributing to this result considering the possible causes such as the country's central examination system, parents and school administrations' expectations for the students' academic achievement.

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Lombok Teachers and Principals Building Resilience in Facing Earthquakes and Covid-19 Pandemic

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Abstract

Effective leadership is needed when the organization faces difficult situations. When major earthquakes and pandemics successively hit North Lombok, the role of teachers and school principals significantly determined the resilience of the school organization's sustainability. The study aims to understand how elementary teachers and principals in Pemenang district, North Lombok regency, West Nusa Tenggara province, Indonesia built their school resilience in facing consecutive natural disasters; devastating earthquakes Covid-19 pandemic. This study focuses on how school leaders and their teams built the organization's resilience during consecutive disasters in North Lombok. The study used a qualitative phenomenology design. The data collection was conducted using semi-structured interviews, Forum Group Discussion, observations, and documentation. Purposive participants consisted of 17 teachers and two principals from 2 elementary schools. The authors found that teachers' and principals' resilience appears to be built through concrete action that the Education Office and principals facilitate to respond to challenges. It appears that concrete actions, management coordination processes, and choices of actions appropriate to the situation are essential factors in building resilience. It is concluded that efforts to build teachers' and principals' resilience must align with the existing context and situation while paying attention to various resources at all levels and considering the diversity of perspectives regarding how individuals, organizations, or communities understand and respond to situations and events such as earthquakes and pandemic.

Keywords: Leadership, Resilience, Earthquakes, Pandemic, North Lombok

1. Introduction

As a country located in the Pacific ring of fire, Indonesia is a country that has the most active volcanoes and a high potential for natural disasters (Rahma, 2018). The Indo-Australian plate crosses Indonesia in the South, the Pacific in the East, and Eurasia in the North, making Indonesia a disaster-prone country from tectonic and volcanic activities. With such conditions, Indonesian people are familiar with natural disasters such as volcanic eruptions, earthquakes, or tsunamis.

One of the large-scale disasters in Indonesia and became the focus of the research was the Lombok earthquake in 2018. The earthquake, which mainly hit the district of North Lombok, West Nusa Tenggara, has become an interest

in studying its distinctive pattern. It had an up-and-down pattern of seismicity, resulting in panic and confusion for the people who lived in the affected areas (Zulfazikra & Amir, 2020). The Lombok earthquake lasted for a relatively long period, starting at the end of July to mid-August 2018, with an unusual pattern of seismicity (shaking in the earth's crust), in the form of earthquakes with large and destructive magnitudes (seismic energy), successively and fluctuating (Zulfazikra & Kusumawati, 2020). According to Zulfazikra (2020) there were at least six earthquakes with a magnitude of more than 5.5 : [1] 29 July 2018 with a magnitude of 6.4 as the beginning of a series of earthquakes, [2] 5 August 2018 with a magnitude of 6.9 and a hypocentre depth of 34 km, [3] 9 August 2018 with a magnitude of 5.9, [4] 19 August 2018 with a magnitude of 6.3 and a hypocentre depth of 7.9 km and [5] 19 August 2018, in the evening, with a magnitude of 7.0 and a hypocentre depth of 25 km, and [6] 25 August 2018 with a magnitude of 5.5. In addition to those six earthquakes with a magnitude of 5.5 and above, the Meteorology, Climatology, and Geophysics Agency (BMKG) recorded more than 2000 mild aftershocks on Lombok island.

Based on the National Disaster Management Agency (BNPB) website dated 10 September 2018, these series of earthquakes brought a total death toll of 564 people, of which 467 were local people of North Lombok district. Injured victims reached 1,584 people, of which 829 were local people of North Lombok. There were 214 infrastructures such as bridges, roads, bus terminals, piers, irrigation to dams damaged and affected by the disaster, with the most damaged infrastructure occurring in North Lombok as many as 85 units. The number of schools damaged, both heavily, moderately, and lightly damaged, reached 1,194 units, of which 639 units were Elementary School buildings, 254 Early Childhood Education (PAUD) buildings, 155 Junior High School (SMP) buildings, 72 units of High School buildings, 56 units of Vocational High School buildings and 8 units of Special Schools (SLB) buildings. The earthquakes also damaged 46 markets, 105 hotels, and 566 shops. Financially, the total damage was estimated at Rp 10.1 trillion, and a total loss of Rp 2 trillion with the total funding requirement for rehabilitation was approximately Rp 8.6 trillion.

When life in North Lombok started to run normally, the region faced another disaster in a different form; the Covid-19 pandemic. Amid efforts to revive all elements of North Lombok society after the earthquake in 2018, the COVID-19 pandemic hit the country in early 2020. The communities were asked to stop all activities outside their homes, including teaching and learning activities.

To anticipate the spread of the Covid-19 virus among the world of education, governments from various countries have issued learning policies from home (Karasan & Erdogan, 2020). The Circular Letter of the Ministry of Education and Culture Number 15 of 2020 concerning Guidelines for Organizing Learning from Home in an Emergency Period for the Spread of Covid-19 was issued to fulfill students' rights to obtain educational services during the pandemic. Schools are given the freedom to manage their online teaching and learning activities (Lo Moro et al., 2020). The school closure policy affected nearly 69 million students from various levels in Indonesia. Schools were also asked to eliminate all exam activities that risk crowding out. For the first time in 3 decades, national examinations for grade 9 and 12 students were abolished (Arsendy et al., 2020).

For educators in North Lombok who are still in the recovery stage of teaching and learning activities after the earthquake, indeed, this pandemic condition has become another big challenge to face. More than 4,000 teachers and 30,000 students from 200 schools in 5 districts in North Lombok are struggling with limited school facilities and infrastructures. According to Rigianti (2020), limited network constraints are the most common challenges found in online learning. Other limitations are the lack of information technology mastery of teachers and students, inadequate facilities and infrastructure, and the high cost of technology support devices (Asmuni, 2020). The lack of educators' skills in using technology must be a big concern to be taken seriously so that learning can optimally run (Aliyyah et al., 2020).

From an economic perspective, the pandemic condition also significantly impacts North Lombok. North Lombok Regency is the entry point for foreign and local tourists to visit the famous Gili Islands, Gili Trawangan, Gili Meno, and Gili Air. The impact of the sluggish tourism sector can be seen in the policy of the North Lombok Regency Government to reduce the target of Regional Original Income (PAD) from the original Rp. 220 billion to Rp. 107.3 billion in September 2020. As stated by the Head of the Regional Revenue Agency (Bappeda) of

North Lombok Regency, most of the PAD is obtained from hotel and restaurant taxes, but unfortunately, since the Covid-19 pandemic hit the island, the local government has to close down all hotels on the three Gilis (Ulum, 2020). This condition has excluded the lack of tourist activities in Senaru village as an alternative entrance to climbing Mount Rinjani, which provides a livelihood for many climbing guide operators (Rakhman, 2020).

In the education sector, Hamdi's research (Hamdi et al., 2021) which involved elementary school teachers in Pemenang district, North Lombok, found that there was a significant difference between the satisfaction levels of primary school teachers with civil servant status (ASN) and non-civil servant status during the Covid-19 pandemic. Hamdi explained that this might happen because ASN teachers are more secure from an economic perspective regarding wages/salaries with various types of accompanying allowances than non-ASN teachers. Although the study does not describe the scope of job satisfaction, it at least shows that economic conditions during the Covid-19 pandemic affect teacher job satisfaction, and then this job satisfaction can also affect teacher performance through work motivation (Hamdi et al., 2021).

With a unique, challenging profile, devastating earthquakes followed by the Covid-19 pandemic, the North Lombok district is an ideal location to understand how educators can build self-restraint to carry out their obligations amid a prolonged disaster. The concept of resilience that will be used as a reference in this research is resilience – the capacity to adapt and bounce back amid adversity (Windle, 2011). In an organizational context, Barasa, Mbau & Gilson (Barasa et al., 2018) stated that resilience was the ability of a system to continue to realize its goals in the face of challenges and turmoil. Resilience focuses not only on an organization's ability to cope with turmoil but also on adapting and transforming. Organizational resilience is influenced by the following factors: resources, readiness and planning, information management, mentoring, governance processes, leadership practices, organizational culture, human resources, social networks, and collaboration. There are 3 (three) main streams of conceptualization of resilience in organizations: (1) resilience as an organizational feature (something the organization has), (2) resilience as a result of organizational activities (something the organization does); and (3) resilience as a measure of the obstacles or disturbances that the organization can tolerate (Ruiz-Martin et al., 2018).

However, all the disasters and crises that an organization faces, in this case, schools, are not entirely destructive. They can also be a driving force for schools to become more influential organizations in the future (Lo Moro et al., 2020). From various studies conducted in various countries, there are three good practices school leaders can do to deal with emerging challenges (D'angelo et al., 2020; Fernandez, A. A., & Shaw, 2020): [1] Implementing servant leadership, focuses on empowerment, engagement, collaboration and placing the interests of the people above personal interests, [2] Delegating leadership responsibilities to more people in the team so that they can make better quality decisions in the face of various challenges. The social complexity is just too immense for any leader to face alone. Today's leaders need one or more leadership teams whose members have broad expertise and problem-solving skills to assist in setting appropriate priorities and to guide specific organizational actions (Southwick et al., 2017), [3] Communicating well, tactically, and effectively with various stakeholders by utilizing various communication media (Fernandez & Shaw, 2020; Kurita et al., 2021).

This study aims to determine how educators from two elementary schools located in Pemenang district, North Lombok built resilience when facing the challenges of the devastating earthquakes and the Covid-19 pandemic. Pemenang district is the smallest of 5 districts in North Lombok. There are 25 primary schools in this district, with 260 teachers and principals according to North Lombok Statistics Agency, 2021 (Kabupaten Lombok Utara, 2021). In the 2018 earthquake, most districts were severely damaged, including the school buildings, so teaching and learning activities had to be carried out in emergency tents for several months. The contours of the Pemenang area, which are primarily hills and beaches, further worsen the earthquake's impact. The tourist area of 3 Gili is located in the Pemenang district. Therefore, this research is important considering: [1] Lombok Island, where Pemenang district suffered the most in the 2018's earthquake, is a disaster-prone area so that the chances for natural disasters to reoccur on Lombok Island will always be highly possible; [2] Students' learning should not stop even when a disaster strikes. The understanding gained from this research will be helpful for policymakers to decide what activities or treatment should be given to educators (in this case, teachers and school principals) so that they have the resilience to continue carrying out their duties when facing a disaster.

2. Method

This study used a qualitative method with a phenomenological approach. Phenomenological research aims to reveal the similarity of meaning which is the essence of a concept or phenomenon that is consciously and personally experienced by a group of individuals in their lives. According to Creswell (2016), phenomenological research describes the experiences or phenomena experienced by a person. So the phenomenological approach in this study was used to reveal the experiences of educators in Pemenang district, North Lombok, in building resilience when facing the earthquake disaster in August 2018, which was then followed by the Covid-19 pandemic in March 2020.

Research participants were selected using the purposive sampling method with the selection criteria: [1] working as a teacher or school principal in Pemenang district when the 2018 earthquake and covid-19 pandemic occurred, [2] Currently working as a teacher or school principal in North Lombok. With these criteria, 17 research participants were gathered: 2 principals from SDN 3 Pemenang Timur and SDN 5 Pemenang Timur; 8 teachers from SDN 3 Pemenang Timur, 6 teachers from SDN 5 Pemenang Timur, and 1 Kepala Bidang (Division Head) at North Lombok Education Office who once worked as a school principal, so the researcher used him as a critical informant to obtain a broad range of information from a helicopter view. To obtain information related to the individual resilience of the Principals and Division Head, researchers carried out semi-structured interviews. Meanwhile, researchers carried out focused group discussions for teacher participants to obtain information related to group resilience. This focus differentiation was carried out with the consideration that the Principals and Division Head are in leadership positions who will direct the people they lead, while teachers collectively are in subordinate positions who will act following the direction of their leaders.

The questions in the interviews were open to obtain information on participants' experiences when facing the earthquake in North Lombok in 2018, which was followed by the Covid-19 pandemic situation in 2020 and how they built resilience so that they were still able to carry out their roles as educators well. The question line is designed using the fact - feeling - finding - future scheme from Greenaway (2002), in the form of open questions such as the following: [1] conditions/situation at the time of the earthquake/pandemic [2] what was felt, [3] what was found, [4] what can be applied in the future under the same conditions. This scheme was chosen with the consideration that all questions were open-ended to trigger participants to issue more elaborative responses. Not all questions were forced to be answered because they depended on the natural response developed during the interview.

Data analysis began with preparing transcripts of all interview results, which were then processed with NVivo software tools to carry out the reduction and elimination process to obtain the core theme of the participants' experiences reflected in the project map image processed by the NVivo software. The core themes obtained were then analyzed by developing a textural description (the phenomena that occurred to participants) and a structural description (explaining how the phenomenon occurred) to gain meaning from the experiences of participants in building resilience when facing challenges in the student learning process when the earthquake occurred in 2018 and followed by the COVID-19 pandemic in 2020.

3. Result and Conclusion

The NVivo software generated an idea map based on words that often appeared during the interview and focused group discussions. Those words were "school", "learning", and "condition". NVivo software then generated a project map that showed an idea map of all the words that emerged during the interview and focused discussion as follows:

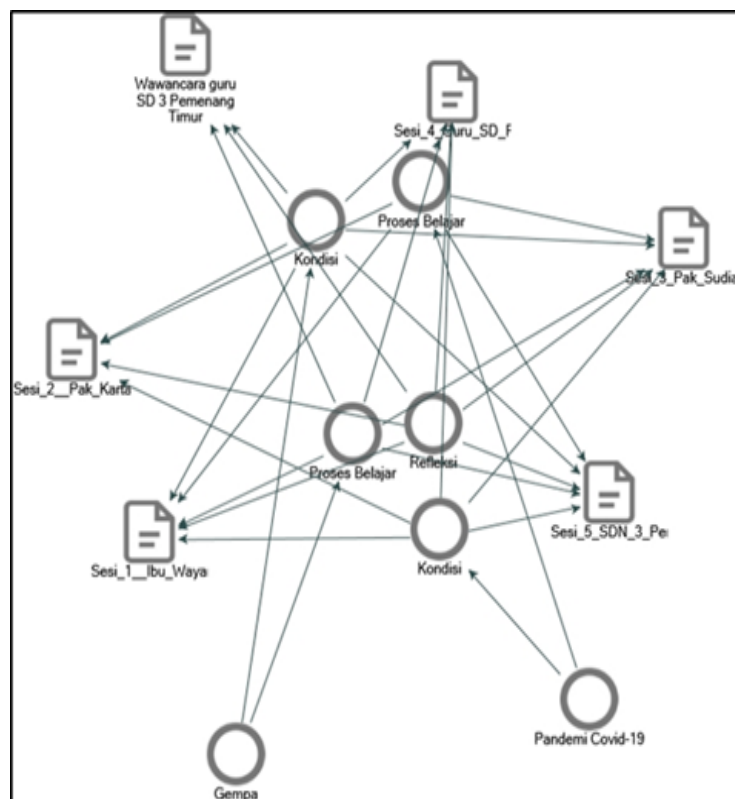


Figure 1: Project Map

Based on the project map above, this research focused on discussing three elements: [1] Earthquake events; discussing the conditions of the earthquake and the learning process that took place after the earthquake, [2] the occurrence of the Covid-19 pandemic; discussing the pandemic conditions and the learning process during the pandemic, as well as [3] Reflection on personal reasons; discussing things that strengthened participants to continue to carry out their roles when facing many challenges. The summary of the results of participant interviews regarding those three elements is as follows:

3.1 Earthquake Incident

3.1.1. Earthquake Condition

The first earthquake occurred on 29 July 2018 in Bayan, followed by an earthquake measuring 7.4 M on 5 August. Earthquakes occurred continuously; hundreds of small earthquakes hit Lombok island every day. The earthquake gradually stopped within six months. The earthquake's tremors were left and right and up and down, making it difficult for the affected residents to move around. After the 5 August earthquake, almost 95 % of houses in North Lombok collapsed. Most of the school buildings also collapsed, some libraries were still standing in the unstable condition. Many of the learning equipment (books, teaching aids, computers) were damaged. All of the classrooms were destroyed. The ruins of the buildings made the surrounding so dusty, since the earthquake occurred during the dry season.

3.1.2. Learning Process

The principal's first focus was on preventing teachers from becoming complacent with the existing conditions so that they could immediately go back to work to handle the situation under the coordination of the Education Office. In the first week, there was no learning process at all. According to a circular letter from the Education Office, the school principal then instructed the teachers to register students at the refugee camps. Teachers collected student data by going around the village to look for students' whereabouts while motivating the students they met to want

to study again. The school principal and teachers were given a target time from the Education Office; two weeks after the earthquake, emergency classes must be available so that face-to-face learning activities could be carried out.

After two weeks, the principal and teachers gathered to discuss how to carry out student learning activities. They agreed to form study groups at the refugee camps where a team of teachers would bring in each study group. No matter how many students were present at the post and whoever was in it, they would be invited to study, regardless of which elementary school they came from. The principal then made a schedule for the teacher team at the assigned post. To get learning tools and facilities that were destroyed/damaged by the earthquake, the principal actively sought donations from private networks, in addition to the assistance coordinated by the Education Office. On the other hand, some parents sent their children to families outside the North Lombok district. So the Education Office supported them by providing a cover letter so that the children could be accepted at a public school in a new location.

At first, the focus of the learning activities was trauma healing. They did not use traditional learning materials. Trauma healing was necessary because many children and parents were traumatized and did not want to leave the shelter due to the endless daily earthquakes, so they did not allow their children to study. Many teachers were also traumatized because they lost their houses and belongings too. The trauma healing materials were guided by non-governmental organizations (NGOs) who had expertise in handling such cases. After trauma healing was carried out, the next thing to do was prepare the learning materials. The teachers taught mixed class materials while students from various classes studied together.

Initially, the learning activities were located under the trees in the refugee camp location. However, they could not stay under the tree for long since there was a risk of being crushed by branches due to aftershocks that were still occurring frequently. One month after the earthquake, they received some tents from the national red-cross. After having a tent, learning activities were moved from the refugee camp to a tent school. However, a more appropriate and permanent learning location was needed to focus on learning activities. Approximately on the third month, the Temporary Learning Classroom (RKBS) was ready. With the RKBS, teaching and learning activities could run normally. Many NGOs and Ministries provided support to North Lombok at that time so that North Lombok became the fastest district in handling education after the earthquake. The Regent of North Lombok then received an award related to the speed of handling post-earthquake education from the Governor of West Nusa Tenggara for making all teaching and learning activities could return to normal within three months.

3.2. Covid-19 Pandemic

3.2.1. Pandemic Conditions

When teachers and school principals were organizing the learning process and enjoying the comfort of new school buildings, the COVID-19 pandemic suddenly stroke the whole nation. The pandemic conditions in North Lombok happened according to the central government's announcement in early April 2020. The pandemic was felt more severe than the earthquake because everyone was affected. During the earthquake, lots of aid came from various parties, and people from outside the island came to take care of them. While houses were destroyed and property was lost, there was never a food shortage. There was so much food at that time; it was like sleeping with instant noodles walls and pillows with rice sacks. In the pandemic, everything was complicated. Gili tourism was severely affected, so the economy became tough. Wanting to earn extra money from selling things was difficult because everyone was also struggling economically. It was also impossible to ask the local government for help, knowing that they were also in trouble; fund was limited because they needed to be diverted to handle the pandemic. Local people needed to fend for themselves. They did not know when this pandemic would end.

3.2.2. School Learning Process

Just when adjusting to new school buildings, The Ministry of Education and Culture issued a regulation on 16 March 2020 that they were not allowed to do face-to-face learning and they had to study from home (BDR/*Belajar dari Rumah*). However, BDR was not possible to run due to limited internet access. Not to mention the issue of limited mobile phones where many families only had one mobile and used by working parents so students could not study.

Principals and teachers eventually translated BDR as a home visit. The principal instructed the teachers to go around the village to visit students gathered in certain houses/bale-bale agreed with the parents. The teachers came to deliver teaching materials and distributed the Student Worksheet (LKS). The results of student work were then taken on the next visit while giving assignments and new teaching materials. For students in locations with good internet access, study assignments were given via SMS and then collected during visits. Zoom access was utterly impossible to do. This home visit was successful because the children were not going anywhere during the COVID-19 pandemic. Teachers taught mixed classes because students gathered based on location, not grade levels.

The principal's biggest challenge was how to continue to maintain the spirit of the teachers because making visits required a lot of money and effort. Efforts were being made to divert School Operational Assistance (BOS) funds for visiting purposes. However, since the amount of BOS received was small, the additional costs for teacher visits were not big enough. Currently, face-to-face learning is carried out daily up to 10.30 AM. Students take turns to come to school in each class, except 6-grade students who study normally every day because they are about to take their final exams. The learning process during the pandemic is more complicated than during the earthquake. The curriculum target cannot be completed because the learning duration becomes longer. Children become more challenging to understand teaching materials. So then schools now focus on keeping children willing to continue learning, not on achieving learning targets.

3.3. Reflection on Personal Reasons

3.3.1. Principal's Perspective

After reflecting, the things that made me able to endure are:

- 1) Before serving as principal, I worked as a teacher for quite some time. I loved working as a teacher. I enjoyed teaching in the classroom and meeting the children. There was a great longing to see children be able to learn, and so that I was trying to do whatever it took to be able to see the children continue to learn in a suffering condition after the earthquake.
- 2) I always wanted to become a teacher, for I believed this was a good field of charity. Attending school college became my priority.
- 3) I had immense devotion and discipline as a teacher. Indeed, it was our duty to become teachers under any circumstances.
- 4) My sense of responsibility as a teacher, I felt the need to know the condition of my students after the earthquake occurred; this made me dare to leave the house after the earthquake.
- 5) I was able to regulate emotions in dealing with post-earthquake trauma. Emotionally it was hard, but I thought that instead of being traumatized at home doing nothing, I had better get out of the house to do something.
- 6) My challenging teaching experience in remote areas on the previous assignments encouraged me not to give up quickly in the face of difficulties. I became accustomed to obstacles and challenges.
- 7) My desire kept me learning, for I believe there were many things I still did not know.
- 8) I received appreciation and support from the teachers at my school. They always supported me, and this inspired me to do positive things.

3.3.3 Kepala Bidang (Division Head) Perspective

After reflecting, the things that made me and the schools survive are:

- 1) My ability to encourage myself. I thought that it was my duty to pay attention to how children, teachers, and school assets could be saved after the earthquake.
- 2) Inviting teachers to think together to deal with the obstacles in front of us so that they do not keep thinking about the loss they experienced. Because if that happened, education in North Lombok would not go through any process.
- 3) The active role of the Education Office in moving schools so that they were not complacent and ready to move when a disaster occurred so that under any circumstances, teachers and principals could carry out their duties properly. I also needed to ensure that the school management process ran well so that it would not interfere with students' learning activities.
- 4) There is support from the Regent. Currently, the momentum for education improvement is good because the new Regent cares about education issues. The budget is indeed limited because everything is being used to handle the pandemic, but for 2022 we will focus on developing the quality of teachers through comparative study activities, internships, soft skills, and hard-skills training.

3.3.4. Teacher's Perspective

After reflecting, the things that made me able to endure are:

- 1) A sense of responsibility that it is the duty to be a teacher in any situation. Indeed, this has become my duty because that is all I live.
- 2) There is an attitude of mutual support and mutual encouragement from co-workers.
- 3) We wonder what will happen to our children if we do nothing. There is a great longing for us to see children learning, a strong bond between children and teachers.
- 4) Much attention from outsiders to us during the earthquake motivated me to do something. They just wanted to come all the way to take care of us all; why don't we just keep quiet?
- 5) I would feel ashamed as a local person if outsiders cared and came to help us during the earthquake; why did we as local people stay silent?
- 6) We did not feel alone during the earthquake; even though our house was destroyed, we never ran out of food, we did not worry about what we would eat the other day.

The following are some notes related to specific responses: [1] responses stating that a pandemic event was considered more complicated than an earthquake only appeared in teacher participants and did not appear at all for Principals and Division Head, [2] responses emerged from Division Head were more a lot of things related to things outside of him, because of that the reflections arising were not only about the things that made him survive, but also how to make the schools survive.

The elaboration of events shows that the earthquakes seem more memorable than the pandemics, as it can be seen from the reflection responses that specifically refer to the earthquake moments, not both occurrences or the pandemic moments. On the other hand, the occurrence of the pandemic, although it did not destroy homes and property, was perceived to be more severe than the earthquake. This happened because the earthquake had a massive disturbance intensity in a shorter period, was visible, clearly ended, accompanied by support from many parties. Meanwhile, the intensity of the pandemic is long-term, it is unclear when it will end, the invisible nature of the virus, and no sufficient support from many parties, so it feels like everything has to be faced alone.

In the case of earthquakes, Spoon's et al., (2020) study related to the 2015 Nepal earthquake appears to be in line with the statement above. The study found that apart from the traumatic experiences that occurred, the disaster recovery efforts also provided positive experiences for the well-being of individuals and groups, which aroused from a sense of togetherness as a community present together in harmony, and therefore they felt closer to one another. Likewise, the role of the principal as a leader in North Lombok in this study is seen to be very important in building this togetherness. Yukl (2003) stated that transformative leadership, in this case, carried out by school principals, would empower teachers to perform effectively by building their trust, creating a conducive climate for the development of innovation and creativity.

In the pandemic, Godinic's et al., (2020) literature review seems to explain the above statement. The study concludes that economic uncertainty in the pandemic will result in job uncertainty, resulting in identity disturbances, namely conditions that are not in harmony with one's identity with the new reality that emerges, which will then reduce psychological well-being. Unfortunately, not everyone understands how to deal with (coping strategies) uncertainty during this pandemic, which can potentially produce mental health disorders during the pandemic (Rettie & Daniels, 2020). The Indonesian Mental Medicine Specialist Association (PDSKJI) survey dated 14 May 2020 supported this view. Their data stated that of 2,364 participants from all over Indonesia, 77% experienced psychological trauma, 69% experienced psychological problems, 68% experienced anxiety, and 67% experienced depression during the pandemic. Of those who were depressed, 49% even thought about the death.

The elaboration of resilience shows that the resilience of teachers and principals appears to be built as a process through concrete action that the Education Office and principals facilitate to respond to challenges in a situation. It appears that concrete actions, management coordination processes, and choices of actions appropriate to the context of the situation are essential factors in building the resilience of teachers and principals. This is in line with the study of Sun & Stewart (2007), which states that resilience needs to be seen as a process built through interactions between individuals, the social environment, and the wider community. Ungar's study (2004) also states that resilience needs to be seen as a social construction influenced by many multidimensional factors that each has its uniqueness. Furthermore, Ungar (2008) states that resilience is a dynamic interplay between individuals and their resources. Wherein the context of adversity, resilience is the individual's capacity to navigate in order to respond to psychological resources, social, cultural, and physical resources that exist for their well-being, as well as the capacity to individually and collectively negotiate together to ensure that these resources are present and shared following the context of the existing situation and culture.

The elaboration of reflection and personal reasons shows that the ability to find personal meaning from what is done seems to be an essential factor in building individual resilience of teachers and principals (who in this study are principals who used to be teachers). This is in line with Hansen's 1995 study in Gu (2018), which states that teacher resilience is related to one's strength and belief in one's vocational commitment as a teacher, where a sense of calling (inner calling) to become a teacher and a commitment to serving is a differentiator for the teaching profession if compared to other professions and occupations. Furthermore, Brunetti 2006, in Gu (2018) defines teacher resilience as a quality that allows teachers to maintain their commitment to teaching and doing other things related to teaching, apart from the challenges and obstacles that arise repeatedly (a quality that enables teachers to maintain their commitment to teaching and teaching practices despite challenging conditions and recurring setbacks). If it is related to the point of resilience as a process (Gu, 2018), then it states that the resilience of teachers is specific and contextual - not only influenced by the context and situation of the school where teaching and classes are faced, but also the broader context and professional situation in which they live. The context of this research is how the policies and treatment of structural officials from the Education Office to teachers.

This research should be seen as an initial effort to understand the dynamics of building resilience in the context of education in a prolonged disaster situation, where resilience is seen from the separate realm of teachers and school principals as individuals, as well as the social domain of teachers and principals as part of the school organization. There are several limitations of this study, including: [1] the limited number of participants: only two elementary school principals from the same district, [2] did not involve students and parents as beneficiaries of education, and [3] a list of questions has not differentiated between individual resilience and group resilience. With the availability of a longer time, this limitation can be corrected through the following: [1] increasing the number and expanding the levels of schools involved, by including junior and senior high schools, so that the analysis can include education level variables, [2] expanding the research area to districts in North Lombok Regency, so that the analysis can include location variables, [3] separate the constructs of individual resilience from group resilience, so that the mapped dynamics become richer, [4] add other constructs, such as transformational leadership so that the analysis becomes more affluent, and [5] strengthen the research design, such as using a qualitative grounded theory approach, or making it a mixed method.

Regarding the implications, seeing resilience as a process also means that resilience can be built based on a conscious effort designed in a structured manner. From the answers of research participants, it appeared that they

felt a more significant challenge in the pandemic when compared to the occurrence of the earthquake. In response to this, the local government of the North Lombok Regency or the West Nusa Tenggara Province through the related offices may consider strengthening the resilience of teachers and school principals so that they will be able to carry out their roles optimally during this pandemic. Efforts to strengthen resilience can be in individual training programs accompanied by community assistance, with participants involving various relevant stakeholders in the community.

4. Discussion

Resilience as a process seems to embed to an event. Thus, efforts to build resilience must align with the existing context and situation while paying attention to various resources at the individual, organizational, or community level. Moreover, efforts to build resilience need to consider the diversity of perspectives regarding how individuals, organizations, or communities understand and respond to situations and events. At the individual level, inviting individuals to seek personal meaning for what they do has a vital role in building resilience.

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Primary School Teachers and Students' Opinions of the First-Grade Mathematics Curriculum in a Turkish Context

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Abstract

This research was carried out to determine the opinions of teachers and students in-depth regarding the primary-school first-grade mathematics curriculum in a Turkish context. This study was designed in accordance with a mixed research method to achieve this goal and to examine the situation that emerged during the implementation of a curriculum. The data collection tools were the "Mathematics Curriculum Evaluation Scale," semi-structured teacher and student interviews, and an observation form. The thoughts of teachers and students regarding the primary school mathematics curriculum were determined in-depth, and the situations that emerged during the implementation of the program were examined. The research population comprised first-grade teachers working in primary schools in central districts of Turkey. Descriptive statistics and content analyses were used for the data analysis. Based on the results, it was concluded that the general structure and objective of the mathematics curriculum were sufficient.

Keywords: Mathematics Curriculum, Curriculum Evaluation, Primary School, First Grade Mathematics Course

1. Introduction

1.1 Introduce the Problem

Mathematics educators point out the importance of mathematical learning based on daily activities that help students manage and make sense of not only school mathematics, but also other areas of their lives (Padilla & Tan, 2019). To understand daily life in a critical and creative manner, students tend to use mathematics and imagine a better world (Atweh & Goos, 2011; Land et al., 2019; Lew, 2019; Wood, 1998). Thus, mathematics lessons take place at every level from primary school to higher education. In primary school, students experience rapid physical, mental, and social development. Thus, the mathematics curriculum should be carefully prepared and implemented for effective mathematics education and to realize the desired levels of learning (Kelley, Hosp & Howell, 2008; Schoenfeld, 2006).

Changes in mathematics curricula occurred worldwide in the 1980s (Christou, Eliophotou-Menon & Philippou, 2004; Senger, 1998; Slavin & Lake, 2008), and the National Council of Teachers of Mathematics (2000) guided reform movements in mathematics education all over the world (Van De Walle, Karp & Bay-Williams, 2010). In this context, local and national reform studies have been initiated in line with research findings, and new research has been done on learning and teaching theories in many countries (Lyakhova, Joubert, Capraro & Capraro, 2019; Kelley, et al., 2008; Schoenfeld, 2006; Steenbrugge & Ryve, 2018).

Some of these reform efforts focus on developing a new curriculum, while others focus on teacher education or mathematics textbooks (Bhatt & Koedel, 2012; Christou, et al., 2004). Boughey (2018) states that the restructuring of the curriculum offers the opportunity to make a real difference in the chances of national and international success for students. Lyakhova et al. (2019) stated that the reason for the reform studies carried out on mathematics courses was the inadequate performance of students on mathematics exams such as the TIMSS and PISA exams.

In the UK, a student-centered approach has been adopted for the mathematics curriculum since the 1960s. With the implementation of a national curriculum in the late 1980s, an approach was adopted in which conceptual learning in mathematics and students' mathematical skills and competencies are developed under the guidance of teachers (Chambers, 2008). In the United States, with the work of the National Mathematics Teachers Association, student-centered approaches and processes that emphasize problem-solving skills have been included in mathematics curricula (Reys, 2014). This is of great importance in terms of informing not only the content but also the learning and teaching methods (Ferrerias, Kessel & Kim, 2015; Kilpatrick, 2014; Remillard & Reinke, 2017).

Many countries emphasize curricula that emphasize mathematical modeling, problem-solving, communication, argumentation, and multiple representation skills, especially in recent curriculum studies in the United States and Europe. In addition, emphasis is being placed on infrastructure networks that enable the use of advanced digital technologies and studies that improve the high-level thinking skills of students (Fidel & Oteiza, 2018; Kilpatrick, 2014; Remillard & Reinke, 2017; Reston, 2018; Reys, 2014).

Great importance is attached to education and training policies in Turkey. Especially in recent years, it has been ensured that educational infrastructures are reinterpreted according to scientific and technological changes, and various seminars, in-service training activities, and perspectives have been developed in the context of a continuously updated teaching curriculum (MoNE, 2018). In evaluating the mathematics curriculum, the aim is to provide information about students' understanding of mathematics and their strengths and weaknesses. From this point of view, evaluation of the mathematics curriculum also plays an important role in the defining ways used by students in improving their mathematics learning and expressing how they learn mathematics. The data reveal what goals should be determined for effective mathematics teaching while giving tips about the regulation of effective educational situations at the same time (Yang, Kaiser, König & Blömeke, 2019).

Teachers have the greatest responsibility for the success of the reforms in mathematics curriculum (NCTM, 2000; Senger, 1998; Shuilleabbin & Seery, 2017). In the 2018 curriculum, teachers were expected to pay attention to students' individual differences, learning styles, and strategies, to use concrete materials as much as possible, to make connections with other lessons, and to include games. In addition, the program emphasized that students should internalize mathematical concepts, and new learning should be built on previous learning. The program also emphasized the importance of strengthening the communication skills of students and enabling them to reflect on the thinking process (MoNE, 2018).

In this sense, for the curriculum to be implemented successfully, constant interaction and harmony are required between the written program and the program in practice (Earnest & Amador, 2019). In this study, it was thought to be necessary to meet teachers who are direct practitioners of the program and to obtain information from them about the implementation process. In this context, it is possible for the institutions responsible for program development to take necessary precautions by determining what problems teachers face in practice (Cavanagh, 2006; Spillane & Zeuli, 1999).

There are various studies on the evaluation of mathematics curricula (Bidabadi, Esfahani, Jafari & Abedi, 2019; Clements & Sarama, 2008; Dole, Carmichael, Thiele, Simpson & O'Toole, 2018; Fonger, Stephens, Blanton, Isler, Knuth & Gardiner, 2018; Glencross & Oliver, 1994; Kelley, et al., 2008; Koedel, Li, Polikoff, Hadaway & Wrabeli, 2017; Lyakhova, Joubert, Capraro & Capraro, 2019; Mchugh, 2011; Ma, Lam & Wong, 2006; Norton, Ballinger & Ash, 2016; Valenzuela, 2018; Wheeler & Bray, 2017). For example, Glencross and Oliver (1994) examined the mathematics curriculum for elementary schools in line with the opinions of teachers. They found that teachers think the curriculum is intense, that they need different teaching approaches, and that they want to do their lessons with enriched activities. Similarly Ma, Lam, and Wong (2006) examined the mathematics education programs applied in two primary schools: one in a rural area and one in an urban area. They found that teachers working in the urban area had a tendency to give more difficult math problems to their students since they prepared them for competitions like the National Mathematics Olympics. The study concluded that the beliefs of teachers shape their tendencies and abilities in the adaptation and differentiation of their professional knowledge and skills.

Clements and Sarama (2008) evaluated the effects of a research-based pre-school mathematics curriculum. They found that the math scores of students in the experimental group increased more than in the control group. Bidabadi et al. (2019) carried out a study on a preschool mathematics curriculum and applied a program based on mathematical competencies to an experimental group. They also applied traditional textbooks and teaching based on worksheets in a control group. They concluded that the mathematical competencies improved in students in the experimental group due to the applied mathematics curriculum. Mchugh (2011) evaluated the academic effectiveness of a mathematics curriculum developed with a developmental approach through the Context, Input, Process, Product (CIPP) model. The results suggested that students should be educated in an appropriate class according to their exam scores.

Bhatt and Koedel (2012) compared the effectiveness of three different secondary-school mathematics curricula. They concluded that the traditional programs were used more effectively. Kelley et al. (2008) found that students had low mathematics achievement, the quality of teachers was insufficient, and there was inconsistency between the teaching process and mathematics curriculum. They found that this problem could be solved by curriculum-based evaluation and curriculum-based measurements. Kaur et al. (2018) found that the gap between the formal curriculum and the curriculum implemented should be revealed as a result of studies in which they examined how teachers applied a mathematics curriculum in secondary schools in Singapore.

A limited number of studies have evaluated primary-school mathematics curricula (Cetin, 2010; Dent & Mcchesney, 2016; Kilinc & Anilan, 2019). Cetin (2010) evaluated a primary-school mathematics curriculum based on the opinions of teachers. He found that there were no arrangements that take into account individual learning differences, the program increased the workloads of teachers, the mathematics hours were insufficient, materials were inadequate, and the program was not compatible with crowded class sizes.

Dent and Mcchesney (2016) studied an elementary-school mathematics curriculum and came to the conclusion that field expertise is important in mathematics classes and that the problems experienced in the teaching process can be solved with more professional solutions such as field expertise. Kilinc and Anilan (2019) aimed to determine the opinions of teachers about a primary-school mathematics curriculum and compared them according to determined variables. They found that first-class teachers working in public schools considered the new mathematics curriculum to be positive, but they encountered some difficulties during the application process.

As demonstrated, there are various studies that include different grade levels for the evaluation of mathematics curricula in general. However, there are very few studies on the evaluation of first-grade mathematics curricula in primary schools, and these studies generally focus on the opinions of teachers. Therefore, this study aims to determine the opinions of both teachers and students in relation to a primary-school first-grade mathematics curriculum that has been implemented in Turkey since the 2018-2019 academic year. The results could provide important clues for the implementation and updating of the curriculum. The curriculum has not been evaluated previously, which increases the importance of the study.

It is also important to determine the opinions of teachers and students who are the implementers of the curriculum and the problems that they experience with it, as well as to provide information and suggestions about the program to decision-makers. Based on these facts, the sub-objectives of the research are as follows:

- (1) What are the opinions of teachers according to their scores on the Mathematics Curriculum Evaluation Scale (MCES)?
- (2) What are the general opinions of teachers about the mathematics curriculum?
- (3) What in-class application situations do teachers face in mathematics lessons?
- (4) What are the general opinions of students about the mathematics curriculum?

2. Method

This study was designed in accordance with a mixed-research method. The thoughts of teachers and students regarding the primary school mathematics curriculum were determined in-depth, and the situations that emerged during the implementation of the program were examined. To collect quantitative and qualitative data, a descriptive sequential pattern was adopted as one mixed research method. The descriptive sequential pattern method starts with a quantitative stage, followed by a search for special results in the second stage (Creswell & Plano Clark, 2014).

2.1 Population and Sampling

The research population comprised first-grade teachers working in primary schools in central districts of Turkey. For the quantitative part of the research, a cluster sample method was used to select 294 teachers in 40 primary schools. In cluster sampling, groups rather than individuals are randomly selected. All the members of the selected groups have similar characteristics (Mills & Gay, 2019). The regions of the schools where teachers worked were taken as a cluster. Accordingly, teachers working in three regions in low, middle, and high-level socio-economic environments constituted the sample of the study.

The demographic characteristics of the teachers were examined, and 56.8% of them were female, while 43.2% were male teachers. Furthermore, 81% of the teachers had a graduate education, 10.5% had an associate degree, and 8.5% had postgraduate education. In terms of professional experience, 48.3% of the teachers had 21 years or more, 27.9% of them had 16-20 years, 17.3% of them had 11-15 years, and 6.5% of them had 0-10 years. The class size of 47.3% of the teachers was 30 students or fewer, and 52.7% of them had 31 or more students.

The majority of the teachers (83%) had taught the first grade more than four times. The percentages of teachers working at lower (34%), middle (33%), and upper (33%) socioeconomic levels were close to each other in terms of total scores. For the qualitative dimension of the study, nine teachers and 18 students were chosen using the criterion sampling method. The criterion sampling method implies that all cases meet some criterion and is useful for quality assurance. The nine teachers selected met the criteria of having at least 15 years of experience and having taught the first grade at least two times. The qualitative data group consisted of six female and three male teachers. Five of the teachers had a graduate education, two had an MA degree, and the other two had an associate degree.

In the selection of the students, two students from each class (one female and one male) from the classes of the teachers interviewed were included in the study while taking into account their success and gender. Accordingly, 18 students comprising 9 females and 9 males with low and high achievement status were interviewed. In the observation dimension of the study, a teacher with the highest degree (MA) among nine teachers was interviewed within the scope of the qualitative dimension. This teacher was randomly determined, and observations were made in the teacher's classroom.

2.2 Data Collection Tool

The data collection tools were the MCES, semi-structured interviews with teachers and students, and an observation form. The MCES scale consists of 21 items that are rated on a five-point Likert scale. We examined

the construct validity of the scale using an exploratory factor analysis, and the total variance explained by the scale consisting of five sub-factors was 73.965%.

The sub-factors are the general structure, objective (purpose, goal, and acquisition), content (subject to be studied), evaluation, and presentation of the content (visual materials, figure, diagram, and table). It was concluded that the model with 21 items and five sub-factor scales was an acceptable model according to all the fit index values obtained after the confirmatory factor analysis ($\chi^2/df= 2.98$, GFI= 0.80, AGFI= 0.75, RMSEA= 0.097, RMR= 0.013, SRMR= 0.013, CFI= 0.92, NNFI= 0.91, NFI= 0.90, and PGFI= 0.62). Cronbach's alpha coefficients were used to determine the scale's reliability. The internal consistency coefficient obtained for the entire scale was 0.94.

For the semi-structured interview and observation form, the relevant literature was examined, and interview questions were prepared. For the interview questions, expert opinions were obtained from seven faculty members, including three specialists in classroom education and four in education programs and teaching. Using feedback and suggestions from the expert opinions, the interview questions were rearranged, and the form was finalized by applying a pilot application with a teacher. All these processes were used to test the comprehensibility, content validity, and language validity of the prepared form. In the semi-structured teacher interview form, there are nine questions for the primary-school first-grade mathematics curriculum.

The questions in the semi-structured interview form include questions about the general opinions regarding mathematics curriculum, applicability status, objectives, content, teaching-learning process, and evaluation situations. The interview form prepared for the students consists of three questions related to the general views of the students about the mathematics lesson, the studies carried out in the learning process, and the students' opinions about the assessment process in the classroom.

Six dimensions were determined for the observation form according to the elements of the curriculum. The five-hour pre-application results for the observation form were presented to the opinions of two experts in the field of education programs and one expert in mathematics education, and the observation form was finalized by making corrections. The following dimensions were included in the form: class description, materials, methods/techniques used in lessons, teaching/learning process activities, evaluation activities, and course completion activities.

2.3 Collection of Data

Nine teachers were interviewed to explain the quantitative data and analysis results in more detail. Before the interviews, teachers were given a voluntary participation and asked to read and sign them. The interviews lasted for about 25 to 35 minutes. The interviews with the students took between 5 and 10 minutes. After each interview, audio recordings or notes were entered into a computer and reviewed.

During the interview process, observations were also made for one month (20 lesson hours) in the classroom of a volunteer teacher. The researcher first contacted the teacher and observed only the lessons without taking any notes in the first week. The researcher followed the lessons by sitting in the back row so as not to spoil the naturalness of the environment. In this context, 25 hours of observations were made. However, the observation notes in the classroom started from the second week. For this reason, observation notes were kept in the course of 20 lessons and used in the study.

2.4 Analysis of Data

Quantitative data were analysed using the statistical software package SPSS 22.0. Descriptive statistics were used to evaluate the demographic characteristics of the teachers. To determine whether the data obtained from the scale show a normal distribution, the skewness and kurtosis were calculated as -0.535 and 0.296, respectively. The values were between -1.5 and 1.5, and it was concluded that they fit a normal distribution (Tabachnick & Fidell,

2013). Answers were obtained with a five-point Likert-type scale that was rated as "totally agree" (5-4.20), "agree" (4.19-3.40), "slightly agree" (3.39-2.60) "disagree" (2.59-1.80), and "not at all" (1.79-1.00).

Content analysis was used for the analysis of qualitative data. In the process of coding the interviews and observation data, the compatibility between the two coders was examined and calculated as 0.85, 0.87, and 0.92 (Miles & Huberman, 1994). Teachers were coded as T1 through T9, students were coded as S1 through S18, and classroom observation notes were coded as O1 through O20.

To increase the validity and reliability of the research, some precautions were taken throughout the study. While developing the semi-structured interview form, to increase the internal validity of the research, a conceptual framework related to the subject was established with a related literature review. Based on this conceptual framework, expert opinions were obtained from the interview forms.

During the application of the scale, teachers were interviewed at the second stage and informed about the purpose of the interviews, and mutual trust was established with the volunteers. Approval of the teachers was obtained with a voluntary participation form, in which the purpose of the research was specified in detail. In this way, we tried to reveal the real views of the data collected in the interview process regarding the situations of the participants.

To describe the external validity (transferability) of the study, the process of data collection and analysis is described in detail. The semi-structured interview findings are supported by direct quotations. All the findings are presented directly in accordance with their nature without any comment.

To increase the internal reliability (consistency) of the research, data diversification was attempted when conflicting participant opinions were directly given. A mathematics teacher with an MA degree who took a qualitative research course on the data from the interviews was also asked to encode the sample datasets, and two faculty members who are experienced in qualitative research made examinations. They mutually discussed whether the direct quotations reflected the situation, and they tried to reach a common decision. To increase the external reliability (confirmability) of the research, the researcher explained the operations performed throughout the process in detail. In addition, the raw data were stored by the researcher both digitally and as hard copies so that they could be examined by others.

3. Results

According to the first sub-purpose of the research, the arithmetic mean and standard deviation of the total cores, overall structure, objective, content, presentation of the content, and evaluation subscale of the MCES.

Table 1: Arithmetic mean and standard deviation values of MCES scores of teachers

Dimension	N	\bar{x}	Ss
Overall structure	294	3.47	.81
Objective	294	3.44	.76
Content	294	2.97	.83
Presentation of the content	294	3.53	.78
Evaluation	294	2.93	.90
Total	294	3.27	.64

It can be said that the teachers participated in the presentation of content, general structure, and acquisition dimensions of the content of the mathematics curriculum. They were able to apply it and had positive opinions, but they agreed little in terms of content and evaluation and had difficulty in implementation. The overall sum of the MCES was also at the level of "I agree a little."

According to the second sub-purpose of the research, the data from the opinions of the teachers regarding the mathematics curriculum.

Table 2: Frequency distribution of teacher opinions regarding the dimensions of the mathematics curriculum

Theme	Category	Code	F
Objectives	Positive opinions	Open/understandable	9
		Suitable for level of development of students	5
		Achievable	5
	Negative opinions	Consistent with each other	5
		Partially consistent with each other	4
		Not suitable for level of development of students	4
		Realization depends on environmental conditions	3
		Realization depends on equipment of teacher	1
Content	Positive opinions	Can be associated with daily life	6
		Suitable for student level	6
		Suitable for objectives	5
		Balance and integrity in the distribution of units and topics	5
		No balance and integrity in the distribution of units and topics	4
	Negative opinions	Partially suitable for objectives	4
		Partially associated with daily life	3
		Not suitable for student level	3
		No subject repetition	3
		Insufficient in acquiring mathematical skills	1
		More number of units	1
Teaching-learning Process	Activities	Inadequate activities	9
		Some activities are not suitable for environment	1
	Materials	Inadequate materials	8
		Creating materials depends on ability of teacher	6
		Sufficient materials	1
	Physical environment	No materials suitable for level of students	1
		Class sizes are too high	6
		Inadequate classroom lighting	1
	Time	Insufficient time	5
		Sufficient time	4
		Imbalances in distribution of recommended times	3
	Instruction methods and Techniques	Using student-centred methods and techniques	3
		Using teacher-centred methods and techniques	1
Evaluation	Measurement and evaluation materials	Few in number	9
		Insufficient in measuring objectives	6
		Low usefulness	4
		Insufficient in measuring the process	1

The results are divided into themes, categories, and codes. The opinions of the teachers regarding the objective theme can be examined under two categories: positive and negative. When the positive opinions of the teachers regarding the achievements were examined, the achievements were clear and understandable, appropriate to the level of development of the students, achievable, and consistent with each other. However, teachers who had a negative view of the objective dimension stated that the achievements are partially consistent with each other, they are not suitable for the level of development of the students, and their realization depends on the environmental conditions and the teacher.

As a second theme, the views of the teachers on the content dimension of the mathematics curriculum were also collected in two categories: positive and negative. The teachers who gave positive opinions stated that the content could be associated with daily life, it is suitable for the level of the students, and the gains and the distribution of units and subjects are in balance and have integrity. On the other hand, teachers with a negative opinion stated that there is no balance and integrity in the distribution of units and topics, the curriculum is partly suitable for

achievements, it is partly related to daily life, it is not suitable for the student level, and there is no repetition of the subject. In this context, T7 stated, "In terms of balance and integrity in the distribution of units and topics, I think there should be more topics for addition and subtraction."

As a third theme, the opinions of teachers regarding the learning-teaching process are included in the categories of activities, equipment, physical environment, duration, and teaching methods and techniques. Most of the teachers stated that they thought that the activities and equipment were not sufficient. Regarding this subject, T1 expressed, "We have no geometric shapes. We don't have a board, we don't have math teams." In the physical environment category, six teachers thought that the class sizes were very high. One of the teachers with this view, T4, said, "There are imbalances between the classes in terms of learning environment."

Five teachers thought that the duration was insufficient. In this context, teacher T3 expressed, "In terms of time, it is not enough. There is not enough activity to grasp a subject, and there is not enough time for the student to get up to the board and handle the examples on the subject." Finally, in the teaching-methods and techniques category, three of the teachers stated that they used student-centred methods, and one teacher used teacher-based methods. T9 stated, "In terms of methods, we mostly use digital media. Digital platforms offer us opportunities to challenge and develop our creativity. I try to create a student-centred environment by making use of audio-visual and tactile materials besides the book."

As the last theme, the participant teachers stated that the number of measurement-evaluation materials was low, the gains were insufficiently measured, and in the opinions of the teachers, their usefulness was weak, and they were insufficient in measuring the process. T8 said, "Assessment and evaluation materials are not enough. There should be at least five questions about a topic. In other words, a child should see a geometry question from the bottom up, top to bottom, see it from left to right. A question must also be created by the child. The child must create the solution of the problem by himself but by taking advantage of examples...."

Within the scope of the third sub-purpose of the research, in-class application situations for a mathematics course were observed. The following general characteristics of the class were observed. The classroom is approximately 50 m², looks clean and tidy, and has a tile floor. In the classroom, there are iron railings on the windows, and there is a burgundy background curtain and a blue, green, red spotted curtain on a white background. The walls of the classroom are painted in cream color.

There is a pink cover on the teacher's desk, while the students' desks have the same color and fabric as the classroom curtain. There is a projector, computer, and sound system in the classroom, and there are two lockers. There are panels that are prepared for different purposes in various parts of the classroom. Students generally seem neat and tidy, and it was observed that they all come to school in school uniforms. The researchers observed that the socio-economic levels of the students in the classroom were generally at a medium level.

The class observed consisted of 40 students. The large class size is a negative situation for the curriculum, which supports the active participation of students in the learning process. The teacher provides classroom management and sometimes has difficulty in attracting the attention of all students to the lesson. The observed teacher stated, "The classroom has 40 people. There is humming. The teacher has difficulty in mastering the classroom and getting the class to do whatever he wants..." (Observation Note: O1).

This situation is reflected in the students as well, and the students complained that they could not speak much. An observed student asked, "Teacher, have you never given me a voice in this lesson?" (Observation Note: O7). There were students at different levels with different comprehension and comprehension rates. When some students have difficulty in grasping the subject, the teacher repeats the subject and goes to the students who have difficulty understanding it, while other students talk to each other or deal with those around them.

Although the teacher occasionally warns them, this situation tends to continue due to the high class size. In this context, the researchers observed, "It was seen that the students who finished the activity quickly turned to other places and talked to each other. The teacher warned these students, but the students continue to talk among themselves" (Observation Note: O3).

On the other hand, a positive psychological environment was observed in the classroom. The students seem very enthusiastic in the lesson, and the teacher has a stimulating role for the students. The teacher seems very sensitive and uses an approach that takes into account the students' interests, wishes, and needs account. In addition, the majority of the students seem happy and excited in the math class. In this context, the researchers observed, "The teacher attends the lesson very graciously. It sounds cheerful and lively. It was observed that the students also came to the lesson ready. All of them have their notebook and pen on the desk." (Observation Note: O2).

In addition, the teacher uses a language that encourages communication with the students, encourages the students to participate in the lesson, and occasionally uses non-verbal communication. When the teacher starts the lesson in the observed classroom, she generally tends to remind students of the previous day and tries to explain what the subject will be dealing with, to come to the class with the appropriate material within the scope of the lesson, and to inform the students about the objectives of the lesson. In this context, the observed teacher emphasized, "Children will learn to read a calendar today. You know, they took your photos in kindergarten. There was something under those photos. Anybody remember? ... Yes, there was a calendar under those photos. Today, we will learn how we read a calendar and how we look at the date from a calendar." (Observation Note: O15).

In the observed classroom, the teacher came prepared for the lesson by paying attention to the working order in the textbook and the curriculum in the mathematics lesson, prepared a daily plan, adhered to the target and the subject, and also included different activities that were not in the textbook in the learning process. In addition, it was observed that students enjoyed drawing, painting, and cutting and pasting activities in the classroom, which each student focused on: "The teacher distributed coloured worksheets about money to students. The students cut out the money from this paper around their cutting points, pasted them into their notebooks, and pasted numbers that showed how many lira they were equal to" (Observation Note: O14).

It is seen that the students always keep their own tools and equipment (textbooks, notebooks, pencils, erasers, play dough, counting sticks, etc.). In addition, it was observed that the teacher used mathematical materials created by herself in the classroom, and there were materials belonging to mathematics lessons and other lessons in various parts of the class. This situation was observed to increase the active participation of the students in the lesson during the learning-teaching process. In line with the understanding of the curriculum, this situation facilitated mental transitions from concrete to abstract in concept development, supported the development of students' mathematical process, affective, and psychomotor skills, and increased students' active participation in the lesson in the learning-teaching process. In this context, researchers noted, "The teacher came to the classroom today with the material she prepared to teach the addition process to the students. She hung the material in front of the class board... She first explained how the material was used." (Observation Note: O2).

When we look at the technological possibilities of the classroom, there is a computer, sound system, and projection device in the classroom. The teacher tries to use these technological opportunities effectively. From time to time, the teacher shows videos appropriate to the subject, plays songs, and shows presentations. In these cases, it was observed that students were more interested in the lesson. In this context, the researchers noted, "The teacher came to the class with his computer. While he was connecting the computer to the projector, he reminded his students what they did in the lesson last week. He opened a presentation on the concept of whole-half in fractions." (Observation Note: O13).

The teacher constantly takes advantage of daily life while processing the subjects and tries to embody them. Concretization of the subject in accordance with the development age of the students is also suitable for the understanding of the teaching program. In addition, it was observed that the students were more eager, interested, and active to participate in the lesson in this way. In this context, researchers noted, "The subject of money is covered. Each student brought an item from home. A doll, toy car, umbrella, ball, tablet... The teacher set up a market in the classroom. She wrote the prices on the items... There is magnetic money on the panel next to the writing board. The students come to the market place by taking the floor and specifying which product to buy. Then, by looking at the price on it, they remove the magnetized money on the side panel, give it to the teacher, and purchase the item... We will do lots of shopping today" (Observation Note: O9).

In the observed classroom, it was seen that the teacher constantly wandered the rows to check what was learned, examined what the students did, verbally reinforced the students who did the correct things, and corrected the mistakes of students who made them. "The teacher noted down the students with missing learning on her agenda and said she would check them on Monday" (Observation Note: O7).

It was also observed that the teacher used worksheets composed of open-ended questions that he prepared mostly as a measuring tool in the classroom where the teacher was observed and used the textbook very little during this process. In this context, the researchers noted, "The teacher preferred to use an activity paper on the subject as a measurement tool." (Observation Note: O1).

Finally, when we look at the teacher's end-of-course activities, the teacher repeats the topic covered in the last five minutes and summarizes it. The teacher also talks about what will be done tomorrow. However, he cannot do this in every lesson, and when he comes to this part, the exit bell usually rings. In this context, the teacher observed said, "The children can go to recess. We will continue in the next lesson." (Observation Note: O4).

The researchers also observed that the students also had problems regarding the duration. In this context, the researchers noted, "It was observed that some students did not go to recess of their own accord so they could finish the activities, even though the recess bell was ringing and the teacher said that they could go to the recess." (Observation Note: O12).

Table 3: Frequency distribution of students' opinions regarding the dimensions of the mathematics curriculum

Theme	Category	Code	F	
General opinion	Cognitive	Addition-subtraction learning	12	
		Learning to count numbers	8	
		Problem-solving	8	
		Learning time	5	
		Learning money	3	
		Learning fraction (half-whole)	2	
	Affective	Happy	14	
		Excited	5	
		Bored	1	
		Associating with daily life	Using in shopping	7
Teaching-learning Process	Activities	Knowing time	3	
		Using while playing	2	
		Drawing and painting activities	10	
		Cut-and-paste activities	9	
		Addition and subtraction operations	4	
		Doing counting exercises	3	
	Setting up a market and shopping in the classroom	2		
	Problem-solving	1		
	Evaluation	Feedback	Teacher checking homework	13
			The teacher looks at the student's gestures	2
Teacher not checking homework			2	
Problems	Teacher oriented	Writing a lot in the lesson	4	
		The inability of students to actively participate in the class	2	
		Inability of the teacher to take care of one on one	1	
	Content oriented	Too much homework	1	
		Having trouble learning the concept of time	4	

The results of the interviews with the students for the fourth and last sub-purpose of the study are shown in Table 3. Accordingly, the interview data with the students fall under five main themes: general opinion, teaching-learning process, evaluation, problems, and suggestions. Accordingly, students in the cognitive category of the general opinion theme mostly learned that they learned addition and subtraction, counting, and problem solving. In the affective category, they stated that they were happy and excited in the lesson, and in the category of associating with daily life, they used the content for shopping in daily life. In this context, the student coded S5 stated, "... we learned to add first. Then we learned to subtract. I knew some addition. The teacher was asking us about it. I am not very happy because I answered quickly."

In the activity category of the learning-teaching theme, students stated that they mostly performed activities for drawing and painting, cutting and pasting, and adding and subtracting. In this context, student S11 explained, "We are painting in the mathematics lesson. Our teacher gives points. We paint and glue them." In the feedback correction category of the evaluation theme, the students stated that the teacher mostly checked their homework. In this context, student S12 stated, "We finish the homework, and we show it to the teacher. The teacher looks at it and sees if we did it wrongly or did we do it right?"

In the theme of problems, students stated that they encountered some problems regarding the teacher, content, and activity. Accordingly, regarding the teacher, the students mostly wrote that they could not participate in the lesson actively. They stated that they had problems in learning the concept of time for content. In this context, student S4 stated, "For example, 'what are you doing at nine o'clock?' 'What are you doing at ten o'clock?' He was asking questions like that. I have a little difficulty answering these."

In the last theme, suggestions, the students mostly made suggestions about increasing the number of activities that are interesting and suitable for the level. In this direction, student S5 stated, "We are doing subtraction in mathematics. I think more subtraction should be done. Addition operations should be both colourful and puzzle-like." Regarding the course materials that can be used in the classroom, student S2 stated, "If there were a television in the classroom, I would like to connect to the internet and watch videos about mathematics."

4. Discussion

This research was carried out to determine the opinions of teachers and students in-depth regarding the primary-school first-grade mathematics curriculum that has been used. In this context, it was first concluded that the teachers participated in the items in the mathematics curriculum scale at an intermediate level. This result shows similarity to other studies (Aslan, 2016; Cetin, 2010). It was concluded that the opinions of the teachers regarding the "objective" dimension of the mathematics curriculum are positive. This result overlaps with the interviews and observation results.

When similar studies are examined, it is seen that the opinions of the teachers about the achievements dimension of the programs are compatible with the findings of the study (Al-Shanawani, 2019; Aslan, 2016). On the other hand, it was also concluded that the opinions of the teachers regarding the content dimension of the program are at a medium level. This result is similar to the results of the interviews with teachers. The teachers stated that the content could be associated with daily life, it is suitable for the student level and objective, and there is balance and integrity in the distribution of units and topics.

In the student dimension, it was concluded that the subjects included in the mathematics lesson were learned and can be associated with daily life. Conclusions similar to this finding were achieved through classroom observations. These findings are similar to one of the general objectives of the 2018 mathematics curriculum (MoNE, 2018), which states that the curriculum should be arranged in a way that students can understand and use it in daily life. Again, studies supporting these findings can be seen in the related literature (Al-Shanawani, 2019; Valenzuela 2018).

Another important finding is that the teachers had more negative views about the learning-teaching process. Most of the teachers think that the activities are insufficient. Similarly, the students who participated in the study emphasized that the number of activities was low, and the activity levels were not suitable for their success levels.

Furthermore, in the classroom, it was observed that teachers frequently use additional activities in the process. In this sense, it can be said that the current activities are inadequate for students to comprehend the subject effectively, and there is also a lack of tools and materials in schools.

This finding is similar to those of other studies (Fuentes & Ma, 2018; Glencross & Oliver, 1994; Kelley, et al., 2008; Kose, 2011; Ocak & Tepe, 2019; Temli Durmus, 2016; Koedel et al., 2017). Fuentes and Ma (2018) also showed that teachers should be encouraged in the context of using and evaluating the educational features of the materials used in the mathematics education program to use them more effectively in the classroom. As a result of studies on the effect of mathematics education programs on student achievement, Koedel et al. (2017) reached the conclusion that the use of materials in future research may vary according to the grade level.

According to the qualitative findings of the research, teachers stated that the classes were too crowded for the physical environment. Students stated that they could not actively participate in the lesson because of the crowded class, and teachers could not take care of themselves one-on-one. This result overlaps with the observational findings. In this context, it was revealed that there were students with different learning speeds in the observed classroom, and the teacher was interested in the students who could not learn, while the interest of other students in the lesson decreased, and they spoke among themselves.

It can be said that this situation was caused by the difficulty of the teacher dominating in the classroom depending on the size of the class. In this context, Finn and Achilles (1999) also emphasized that there is a positive relationship between a low number of students in primary grades and the increase in student success. In the same context, Ocak and Tepe (2019) found that there were many problems due to crowded classes.

Besides the physical characteristics of the classroom, a positive climate in the classroom is also important for creating an effective learning environment. It is clear that there is a positive classroom climate with easy communication. It can be said that this situation positively reflects on students during the implementation phase of the curriculum. Hidiroglu (2016) found similar to the results to this study and concluded that academic success increased in a learning environment where students easily communicate with each other and with their teachers.

According to the qualitative findings, teachers had insufficient mathematics lessons, and there are imbalances in the distribution of the time allocated to them. According to the observations and interview results, there were problems in the completion of the activities. Cetin (2010) also reached similar results. In addition, the interviews with teachers clearly show that the time is not sufficient for students to complete activities. This situation coincides with the results of the classroom observations. These results are similar to those of Kose (2011), who revealed that there was insufficient time for the activities in lessons and that there was a shortage of materials and equipment. Furthermore, Altintas and Gorgen (2014) compared Turkey and South Korea's Mathematics curriculum at the primary school level. They found that Turkey is much more time left, and the status of South Korean students a better basic mathematics.

In the qualitative findings of the research, most of the teachers stated that they used student-centred methods and techniques in the teaching-learning process. It was also observed that the teacher tried to ensure the active participation of the students in the observed classroom. This indicates that teachers internalize a student-centred process in accordance with the constructivist approach and program. In this context, Kalem and Fer (2003) concluded that expectations of students towards the lessons were more positive in lessons taught according to active learning principles in which the students were at the centre.

The observation and interview data showed that the evaluation dimension of the mathematics curriculum in practice was especially insufficient for teachers in terms of the basic gains it aimed to measure. From this point of view, it is clear that the majority of the teachers participating in the study have negative views on the evaluation dimension of the mathematics curriculum, and they emphasize that the measurement tools do not measure the achievements. The number of measurement tools is insufficient, and they do not serve their purpose. In this context, the Kilinc and Anilan (2019) looked at the size of the program evaluation studies conducted in Turkey and reached the conclusion that teachers emphasize that they the desired more qualification. In comparative

research, Cetinbag (2019) found that in the assessment dimension of the Canadian mathematics curriculum, different types of assessment are offered to teachers in a way that suits each acquisition. In the assessment dimension of the Turkey mathematics curriculum, different types of assessment are not offered to teachers in a way that suits each acquisition.

To sum up, the evaluation dimension of the new mathematics curriculum has been simplified in comparison to previous programs. Nevertheless, it is clear that it is insufficient to measure what is learned, it is not useful, and problems related to measurement and evaluation continue. Similarly, Demir, Tananis, and Basbogaoglu (2018) and Letina (2015) also found that teachers experienced the most problems in terms of time and lack of guidance during the implementation of alternative assessment and evaluation methods.

On the other hand, teachers in the study stated that creating mathematical tools and materials depends on the teacher's equipment. This finding also coincides with the observation results. For example, in the classroom observed, the teacher used materials that he made in teaching addition with natural numbers, teaching the concept of time, and teaching the subject of money. In this sense, although teachers find the course materials in the new curriculum insufficient, they try to complete the material's deficiencies individually. In this respect, besides providing ready-made materials to schools, guiding and encouraging activities for teachers in preparing materials can be effective in increasing the quality of learning environments.

Finally, compared with other countries engaged in similar programs, the reformed mathematics curriculum implemented in Turkey has similar efficacy. However, it was concluded that the expected goals in the learning-teaching process and assessment dimensions were not achieved. It is thought that the implementation of the curriculum could be improved by curriculum development experts revising the weak elements of the curriculum, especially in the dimensions of learning, teaching, and evaluation.

From this point of view, within the scope of curriculum development, many researchers emphasize that it is important to compare the educational practices and curricula of different countries during the development of a curriculum and to determine the deficiencies of the programs in this context (Baki & Gökçek, 2005; Cetinbag, 2019; Hıdıroğlu, 2016). In this sense, examination of the current mathematics curriculum will not only provide information about the program's image, but also contribute to the future experience of other countries with similar characteristics.

4. Suggestions

According to the results of this study, it is suggested that the number of activities and measurement and evaluation tools be increased in the teaching and learning process. It may be suggested that the physical facilities of schools be reorganized according to the changing and developing educational understanding, to provide in-class technological facilities that will facilitate the active participation of students in lessons and structuring the information, and to ensure that the necessary materials for students and teachers are made available in learning environments for mathematics lessons.

The research findings were obtained through processes limited to students and teachers based on both quantitative and qualitative data. The similarities and differences between the renewed primary education curriculum and the primary education curriculum implemented in developed countries could be compared. This research was evaluated from the perspective of primary-school teachers and students in mathematics only. Thus, research could be conducted to include the opinions of parents or administrators.

After presenting the results, you are in a position to evaluate and interpret their implications, especially with respect to your original hypotheses. Here you will examine, interpret, and qualify the results and draw inferences and conclusions from them. Emphasize any theoretical or practical consequences of the results. (When the discussion is relatively brief and straightforward, some authors prefer to combine it with the Results section, creating a section called Results and Discussion).

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Student-Student Interaction in Online Learning During the Covid-19 Pandemic: A Case Study

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Abstract

Despite numerous studies investigating various aspect of online learning amidst the Covid-19 pandemic, the empirical findings reporting about student(s)-student(s) interaction in micro-level of language teaching learning process is inadequately documented. Thus, this current study was in attempt to address this void by exploring how the students interact in online learning, identify the perception of the student about student-student interaction in online learning for effectiveness in online learning English teaching process. Framed in a case study, 5 students of a public University in West Nusa Tenggara participating in Teaching English for Young Learner (TEYL) course were purposefully recruited to participate in this study. The data were garnered from a series of semi-structured interviews and a 4-month virtual classroom observation and were analyzed using thematic analysis. The finding elucidates that students enjoyed their online learning interactions and they perceived that their language skills and knowledge increased significantly. The teacher was seen to have pivotal role in facilitating students to have effective interactions by providing various activities, prepared materials, and support. Practically, this study proposes some suggestions for teachers and students on how to establish effective student-student interaction in a language online classroom.

Keywords: COVID-19, Online Learning, Sociocultural Perspective, Student-Student Interaction

1. Introduction

Online learning has been very popular in the world of education, especially in universities because it is one of the tools or alternatives used by teachers in learning media in providing learning materials for their students (Artino & Stephans, 2009). Online learning will also make an active learning process because students can

independently explore self-study materials via the Internet. So, it exercises students' independence honing their abilities and being responsible for their own learning or commonly referred to as autonomous learners (Khotimah, Widiati, Mustofa, & Ubaidillah, 2019; Liaw, Huang, & Cheng, 2007).

During the Corona Virus outbreaks, almost all countries in the world have been implementing a some physical restrictions such as lockdown and social distancing, to take precautions to prevent the spread of the virus (Khachfe, et al., 2020). This surely impacted on the countries' economy as well as education (Schulten, 2020). Therefore, in education context, online learning by its nature has been the most considered platform to facilitate teaching-learning in addressing this unprecedented condition (Hodges, et al., 2020; Ministry of Education of China, 2020a).

In the micro-level of teaching-learning, interaction has considerable influence on students' learning outcomes and is unduly linked to the success of educational practices. It is anchored from the sociocultural perspective believing that human beings can influence each other such as the change of thinking patterns (Vygotsky, 1896).

In this respect in the classroom context between students and students, students and teachers also affect each other through the interaction. The interactions could be personal to social life. Bates (2019) argues that through sociocultural theory, "knowledge and interactions are constructed through social interactions with families, friends, teachers, and peers." Sociocultural theory not only reflects the view that learning and development is a process of increasing mental sophistication, but is also mediated through social and cultural interactions (Nagel, 2012). Students are thought to be active in independently interact, share ideas, discuss things as well as offer solutions to problems in their learning processes. Sociocultural theory is based on the assumption that learning occurs not through interaction but in the interaction itself (Ellis, 2000). In the sociocultural theory, teachers and students are particular factors that have a relationship to help a student learn and achieve the goals of learning. The relationships help social interaction and active participation in the classroom even though this takes place through the online processes. The teachers encourage students to communicate, interact, discuss with their peers to make them productive and active in online learning activities. Therefore, online learning will not monotonous, passive, and boring. So, it is highly recommended that teachers avoid handling unmeaningful online learning where students have nothing, the student attends the online classroom without getting feedback from the teachers or having less input and limited insight from what have they learned.

Also, it is very helpful for students when they have found online learning as a source of knowledge and a good medium to share experiences. Teachers facilitate online learning very well and strongly encourage the student to communicate actively in the online interactions. This beneficial situation will help students express their ideas and opinions more comfortably especially when they have the English Specific Purposes class. So, it is claimed that the lower the level of communications or interactions among students in the learning process, the less opportunity to get a satisfying learning attainment. As seen in Figure 1.

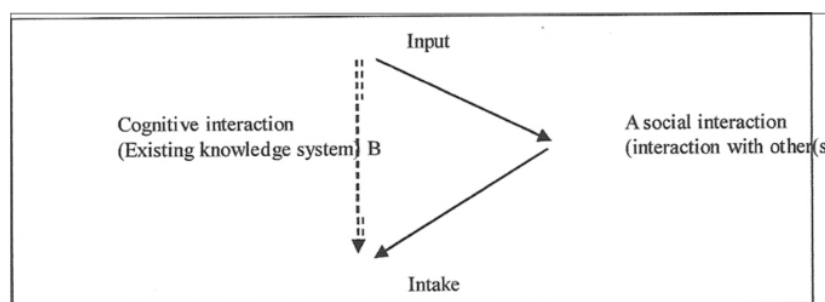


Figure 1: The Role of Interaction (Lier in Sundari, 2017: 148)

The relationship between the constructs of this research can be seen in figure 1. Interactions in online learning involve teachers and students as interactants use the target language. The teacher facilitates and encourages the student to be active and give feedback as a sign that students understand what is being learned. On the other

hand, the students will actively interact with other students to discuss and collaborate as well as negotiate among them to solve the problems during their learning process. So, the goals of learning will be achieved, and the result of this research will contribute to a new perspective of knowledge resources available to enhance the learning experiences.

In the context of online learning, the effective interaction is mediated by appropriate use of technology and how the teachers effectively design the learning environment (eg, space where learning occurs) (Bower, 2019; Gonzales et al., 2020; Wang et al, 2013). Practically, when the interaction in the classroom is running well, then the class tends to be active and productive. An active class is created because of the good interaction between teachers and students, students and students, and the achievement of the goals of the learning and learning process (Moore, 2002). Moreover, the importance of interaction in online learning plays as a big determinant of the success of the learning objectives (Merkine, Bisa & Ayele,2019).

Establishing effective interaction is indeed deeply correlated with teacher's role. Rashidi & Rafieerad (2010) found that when the teachers can organize a class facilitating effective interaction between teachers and students, the teaching learning process will exert positive influence on the students' learning attainment. For example, as a facilitator, a teacher must be able to facilitate students well and participate actively in the learning process such as in online discussion forums so that students are more focused and feel comfortable during the learning process (Zhang, Gao, Ring & Zhang, 2007). Students will also have some opportunity to boost their critical thinking (Bishop, 2000) by exchanging ideas with their friends that might come from different levels (Woods, 2002). Within the process, teacher ability and competence to provide necessary scaffolding takes fundamental role.

Against this backdrop, investigating classroom interaction especially student(s)-student(s) interaction is warranty needed moreover in the context of online learning during the pandemic that empirically underexplored. To address this need, this current study aimed to paint the portrait on how student(s)-student(s) interaction in an online learning happens and to explore students' perception towards it.

2. Method

This study was a case study picturing individual phenomenon (Stake, 1995) and investigating related features of the case without any systematic intervention (Yin, 2018). Situated in a public university in West Nusa Tenggara, Indonesia, this study purposefully recruited 5 students from English department participating in Teaching English for Young Learners (TEYL) course. To get the consent from the participants, researchers employ personal approach by firstly providing adequate information about this current study; the aims, participants' contribution, research contribution and implication and technical details. In addition to the participants' willingness to voluntarily participate in this study, they were recruited based on some criteria: first, the participants are easier to contact, second, they are enthusiastic and have high interest in TEYL course, and third, they have active participation in online learning process, and fourth, perceived to have ability in expressing and telling feeling and experiences. The detailed demographics of the participants can be seen in table 1. In this respect, the researcher used pseudonyms to keep the virtues of participants' confidentiality and safety.

Table 1: Participants Demographics

No	Name	Sex	Age	Semester	Characteristic(s)
1	PM	Male	21	7	Meeting the criteria, participating in online courses, having no previous experience in joining online course.
2	YSK	Female	21	7	Active in joining online courses and cooperative discuss with others student.
3	VPC	Female	21	7	Active participation and showed high interest in online courses.
4	RAL	Female	22	7	Enthusiastic and highly interested in online course.
5	SO	Female	21	7	Highly motivated, informative in giving feedback, and active in online course.

To collect the data, two types of data collection techniques: observation and semi-structured interview were systematically conducted in 4 months starting from September to December 2020 for the observation and in one month (January 2021) for the interview. The observation was carried out to depict student(s)-student(s) interactions in the series of online teaching-learning processes (16 meetings) either from the synchronous or asynchronous mode. Meanwhile, the semi-structured interview was designed to gather further information about the data taken from the observation and also to delve the data related to students' perceptions about student(s)-student(s) interaction. The interview was carried out via phone, online media such as WhatsApp, and also face-to-face interviews. The interview was done for 15 to 20 minutes for each meeting based on an agreement between the researcher and the participants. The researchers made the interview in relatively short time to avoid boredom and exhaustion.

To analyze data from observation the researcher took some documentation from group discussion in the form of photos or screenshots and notes. And to analyze data from the interview, the researchers obtained the information to summarize and interpret to understand the topics during the study (Hancock & Algozzine, 2006). The researcher collected the data from observation and interviews carefully. Then the researcher reduced unnecessary information and summarize important information that focusses on the topic of the study. The researcher discussed and interpreted the larger meaning about what the researcher found in the field which was in the interaction between students and students in the online teaching-learning process. After the data discussed and interpreted the researcher concluded from the data had been obtained. The researcher used the technique analysis based on Miles and Huberman (1994) which are data collection, data reduction, display data, and drawing conclusion.

3. Result

The findings acquired from observation and interviews were presented in two themes based on research questions: student(s)-student(s) interaction in online learning and students' perceptions about student(s)-student(s) interaction in online learning

3.1. Student-student Interaction in online learning

As observed, the lecturer designed the online TEYL course in ways to promote students-centered learning. The design of the class is real-time virtual discussions mediated by Google Meet, WhatsApp group discussion and Moodle. The lecturer organizes the real-time virtual discussions as synchronous meetings to facilitate the students in learning to discuss, exchange their ideas and interact with others. The lecturer provides new insight and skills to the students from the material in online learning. Then the students engaged in WhatsApp group and Moodle as an asynchronous meeting to discuss the given materials and collaboratively to do some group projects. Table 2 captures the snapshot of interaction modes during the course.

Table: 2 Data observation in online learning

Meetings	Platforms	Interactional Mode
1	▪ Synchronous Meeting (Google Meet)	Teacher-students interaction: Via Google Meet the teacher and the students discussed the details of the course covering course outline, project description, materials overview, assessment, and course contract.
	▪ Moodle mediated learning (Asynchronous meeting)	Students- content interaction: Students interacted with the materials provided in the Moodle.
	▪ WhatsApp group discussion	Students-students interaction: Selecting groups and planning the following learning activities.
2	▪ Moodle mediated learning (Asynchronous meeting)	Teacher-student interaction: The teacher provided direction and manual for the following group discussion. Student-content interaction: The student learned the material and made a portfolio about the next material.

	<ul style="list-style-type: none"> ▪ Moodle forum group discussion (Asynchronous meeting) 	<p>Student-student interaction: This meeting used forum group discussion in Moodle to discuss materials. Students who are responsible to lead the discussion are the members of group A. each student of group A needed to start a discussion by posting the topic of discussion and responding to other students' responses.</p>
3	<ul style="list-style-type: none"> ▪ Moodle mediated learning (Asynchronous meeting) 	<p>Teacher-student interaction: The teacher provided feedback to students on the task given before. And the teacher gave further explanation about the following materials and tasks.</p>
	<ul style="list-style-type: none"> ▪ Real time virtual discussion via Google Meet (Synchronous Meeting) 	<p>Student-student interaction: In this meeting, group B was responsible to lead the forum. Each member of group B should raise an issue (related to the current topic), and the other students from other group should respond to the motion by agreeing, disagreeing, or raising new ideas by adding some explanation.</p>
4	<ul style="list-style-type: none"> ▪ Moodle mediated learning (Asynchronous meeting) 	<p>Teacher-student interaction: The teacher provided course feedback to help students know the position of their learning attainment.</p>
	<ul style="list-style-type: none"> ▪ Moodle forum group discussion (Asynchronous meeting) 	<p>Student-student interaction: In this meeting, group C was responsible to lead the forum with the similar rule and procedure of the previous meeting.</p>
	<ul style="list-style-type: none"> ▪ WhatsApp group discussion 	<p>Student-student interaction: The students discussed and prepared the material that they would present in the real-time virtual discussion in the next meeting.</p>
5	<ul style="list-style-type: none"> ▪ Real time virtual discussion via Google Meet (Synchronous Meeting) 	<p>Teacher-student interaction: The teacher encouraged the students to be active, provided necessary feedback, and gave some content enrichment</p> <p>Student-student interaction: Everyone in the class must bring their critical questions related to the topic. Members of groups A, B, C were the experts.</p>
6	<ul style="list-style-type: none"> ▪ Moodle mediated learning (Asynchronous meeting) 	<p>Student-teacher interaction: The teacher provided a slot in Moodle mediated learning for students to raise critical questions to discuss together in the following real time virtual seminar.</p>
	<ul style="list-style-type: none"> ▪ Moodle forum group discussion (Asynchronous meeting) 	<p>Student-student interaction: In this meeting, group D was responsible to lead the discussion. The students discussed some difficult materials to make some clarification and enrichment.</p>
7	<ul style="list-style-type: none"> ▪ Moodle mediated learning (Asynchronous meeting) 	<p>Teacher-student interaction: The teacher asked the students to fill about forum group discussion as a feedback.</p>
	<ul style="list-style-type: none"> ▪ Moodle forum group discussion (Asynchronous meeting) 	<p>Student-student interaction: In this meeting, group E was responsible to lead the forum with the same rule as the previous meetings.</p>
8	<ul style="list-style-type: none"> ▪ Google form mediated learning (Asynchronous meeting) 	<p>Teacher-student interaction: The teacher-directed students through voice note about the topic of the material.</p> <p>Student-content interaction: The students made a reflection about the material that they had been learned before. In the form of posters or video.</p>
9	<ul style="list-style-type: none"> ▪ Moodle mediated learning (Asynchronous meeting) 	<p>Teacher-student interaction: The teacher sent feedback about the midterm test result for students and guided students to create a group project in the form of E-book for children.</p> <p>Student-student interaction: The students made a group then read and observed the examples of the E-book for</p>

		discussion.
10	▪ WhatsApp group discussion	Student-student interaction: The students were engaged in group discussion determining the topic of the E-book for planning the e-book design.
11	▪ WhatsApp group discussion	Student-student interaction: The students negotiated and discussed each group member's job description in designing an E-book.
12	▪ Google meet (Synchronous Meeting)	Student-student interaction: The students conducted Real-time virtual meetings to discuss the progress of the E-book project and tutorial on E-book creation.
13	▪ WhatsApp group discussion	Student-student interaction: The students in each small group collaboratively discussed the e-book creation via book creator App.
14	▪ Google meet (Synchronous Meeting)	Teacher-student interaction: The teacher guided the student to tell the progress of E-book creation. Student-student interaction: The students conducted peer validation of the group member to know how the progress of E-book.
15	▪ Moodle mediated learning (Asynchronous meeting)	Student-teacher interaction: The teacher gave feedback to each group. Student-student interaction: The students made some final revisions. Student-content interaction: Individual self-reflection of E-book project.
16	▪ Moodle mediated learning (Asynchronous meeting)	Student-content interaction: The students did mini teaching trying out the e-book.

From table 2, it is seen that the teacher-facilitated student(s)-student(s) interaction in almost all meetings using various platforms: Moodle, WhatsApp Group, and Google Meet with diverse activities. This can also be seen in the interview data, as follows:

“There are several kinds of interactions in online learning in TEYL class, such as group discussion and the project creation group. We usually interact through online media such as Google Meet, WhatsApp group, and Moodle”. (RAL, WhatsApp- mediated interview, January 27, 2021)

“As we know, we use WhatsApp group, Google Meet, group discussion with various methods. There is frequent group discussion with the blended method. There are group sessions where students could share knowledge and personal experiences, with other students where students could exchange their ideas and opinion”. (VPC, Via telephone, January 28, 2021)

“Interaction in online learning using various virtual discussion methods. There is through Google Meet where the discussion runs between students and students who answered about the material and exchanged opinions and ideas. It makes the classes interesting and fun”. (SO, face to face interview, January 29, 2021)

Based on the participants' utterances, the group discussion is the avenue for students to interact, communicate, and exchange new ideas. The students had the opportunity to learn from their peers and from the context of learning. It is by the fact closely related to the sociocultural theory arguing that our minds are influenced by the thoughts around us and that learning happens within interaction (Vygotsky, 1896).

Based on the participants' explanation, the lecturer facilitated either synchronous or asynchronous meetings for establishing interaction among students.

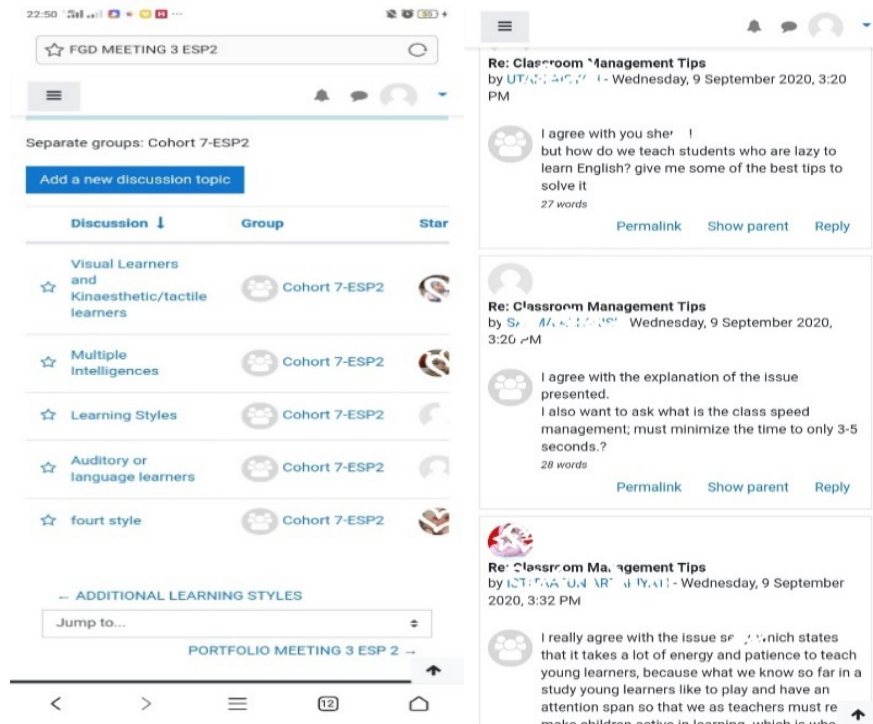


Figure 2: Sample of Student Interactions in Moodle (Forum discussion group)

Asynchronously, there was a forum discussion group what the students call as "a group interaction" that was mediated by Moodle and conducted once a week. In this forum, the discussion was led by a particular group and the other class members should respond, comment, or criticize the topic prompted by the group leader. It made the students in TEYL course very excited and interested in following the learning process even through online learning. It was also a place for students to (re)construct their understanding after individual reading.

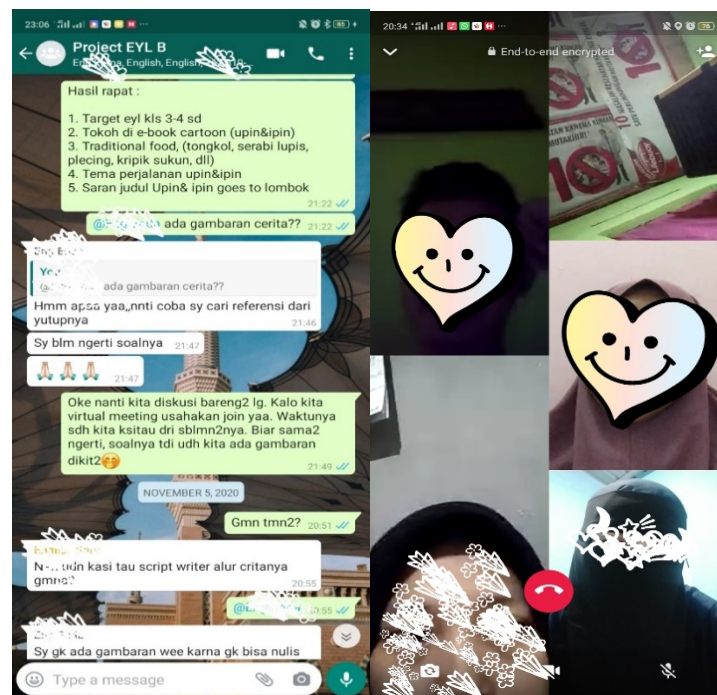


Figure 4: Sample of Student Interactions in WhatsApp group (Group discussion)

The WhatsApp group became a venue for students' discussion to collaboratively prepare the materials and projects that will be discussed in forum group discussion and Google Meet. In this case, the lecturer encouraged the student with written or oral (using voice notes) motivation and gave information and guidance respectively.

Whereas, Google Meet was mostly used to discuss and exchange ideas and opinions and also to deliver some modellings, feedback, and enrichment from the lecturer synchronously. To be specific, the students were divided into four groups (A, B, C, D) in which each group to be the expert for particular topic in certain meeting while the other groups were encouraged to raise questions, bring some authentic cases to be collectively discussed with the expert group. This was conducted once every two weeks. The teacher encouraged the student to discuss and interact with each other to train their skills and exchange ideas to get new knowledge, inspiration or skills from other students about the materials being learned.

The students were also engaged in an e-book project requiring them to intensively interact in WhatsApp Group, Zoom Meeting or Google Meet, as well as e-book creator (an App to design an electronic book)

3.2. The perceptions of the student about student-student interaction in online learning

The study finds that in general, the students' perceptions about the interaction in TEYL course in online learning are positive. The students tended to appreciate the variation of the platforms and the interaction modes. Specifically, the sense on how teachers tried to help students to be active in the online learning is clearly captured. The students were set in series of activities allowing them to co-construct their understanding with their peers or groups.

"I think the online class is very interesting and the participants are all very active. The learning process is active because both lecturer and students are active in discussions, The interaction through Google meet and WhatsApp groups, and other online learning media.". (PM, WhatsApp- mediated interview, January 27, 2021)

"I feel very happy as I could ask my friend more frequently without feeling threatened. I feel secure. That is what I have experienced during the online interactions". (SO, face-to face interview, January 29, 2021)

The students perceived that online learning of TEYL course could encourage students to actively participate in the course activities and provide them a safe atmosphere where they felt secure to express their ideas and opinion.

"It is important to note that not every online class is effective. Some classes are good and some are not. But in my opinion, the TEYL course in online learning is the best online class: the lecturer was very punctual and active in holding regular meetings, could set effective course design encouraging students to take part more actively in an open discussion to share their knowledge and ideas. So, this made the student participate actively during the online learning." (PM, WhatsApp- mediated interview, January 27, 2021)

In the abovementioned excerpt, students' perception stating that TEYL course as the best course among some other courses implies that they were very pleased with the course presentation. The students appeared to be satisfied with how they were facilitated by the lecturer. In this sense, the lecturer played a pivotal role in establishing student(s)-student(s) interaction in online learning helping them learn better. The lecturer provided videos, articles, illustrations, and training how to make an e-book for young learners requiring them to engage in a series of interactions to collaboratively discuss, analyze, negotiate, co-construct their understanding. Scaffolding was also given sufficiently such as: giving feedback and response to students' ideas and learning products and giving insight and direction to respond to students' problems using manuals and oral or written explanations. It was also reported that the lecturer also motivated and encouraged the students to learn better either in the synchronous or asynchronous meetings. Practically, in addition to oral and written motivation, the lecturer was seen as the role model who was committed to the course, punctual, patient, creative, and open to the students' ideas that indirectly bolstered students' motivation.

Akin to teacher's role, the students' role also seemed to have contribution to arising effective student(s)-student(s) interaction. This can be seen from the results of interviews with participants, as follows:

“On WhatsApp group discussion, I shared a real time virtual meeting link, reminded my friends when it's the time for class hours and reminded them to work on projects or other group assignments that had not been completed. It also happened in the smaller WhatsApp groups. In short, a reminder telling "don't forget to do it" helped me engage. (PM, WhatsApp-mediated interview, January 27, 2021)

Based on the explanation of the participants, it can be concluded that students also had a significant role to make active interaction in online learning. The students are reminded and contacted each other.

In a nutshell, the students perceived that the student(s)-student(s) interaction in their TEYL course was effective and positive in which highly mediated by the teacher's role as well as students' role. Nevertheless, despite the positive perceptions, this study also discovered some problems during the teaching of TEYL through online learning platforms. This can be seen from observation and informal conversations with participants, as follows:

“Online learning sometimes has network problems, lack of quota, especially during pandemic conditions. As a result, the communication or interactions is still very limited.” (PM, informal conversation, January 27, 2021)

“When learning in real time virtual meeting, sometimes I experienced some Internet problems that make me a little depressed. Especially during the rainy season, the signal was not stable, I could not listen well and even could not join the real time virtual meeting. Also, the quota adequacy was another issue for me” (SO, informal conversation, January 29, 2021)

In this respect, Internet connection was seen as the most salient barrier in online learning hindering and impeding them to learn better. This problem also exerted negative impact on students' psychological aspect such as arousing depression and anxiety.

4. Discussion

4.1. Student-student Interaction in online learning

The result of the present research from the data interview showed online learning enhances smooth interactions among students, they tend to avoid demotivating languages and withdrawal. Students enjoy themselves as they really feel safe rather than talk directly which seems to be a bit frightening. As the research showed, one of the participants acknowledged that she "I feel very happy as I could ask my friend more frequently without feeling threatened. I feel secure. That is what I have experienced during the online interactions". The interaction between students and students is also very active because the teacher encourages and facilitates the students well. With a variety of methods and learning materials that are quite complete as well as a detailed discussion and explanation of the material.

In addition, the teacher also facilitates students well, with a regular schedule, with intense meetings and discussions, good material exposure with various teaching materials, and there are goals to be achieved from the online learning process. The teacher encourages students to continue to be active in the learning process so that the class does not become passive and students do not just fill in online absences and then receive material without understanding what is being learned. The teacher will direct students so that during the discussion the material does not come out of the learning topic. That way, the learning process will continue to run well and be active so that it creates good interaction between students and students as well as students and lecturers. It is in accordance (Zhang, Gao, Ring & Zhang, 2007) have found that when the teacher facilitates students well and participate actively in the learning process such as in online discussion forums so that students are more focused and feel comfortable during the learning process.

4.2. The perceptions of the student about student-student interaction in online learning

Interaction between students and students also goes well through the assignments given by the teacher to students. Because there is a sense of responsibility that students have to complete the tasks that have been given by the teacher. Nurture was formed by teaching. It is based on the experiences of social and cultural influence on language learners (Mitchell & Myles, 2004). Students with each other will contact and remind each other to complete the task based on the material that has been shared by each respective group. Students will discuss more deeply their material before discussing it with other groups. So that, students must understand very well the material for their respective groups.

Students and students actively interact through group discussions given by the teacher. Both through virtual meetings (synchronous meeting) and group discussions (asynchronous meeting). Many discussions conducted by students, it will generate enthusiasm for learning, a sense of comfort, and an increase in knowledge because they get new knowledge from every other student. With a regular schedule and regular discussions, students feel the atmosphere of learning even when studying from home or studying online. With several types of forms used in online learning with various methods that make student interaction more diverse. The quantity and the quality of interactions in the classroom are influenced by the climate of communication (Barker, 1982). Some have gone through a virtual meeting for students to discuss and answer questions with other students, there is a project for students to collaborate well to complete their project assignments together through group discussions, video calls on WhatsApp, and other online media. One student said that she liked the group discussion method as given by her teacher. Because it makes the class more active and less bored. Other students help each other to explain and provide understanding to other students who ask questions. This becomes fun because one student and another student is connected and chimed in so that the interaction in the online class becomes active.

On the other hand, several problems occur in online learning based of the student perception. The first, network problems that are very disturbing during the online learning process. Because not all students have a good network or are in city areas so that network constraints are also very disturbing during the learning process. The second, the problem is the limited quota that students have because not all students install Wireless Fidelity (Wi-Fi) at home. The third, the limited time in online learning. There is a merger of classes which makes online classes contain many members in one meeting, thus making online classes swell, seize, and less effective. Because when the discussion is taking place, the time they have for discussion is so limited because they have to share with other groups.

Based on the result above, there are several things that the teacher must do to help the class become more active through student expectations. The hope is for other online classes to be more active so that the learning process does not become passive. The teacher preserved active class with existing methods and with each assignment that makes up a portfolio and answer questions. And it makes the class active, not monotonous so that the material is not only fed by the lecturers. Virtual meetings conducted through Google Meet are already active. So, every student has the opportunity to interact not only with the same person but it is just that virtual meetings are more activated, but because several obstacles that cannot be avoided such as limited quota and network constraints that make it impossible. The students already get knowledge with assignments made by the lecturer. And when discussing through virtual meetings, the members are minimized because even in offline classes when there are many members in the class, the class becomes ineffective. Especially when online, many students in the class make the class ineffective. And the expectation of students that the campus and government also facilitate student needs in online learning by providing a free quota thoroughly to students and provide the best service and facilities.

5. Conclusion

This present study explores the students' online learning interactions during the Pandemic Covid-19. The aims of this study are to explore how the student interacts in online learning especially student(s)-student(s) interaction is warranty needed moreover in the context of online learning during the pandemic that empirically

underexplored, identify the perception of the student about student-student interaction in online learning for effectiveness in online learning English teaching process.

This research reveals that the interactions that occur in online learning in the Teaching English for Young Learners course are very good and effective. The students enjoyed their online learning interactions and their language skills and knowledge increased significantly. Students get many benefits and new knowledge even though the learning and teaching process is done online. The students feel that they are learning even though they are at home. With teachers who facilitate and encourage students so well with various methods and clear goals in the learning process. So that, students can interact well with other students and create effective classes even though online media is not face-to-face-based. Interaction and knowledge run through social interactions by following the sociocultural interaction theory. How can one student influence and communicate with each other so that good interaction is created through discussions given by the teacher who is responsible for the class.

On the other hand, although the various problems that arise cannot be avoided and they occur accidentally, they can still be minimized so that online learning continues to run well. Students enjoy the online learning process and get new experiences. Students also stay connected to other friends even though they are at different places and times. Furthermore, the perception of students about student-student interaction in online learning is the best in English for Specific Purposes online class. Because the process of learning and teaching is quite good with teachers who encourage and facilitate the students well so that the creation of active interactions between students and other students.

Although not as good as face-to-face but in such a situation, this learning process is well run. The teacher as a facilitator has been running her duties well. The teacher creates an active and conducive class, where students and students can interact well, exchange their respective ideas and opinions. Students experience increased knowledge and smoothness in a speech in online learning. However, the student expects that the campus or government can provide better facilities by providing a free quota thoroughly for students in order to online learning can run well.

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Investigation of Turkish Middle and High School Students' Water Literacy as a Factor Predicting Targets for Sustainable Development Goals

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Abstract

This research was carried out to reveal the factors affecting the water literacy of middle and high school students in Turkey. In the study, in which a total of 155 children living in Rize of Turkey participated, the data were collected using the "Water Literacy Scale" developed by Sozcu and Turker (2020a). This measurement tool was implemented as online questionnaire. The scale consisted of three sub-dimensions, namely water saving, water consciousness, and water sensitivity, and a total of thirty items. Data analysis was performed in the SPSS program, using unrelated t and One-Way Anova tests. It was concluded that the water literacy of the children differed according to finding the news about the water crisis realistic, and having a concrete experience in reusing water in some dimensions. There was no difference between the water literacy of middle and high school students. Critical suggestions based on informal learning, including parents, were made to provide water literacy to children.

Keywords: Sustainable Development, Water Literacy, Children, Environmental Education

1. Introduction

Human beings find new ways to meet their current needs with each new century. They prepare new needs lists, probably as a result of their changing nature, not nature. It becomes clear that the recognition and resolution of existing needs is a dynamic and interactive process. The process starts again when a new cycle begins to be talked about. One of the best indicators of this situation is the differentiation of topics and concepts spoken in previous centuries and today. As an example, the subject of development, which started to be used with the industrial revolution, has now turned into sustainable development (SD). New topics have been started to talk about for a while that the old people had difficulty in understanding. Among these, the issue of literacy is very important. As a result of a small literature review, they are frequently seen even in reports and/or speeches of politicians or bureaucrats. These include science literacy, technology literacy, media literacy, global literacy, economic literacy, and many more. There are types of literacy belonging to different disciplines, especially education. In reviews conducted by Ates and Asci (2021) and Mete (2020) on this subject, many types of literacy were determined. As a result of the transformations in science and technology, the tendency to studies on literacy has increased (Kurt, 2010; Kurt et al., 2014). Some of these (for example, science, technology, and water literacy) are known as literacy

that is directly related to education. New knowledge and skills needed from individuals as a result of rapid changes in science and technology are identified, and new types for different fields will emerge. Here, it should be well known that new concepts are created by new needs, and therefore, new concepts may arise in the future. However, efforts should be made to explain the theoretical foundations of literacy concepts, which are on the agenda in today's conditions, and to bring related knowledge, attitudes, and behaviors to all stakeholders of the society, from 7 to 77.

One of them is “water literacy,” which is closely related to sustainable development (Kucuk & Burkaz Ekinci, 2021). In this, it has been effective that the bad prophecy about the end of life, which is thought to be unlimited and does not only end when consumed at high speed, is frequently spoken. Water is one of the best proofs of life in a celestial body. In this direction, human beings spend huge sums of money in the hope of encountering a drop of a water molecule in space. The studies carried out to date, unfortunately, have suggested that there may be water on another planet other than Earth, but they did not enable it to be discovered. Water, which is a combination of oxygen and two hydrogens, is known as the beginning of life. In all faiths and religions, water is known as the source of life, the basic substance of holiness, and physical and spiritual purification (Kiyak, 2013). Now, it is important to know how water is formed, as well as to learn how to save it and make it sustainable (Dinc, 2018). In science lessons, a simple experiment of water into its components is done. For this experiment, water is first electrolyzed, and oxygen and hydrogen gases are accumulated in two tubes. Finally, only a few drops of small water molecules are observed by holding a lit match inside the hydrogen collection tube. This experiment is necessary to learn how the water molecule is formed with concrete experience. It can be achieved that other members of the society, especially children, view water as a limited and valuable substance, not as an unlimited resource (Cooper & Cockerill, 2015). In this way, water knowledge, attitude, and behavior can be gained.

The subject of water literacy has been put forward as a means of trying to define and gain knowledge, attitudes, and behaviors about water (Otaki, Sakura, & Otaki, 2015). There are many definitions of this subject (Su, Chen, & Wang, 2011; Wang, Chang, & Liou, 2019; Sherchan et al., 2016). In addition, compilation and structure creation studies are also carried out to solve the confusion in the literature about the concept (McCarroll & Hamann, 2020). This concept is essential for achieving the water-related goals of sustainable development and for the sustainable use of water (UNESCO (United Nations Education, 2003). Otaki, Sakura, and Otaki (2015, p.36) defined water literacy as “water literacy as the ability to feel familiar with water, get actively involved in water, and face the issue of water as one's issue. Being water literate means understanding how the water we use daily is delivered and treated, as well as knowing the quality and safety of that water, how much water we use daily, and exactly what we use it for” Similarly, He (2018, p.486) explained that “water literacy is a composition of necessary water knowledge, scientific water attitude, and normative water behavior... Water literacy, composed of water knowledge, water attitude, and water behavior, is related to social economics, living habits, water ecological environment, water conservancy propaganda, and education.

With the sharing of this concept as an important dimension of sustainable development and its inclusion in curricula, research aimed at both teaching and measuring the impact of teaching have gained momentum (McCarroll & Hamann, 2020). In this process, the fact that the information obtained informally from family, friends, and other environments was not sufficient (Cappellaro et al., 2011). In support of this claim, studies conducted from preschool to university and even among adults have revealed that individuals experience significant problems in their knowledge, attitudes, and behaviors about water (Dean, Fielding, & Newton, 2016; McCarroll & Hamann, 2020). Although a partially acceptable proficiency is observed in some age groups in terms of attitude, it has been revealed that it does not trigger behavior towards water (McCarroll & Hamann, 2020). One of the possible reasons for this is the lack of water information (Xu, Wang, Wang, & Zhang, 2019; Wang, Chang, & Liou, 2019). Although attitude, which is an important quality for many subjects, including academic success, is considered valuable, more is needed in water literacy. It is believed that there is a hierarchical relationship between knowledge, attitude, and behavior that forms the center of the concept (McCarroll & Hamann, 2020). In short, attitude does not occur without knowledge about water, and behavior does not occur without attitude. In this context, measurement tools to measure water literacy consisted of three dimensions water saving, water consciousness, and water sensitivity. I think a sufficient and balanced development in these three dimensions indicates water literacy.

Water literacy of children or adults at certain educational levels (for example, secondary school, high school, university) was reported. The fact that the literacy measured in these reports were not frequently cited. In addition, gender, academic achievement, income status of the family, the profession of mother and father, etc. The effect of the usual variables was measured. And it has been reported that sometimes these variables have an impact on water literacy on a holistic or dimension basis, and sometimes they do not. As a criticism at this point, it is not clear how a possible difference reported in children's water literacy according to maternal education level, for example, can be used to predict the child's water literacy-based only on the mother's education level. A similar situation arises in the relationship established between the type of settlement where children live and water literacy. For example, it is not clear how information regarding a possible difference in water literacy according to residence will be used, other than only predicting the child's water literacy. For these reasons, instead of classifying children using their demographic information, it seems more pragmatic to examine the effects of life examples that will be employed in the immediate environment and that can bring water consciousness to children on their literacy. As an example of this, the situation of informing the children about the monthly water consumption of the home and making them conscious of water can provide pragmatic information. This can be produced simply by comparing the water literacy of children who know and do not know about water consumption at home.

This aim of providing useful information to the literature instead of producing information based on classification, which has been described as a problem situation up to this point, has made it necessary to conduct the current research about water literacy. For this purpose, gender, education level, place of residence, and others, which are independent variables that cannot be changed only by external intervention, were not studied on water literacy. Moreover, there is a rich literature on this subject, not only on water literacy but also on others. Instead of these, those that have the potential to affect it in dimensions such as water saving, water consciousness, and water sensitivity are written as independent variables, since they are included in the theoretical foundations of water literacy in the current study. A few of these are being aware of the average annual income of the family, knowing the average monthly water consumption, following the news in the media about water shortage and finding it realistic, having a concrete life for reusing water at home or outside, and similar variables. Suggestions for what can be done for water literacy in children can be developed by using the confirmatory evidence to be collected terms of these. In this way, instead of constantly moving in a loop for different literacies and eventually arriving at the same point each time, the starting point for another cycle can be reached.

This research was carried out to reveal the factors affecting the water literacy of middle and high school students in Turkey.

2. Method

In this study, survey research was used. In this way, the water literacy of the students between the 11-17 age group, known as children was measured.

The sample

The sample consisted of 155 children. 104 women (67,1%) and 51 men (32,9%), participated in this research. Of these, 53 (34.2%) stated that they knew about the water consumption at homes, and 102 (65.8%) did not. To date, 66 (42.6%) of them have stated that they have had a concrete experience regarding reusing water at home or outside, while 89 (57.4%) have stated that they have not. In addition, 131 (84.5%) of them stated that they found the news that there will be a water scarcity in Turkey and the world in the 2040s realistic, while 24 (15.5%) stated that they did not. In another question, 109 (70.3%) of them stated that they believed the news that technological tools such as dishwashers and washing machines consume less water, while 46 (29.7%) did not believe. The relationship between the participants' average annual income-education status (Table 1) and their knowledge of water consumption at home and the place of residence (Table 2) are in the next two tables.

Table 1: The relationship between the education status of children and the average income group

	Income Group				Total
	Low	Lower-Middle	Upper-Mid	High	
Middle School	61	38	21	-	120
High school	21	8	6	-	35
Total	82	46	27	-	155

Table 2: The relationship between children's knowledge of the water consumption of their homes and the type of settlement they live in

Residential Unit	Water consumption		Total
	No	Yes	
Village	24	1	35
Town	30	6	36
City	48	36	84
Total	102	53	155

Data Collection

The data were collected by a questionnaire that included two parts. One is the 'Water Literacy Scale,' which was developed by Sozcu and Turker (2020a) and used successfully in previous studies (Sozcu & Turker, 2020b; Turker, Yuksel, Tuna, & Sagir, 2022), the other part included introductory information about the sample. This measurement tool was implemented as online questionnaire. There were eight questions prepared to measure the variables that have the potential to affect the water literacy of the sample. The main part, there is a water literacy scale consisting of thirty items and three dimensions: water saving, water consciousness, and water sensitivity. The rating of this scale was made as a 5-point Likert type (totally agree, agree, partially agree, disagree, strongly disagree). The lowest score that can be obtained from this scale is '30' and the highest score is '150'. In this study, the Cronbach Alpha reliability coefficient of the water literacy scale was calculated as .91.

Data Analysis

Data were analyzed with SPSS 24.0. The skewness and kurtosis values of the scale dimensions were checked to prove whether the data were normally distributed. Tabachnick and Fidell (2013) explained that the skewness and kurtosis values of the normal distribution should be between -1.5 and +1.5. The skewness value of the total score was calculated as -.528, and the kurtosis value as 1,078. Based on these data, descriptive and exploratory statistical methods were applied sequentially according to the independent variables employed regarding the sub-dimensions of the scale and the total score. In descriptive statistics, the mean and standard deviation values of the answers given by the students to the scale items are given. In explanatory statistics, a t-test was used in pairwise comparisons of children's water literacy levels, and a one-way analysis of variance (ANOVA) was used in multi-way comparisons (Buyukozturk, 2012). Finally, for the relations between the groups, two comparison tests were made the Tukey test was applied in cases where the variances were homogeneous, and the Games Howell test was applied in cases where the variances were not. These tests have also been used successfully in previous studies examining water literacy scores (Sozcu & Turker, 2020b; Turker, Yuksel, Tuna, & Sagir, 2022).

3. Results

The results of the water literacy levels according to the gender of the participants are given in Table 3.

Table 3: Results of children's water literacy levels according to gender variable

Sub- dimensions	Gender	N	Mean	s	F	t	sd	p
Water-saving	Female	104	4,35	,60	1,56	1,87	153	,06
	Male	51	4,14	,72				
	Female	104	3,16	,89	1,40	2,61	153	,01

Water consciousness	Male	51	2,74	1,01					
Water sensitivity	Female	104	3,86	,88	,10	,58	153	,55	
	Male	51	3,77	,88					
Total	Female	104	3,79	,57	1,20	2,62	153	,10	
	Male	51	3,52	,67					

Table 3 indicates that there is a statistically significant difference in favor of female children in terms of gender, the two sub-dimensions of the water literacy scale, water-saving, and water consciousness.

The results regarding the water literacy levels of the children according to their knowledge of water consumption at home are given in Table 4.

Table 4: Results of children's water literacy levels according to their knowledge of water consumption at home

Sub-dimensions	Knowledge of water consumption	N	Ort	s	F	t	sd	p
Water-saving	Yes	53	4,28	,71	,21	-,07	153	,94
	No	102	4,28	,63				
Water consciousness	Yes	53	3,11	,91	,155	,81	153	,41
	No	102	2,98	,97				
Water sensitivity	Yes	53	3,92	,90	,04	,89	453	,37
	No	102	3,79	,87				
Total	Yes	53	3,75	,63	,41	,68	153	,49
	No	102	3,68	,61				

Table 4 indicates that there is not a statistically significant difference in favor of those who know the water consumption at home or not.

Table 5 shows the results of children's water literacy levels according to whether they find the news that there will be a water scarcity in Turkey and the world really in the 2040s.

Table 5: Results of water literacy levels according to the fact that children find the news that there will be a water scarcity in Turkey and the world really in the 2040s.

Sub-dimensions	Belief in the authenticity of the news	N	Mean	s	F	t	sd	p
Water-saving	Yes	131	4,34	,59	1,96	2,80	153	,00
	No	24	3,94	,89				
Water consciousness	Yes	131	3,09	,92	,24	2,20	153	,02
	No	24	2,63	1,01				
Water sensitivity	Yes	131	3,84	,84	2,94	,36	153	,71
	No	24	3,77	1,08				
Total	Yes	131	3,76	,58	,85	2,74	153	,00
	No	24	3,39	,70				

Table 5 indicates that there is a statistically significant difference in favor of those who find the news that there will be a water scarcity in Turkey and the world in the 2040s realistic, in terms of the first sub-dimensions of the water literacy scale and the total score.

Table 6 shows the results of the children's water literacy levels according to the fact that they find the news that technological tools such as dishwashers and washing machines consume less water realistically.

Table 6: Results of water literacy levels according to the fact that children find the news that technological devices such as dishwashers and washing machines consume less water realistically

Sub-dimensions	Belief in the authenticity of the news	N	Mean	s	F	t	sd	p
Water-saving	Yes	109	4,31	,68	1,09		153	,37
	No	46	4,21	,58				
Water consciousness	Yes	109	3,94	,85	2,08		153	,44
	No	46	2,93	1,05				
Water sensitivity	Yes	109	3,94	,85	,00	2,31	153	,02
	No	46	3,58	,91				
Total	Yes	109	3,75	,62	,25	1,42	153	,15
	No	46	3,59	,59				

Table 6 indicates that there is a statistically significant difference in favor of those who find the news that technological devices such as dishwashers and washing machines use less water realistic, and the third sub-dimensions of the water literacy scale.

Table 7 shows the results of the children's water literacy levels according to their experience of reusing the water they have used at home before pouring it into the sink.

Table 7: The results of the children's water literacy levels according to their experience of reusing the water they have used at home before emptying it into the sink.

Sub-dimensions	The life of reusing water	N	Mean	s	F	t	sd	p
Water-saving	Yes	89	4,30	,69	,13		153	,69
	No	66	4,26	,62				
Water consciousness	Yes	89	3,16	,95	,04	2,04	153	,04
	No	66	2,84	,92				
Water sensitivity	Yes	89	3,96	,85	,15	2,19	153	,03
	No	66	3,65	,89				
Total	Yes	89	3,79	,63	,97	1,95	153	,05
	No	66	3,59	,58				

Table 7 indicates that there is a statistical difference in favor of those who have experience, in terms of the second and third sub-dimensions of the water literacy scale:

The results of the one-way analysis of variance (ANOVA) to determine the water literacy levels of children according to their annual average income for their families are given in Table 8.

Table 8: The results of the water literacy levels according to the annual average income of the children

Sub-dimensions		Sum of Squares	df	Mean Square	F	Sig.
Water-saving	Between Groups	,66	2	,33	,75	,47
	Within Groups	66,39	152	,43		
	Total	67,05	154			
Water consciousness	Between Groups	,03	2	,01	,01	,98
	Within Groups	140,37	152	,92		
	Total	140,41	154			
Water sensitivity	Between Groups	,33	2	,16	,21	,80
	Within Groups	120,02	152	,79		
	Total	120,35	154			
Total	Between Groups	,23	2	,11	,29	,74
	Within Groups	59,25	152	,39		
	Total	59,49	154			

Table 8 indicates that there is not a statistically significant difference among the groups in terms of all sub-dimensions of the water literacy scale and the total score according to their annual average income.

The results of the one-way analysis of variance (ANOVA) performed to determine the water literacy level of children according to their educational status are given in Table 9.

Table 9: Results of children's water literacy levels according to their educational status

Sub- dimensions	Levels	N	Mean	s	F	t	sd	p
Water-saving	Middle School	120	4,32	,57	9,78	,26	152	,20
	High School	34	4,16	,91				
Water consciousness	Middle School	120	3,01	,95	,12	-,44	152	,65
	High School	34	3,09	,97				
Water sensitivity	Middle School	120	3,83	,83	3,32	-,21	152	,82
	High School	34	3,87	1,04				
Total	Middle School	120	3,71	,61	,00	,25	152	,79
	High School	34	3,68	,65				

Table 9 indicates that there is not a statistically significant difference between the groups in terms of all sub-dimensions of the water literacy scale according to the educational status of the children.

The results of the one-way analysis of variance (ANOVA) performed to determine the water literacy level of children according to the type of settlement they live in are given in Table 10.

Table 10: Results of children's water literacy levels by type of settlement

Sub- dimensions		N	Mean	s	df	F	p	Sig
Water-saving	Village (1)	35	3,92	,98	2	7,76	,00	1-2;1-3
	Town (2)	36	4,48	,41				
	City (3)	84	4,35	,51				
Water consciousness	Village (1)	35	2,75	,97	2	2,32	,10	1-2;1-3
	Town (2)	36	3,22	,83				
	City (3)	84	3,05	,97				
Water sensitivity	Village (1)	35	3,70	,90	2	1,46	,23	1-2;1-3
	Town (2)	36	4,04	,89				
	City (3)	84	3,80	,86				
Total	Village (1)	35	3,41	,73	2	6,10	,00	1-2;1-3
	Town (2)	36	3,90	,46				
	City (3)	84	3,74	,59				

Table 10 indicates that there is a statistically significant difference between the groups in terms of the first dimension of the water literacy scale according to the type of settlement where the children live. When compared to those living in villages water literacy for water saving was found to be high among those living in the town and/or city in only the first dimension of the water literacy scale.

5. Discussion

While numerous studies have addressed student conceptions of the water cycle and scientific knowledge, less is known about their attitudes and values regarding water. Water is a particularly challenging topic due to its systems complexity as well as its interdisciplinary nature (Xiong, Hao, Liao, & Zeng, 2016; McCarroll & Hamann, 2020). It has been determined that the water knowledge level of the children has a direct effect on the water behavior, and indirectly affects the water feeling and water responsibility (Xu, Wang, Wang, & Zhang, 2019). This research was carried out to reveal the factors affecting the water literacy of middle and high school students in Turkey. It is known that many studies have been carried out on water literacy both in Turkey and in other countries for students (Ates, 2019; Boon, 2011; Cobanoglu & Turer, 2015; Er-Nas & Senel-Coruhlu, 2017; Sagdic & Sahin, 2016; Teksoz, Sahin, & Ertepinar, 2010). However, in the current study, a study was conducted that revealed pragmatic knowledge in terms of water literacy. In this way, instead of hard-to-change factors such as gender, class level, educational status of parents, and place of residence, which are frequently researched in others (Hui-Shuang, 2018; Sozcu, Yuksel, Tuna, & Sagir, 2022; Sozcu & Turker, 2020b; Moreno-Guerrero et al., 2020), some variables were

determined based on the experiences offered to children. For this purpose, a possible difference that may arise at the point of water literacy can be used directly to strengthen water literacy in the field.

For this purpose, firstly, gender, grade level, and place of residence were discussed as independent variables. There are many studies in which these variables are discussed and their effect on water literacy were examined (Moreno-Guerrero et al., 2020; Wang, Chang, & Liou, 2019). In this study, there was a difference in the water literacy of middle and high school students, although not on the whole scale, in the dimensions of water-saving and water consciousness, in favor of girls. However, there is no difference in water sensitivity. Some studies supported these results, that is, the water literacy of girls is higher than that of boys (Cakir, 2016; Sozcu & Turker, 2020b; Sozcu, Yuksel, Tuna, & Sagir, 2022). However, unlike the current study, there was no difference in water sensitivity. There was no statistical difference between the annual average income of the families of the children on water literacy as supported (Sozcu & Turker, 2020b). Wang, Chang, and Liou (2019) determined that there was a significant difference between the variables such as age, income level, and domestic water expenses of the participants and their water literacy levels. In terms of where children live, there is only a difference in the first dimension of the scale, water-saving. As expected, this difference is in favor of those living in the city rather than those living in the village. This was probably because the water in the villages was free and plentiful in Turkey. On the other hand, the high water prices in cities automatically lead children to save water. At this point, it comes to mind that sharing the water consumption at home and even the price paid for it may affect the water literacy of children. At this point, when the effect of grade levels on water literacy was compared as usual variables, there was no difference. In short, the water literacy of middle and high school children is quite similar. This result is different from studies that argue that children gain more water consciousness as they get older (McCarroll & Hamann, 2020).

In the second part of this research, factors that were rarely studied in previous studies were used as independent variables to produce pragmatic information that would contribute to the field, namely the promotion of water literacy. Although the average scores of those who know the amount of water consumed at home, which is among them, are high in all three sub-dimensions, no difference was found in the pairwise comparison. If they know not only the amount of water consumption but also the price paid for it, which will deepen the discussion in the previous paragraph, their water literacy will likely change. For this purpose, when the children were asked whether they followed the news about the drought risk, which is predicted to be experienced in the 2040s and which is frequently shared in the media, the majority of the children answered yes. In this way, there was a difference between the water literacy scores of the children who follow and believe to be realistic in terms of the first two dimensions of water conservation and water consciousness. This difference is in favor of those who follow and find it realistic. Meanwhile, it was noted that the mean scores of both groups were close to each other in terms of water sensitivity, where there was no difference. Again, the vast majority follow the news in the media about devices such as washing machines and dishwashers, which are among the technological tools used at home, that they consume less water and find it realistic. In the comparison made at this point, the difference in water sensitivity has emerged. The first dimension scores were again both high and close to each other. In the comparison made according to whether they have had a concrete experience of reusing water at home, there is a difference between water consciousness and sensitivity scores. The value of direct experiences offered to children at home towards sustainable development and water literacy is revealed (Kucuk & Burkaz Ekinci, 2021). As expected, this difference is in favor of those who have experienced it. A comparison could not be made because there was no other study in which these variables were studied in the literature. However, important results can be shared based on the new and pragmatic information produced in the study.

6. Conclusion

Brody (1995) explained that water concepts were abstract and disconnected from everyday life and experience. Based on the literature, attention needs to be paid to helping students to better understand and conceptualize some unseen elements of hydrologic and hydrological systems (Benninghaus, Kremer, & Sprenger, 2018). The variables produced and frequently examined in this study were used to confirm the validity of the study. However, concrete inferences can be made for the development of water literacy in children over the newly determined variables. In this context, there is a need to adopt a movement style from near to far to develop water literacy in children. The

closest place is the house where they live. At this point, it is useful to share the amount of water consumption in the house as well as the price for it. Creating an environment for the families to follow the news about water and evaluating the news within the family will contribute to the water literacy of children (Cappellaro et al., 2011). In this process, in addition to the news, conversations with them about the water consumption of the machines have the potential to be useful so that children can gain concrete experiences. Experiences in reusing water at home and outdoors are also very valuable.

When these results are taken together, although the value of instructional designs based on an interdisciplinary approach to water literacy is known, the training of parents can be given as an alternative to this. In this way, the informal experiences that the parents, who are models for water literacy, will offer to their children will probably be more valuable than the formal experiences offered in educational institutions (Kucuk & Yildirim, 2020). It is also advocated by other researchers that informal experiences can be used successfully in helping children acquire water literacy. Dean, Fielding, and Newton (2016) put forward that higher levels of water-related knowledge among the public lead to more numerous and productive discussions and also public engagement in both informal and formal processes. In this context, as a final word, it is clear that there is a need for training on the physical and chemical nature of water so that children can acquire water knowledge and therefore water literacy and water consciousness.

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New Normal: The Future Curriculum Development in Education

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Abstract

The purpose of this study was to conduct a needs analysis concerning the future of curriculum development in education. A mixed-methods study was conducted with a sequential exploratory research design, where the qualitative data were collected first followed by the quantitative data. As a needs analysis was undertaken in this research, the Delphi technique, one of the techniques for determining needs, was employed in this study. In the first stage of the three-stage Delphi technique, an open-ended question was directed to curriculum development experts. The qualitative data were analyzed using a content analysis method under four themes, Design, Development, Implementation, and Evaluation. In the second stage, a questionnaire was prepared based on the resultant findings and experts were asked whether they agreed with the questionnaire items. After analyzing the questionnaire data using central tendency measures, the second stage was initiated to determine whether there were differences in their views regarding the same questionnaire items. As a result of these procedures, first, the views of experts were obtained on the future of curriculum development and then the quantitative data were collected. Finally, the collected data were analyzed together. Under the design stage of curriculum development, the study findings suggested creating curriculum drafts based on the needs analyses, skills, and abilities and ensuring their suitability to digital platforms. Under the development stage, the results suggested preparing curriculum with interdisciplinary approaches that value student-centered practices, skills, values, and activities. The implementation stage included inclination towards practices such as creating digital content and guiding towards social accountability projects that eliminate the disadvantages of distance education. Lastly, the evaluation stage included effective use of digital platforms, taking safety precautions, and providing counselling services.

Keywords: Distance Education, Curriculum Development, Curriculum, Needs Analysis, Delphi Technique

1. Introduction

1.1 Introduce the Problem

The developing and evolving technology promotes societies, individuals, and institutions by changing their

structures. These changes stem from the needs drive experienced by people. Throughout centuries, people have needed many elements, and these needs have caused new structures and systems to take shape. As such, the needs arise from the challenges in people's lives. People have built houses because of their needs for shelter, hunted for their needs for food, and created new states and forms of government for their needs to maintain order. Education, on the other hand, is a structure that emerges from people's needs for knowledge. As a result of transferring knowledge from generation to generation using various methods, human beings have been able to sustain their existence in the world (Sarı, Yunus Emre, 2019). Open and distance education has gained significance with the needs of countries to meet the educational needs of individuals (Gökmen et al., 2016).

Distance education, which has become more practical to use with the developing technology, provides convenience to many students and teachers today (Aksüt, 2020). People suffer from great time issues because of the changing world order. Therefore, they may show more inclination towards distance education in the near future, even if there is no disaster (Uyar, 2020).

Today, conditions are prone to change along with new events. The Covid-19 pandemic is one of these unexpected events which has started controlling the world (TIME, 2021). This event caused the future plans to change and the education and working process to continue from home (Salari et al., 2020). In this period, seen as the information age, education has become the key element of fundamental transformation and change, making its presence felt in every field (Salari et al., 2020; Wong, 2003; Örs et al., 2013; Doğan, 2019). For instance, when computer and internet technologies were unavailable, people created classroom environments for centuries and offered education in these settings, sharing the same physical environments (Karasu & Sarı, 2019). Demands for education have increased in the rapidly developing society with industry, whereby face-to-face education and traditional learning methods have become insufficient to meet society's needs. The history of humanity has witnessed major ruptures affecting societies in different periods, and innovations brought by these pursuits have led to changes and transformations by affecting societies in different ways (Karakaş, 2020). Technology has caused a rapid change and transformation between societies and is one of the primary factors that has led to these changes (Çalışkan & Özbay, 2015).

In addition to discussing the effect of the pandemic on technologization and digitalization in education, we could also discuss its effects on society. The concept of social change could be defined as the transition process of any group, organization, community, or society in the world from one form to another (Çalışkan, 2018). According to this definition, the effects of mass changes in society on education are inevitable. Education, one of the elements that make up the social structure, is inseparable from the changes taking place in other parts (Özdemir, 2011). This is because society and education are two structures that complement and change each other. These changes in education and society are two-way, that is, reciprocal (Çalışkan, 2018). While changes in education affect society, changes in society also affect education (Çalışkan, 2018). Considering that the pandemic had a greater impact on society, education is inevitably affected by this change. Hence, the education system should adapt to this change under process (Vahap, 2003). This change once again reveals the importance and function of educational institutions (Aslan, 2001). In conditions that unfolded with the pandemic, many studies have been conducted considering variables such as teachers, students, and parents in distance education (Gökbulut, 2021; Williams et al., 2021; Reguera et al., 2021; Perez-Lopez et al., 2021). By taking a look at all these studies, we can observe many changes in practices, student profiles, and perceptions. In this process we are experiencing, the only way educational institutions, whose function in terms of education has reached a much more important point, could adapt to these changes is to develop curriculum per requirements and adequacies of the process.

Conducting a needs analysis under these objectives becomes imperative in education. Needs analyses in education are consistent and detailed planning to achieve the outcomes that should be realized by the end of an educational process (Thoha & Al Mufti, 2020; Çeliköz, 2004). Based on these requirements, there will be many changes in curriculum development practices in education in current and future times. The views and suggestions of curriculum development experts in this regard are of primary significance in terms of changes that may occur in the curriculum development process. This study also aims to carry out a needs analysis concerning how curriculum development should be in education in near future. In the meantime, issues such as the limited access of many students to distance education in the world (UNESCO, 2021), how digital technologies can be

used effectively in education (Husaj, 2020), how to support students in current crisis periods and how to help students facing obstacles (Frumos, 2020) have become the current perspectives of today's education in the world. This study also aims to reveal the views and suggestions of experts regarding how the curriculum development process could be shaped in distance education considering the experiences gained in this period and the past knowledge.

This research aimed to conduct a needs analysis through the Delphi technique about how curriculum development should be in education in near future, owing to the reflection of developments in science and technology and changes in current processes on education. Considering the literature, studies carried out on this subject are significant in terms of predicting the near future (Vare et al., 2019). Per this objective, the problem statement of the research was determined as: How should curriculum development in distance education be in near future according to the views of curriculum development experts? Based on this question and aim, answers were sought to the following questions.

- 1) How should be the curriculum development in distance education in near future according to the views of curriculum development experts in education?
- 2) How should be the design stage of curriculum development in distance education?
- 3) How should be the development stage of curriculum development in distance education?
- 4) How should be the implementation stage of curriculum development in distance education?
- 5) How should be the evaluation stage of curriculum development in distance education?

2. Method

This research is a mixed-methods study. One of the reasons why mixed-methods research is preferred is that qualitative and quantitative research alone could be insufficient to understand the scope of a subject, and therefore, by combining two qualitative and quantitative data sources, the problem could be viewed from a broader perspective (Creswell, 2021). Of mixed-methods research designs, an exploratory sequential mixed-methods research design was used. The exploratory sequential mixed-methods study is defined as a research design in which the qualitative data is explored first and then the collected data are used in the quantitative dimension (Creswell, 2013). In this study, qualitative data were collected by asking an open-ended question to curriculum development experts through a Delphi technique. After analyzing the qualitative data, the quantitative data were collected using a questionnaire created based on the qualitative data to collect the quantitative data. After collecting the qualitative and quantitative data, the resultant findings were examined from a holistic perspective. A needs analysis was carried out in accordance with the subject of the research. Besides being a tool, the needs analysis is used to make more accurate decisions about a topic under investigation (Şahin et al., 2018). Of needs analysis techniques, the Delphi technique was used in this research. The decision-making process of decision-makers in education, often carried out by political and emotional decision-making, can allow experts to make better decisions using the Delphi technique (Vare et al., 2019; Şahin, 2001). Delphi technique has limitations, which may lead to some disruptions and problems in the process. These multiple procedural steps make it difficult to keep participants in the process. Considering these disadvantages, Şahin (2001) stated that a group of at least seven experts is adequate. As such, more than seven experts were reached by taking these limitations into consideration. A general view of the study is given in (Figure 1).

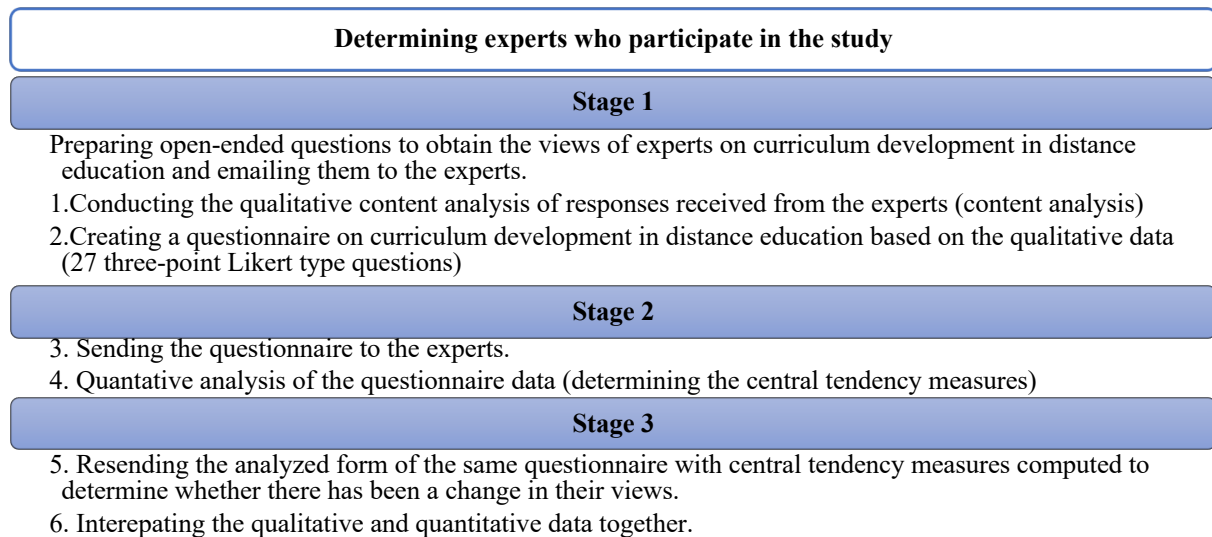


Figure 1: A General Overview Of The Study

2.1 Participant Characteristics

The study group of this research consisted of curriculum development experts from three universities in Turkey. Of purposive sampling methods, expert and convenient sampling techniques were employed when selecting the experts comprising the study group. Expert sampling is a sampling technique used when one needs to collect data from individuals with expertise on the topic selected for research (Oral & Çoban, 2020). The demographic information of study participants is presented in (Table 1).

Table 1: Demographic Information of Participants

University	Department	Participants	Title
Two Universities in Mediterranean Region	Curriculum and Instruction	9	3 Prof. Dr. 5 Associate Prof. Dr. 1 Dr. Faculty Member
One University in Black Sea Region	Curriculum and Instruction	1	1 Associate Prof. Dr.
Total		10	

2.2 Data Collection Tool

An open-ended question prepared by researchers was used as a data collection tool in the study. Experts were asked to answer a comprehensive open-ended question regarding the curriculum development process in distance education. The qualitative data obtained from this question were subjected to content analysis, interpreted, and turned into a questionnaire by the researchers to interpret the views of experts quantitatively. In other words, a sequence was followed from qualitative to quantitative data. At the same time, it also formed the stages of the Delphi technique. The questionnaire was submitted for expert opinions and became ready for use. The content analysis of the open-ended question used in the research enabled both preparing a questionnaire and reaching the qualitative findings that would create data in answering each sub-research questions.

2.3 Validity and Reliability

In order to increase the validity of the research, questions prepared were evaluated by 3 researchers who were experts in the subject before they were applied, and they were applied after the necessary improvements were made according to the suggestions made. In order to increase the reliability in the analysis of the data, the codes were checked by different researchers and a code list was created by reaching a consensus.

2.3.1. Research Ethics

The data in the study were collected on a voluntary basis. Instructors were reminded that they could terminate the research process at any time. In addition, no information that would disclose the identity of the participants was included. In addition, since the research is not an applied study, it does not have a dimension that will negatively affect the participants physically or psychologically.

2.4. Analysis of Data

Below is a detailed description of the data collection process and the implementation of the Delphi technique.

First Delphi Stage

10 curriculum development experts participated in the first stage of the Delphi technique. For this stage to be successful, at least 60% of participants should express their opinions (Turan et al., 2021). In this study, all ten people invited presented their views. In the first stage, the following open-ended question regarding the views of participants about the near future of curriculum development in education was emailed to 10 experts: How do you think the curriculum development process in distance education should be in near future, assuming that there has been a social impact with the rapid transition to distance education in the current pandemic process? (Please provide your comments in terms of design, development, implementation, and evaluation stages of curriculum development). Responses received from the experts were examined, converted to short sentences without changing their original meanings, and content-analyzed by the researchers. To ensure the validity and reliability in content analysis, the reliability coefficient of Miles and Huberman (1994) was used ($\text{Reliability} = \text{Consensus} / (\text{Consensus} + \text{Disagreement})$). As such, the reliability coefficient was 99.9 in the study.

Second Delphi Stage

The purpose of the second stage of Delphi is to create a questionnaire based on the data obtained in the first stage and to determine the agreement level of participants with these questionnaire items. Questionnaire items were prepared using the data obtained from the qualitative data analysis to implement the second stage of the Delphi technique, and two curriculum experts were asked for their opinions to test the internal consistency of the questionnaire. The questionnaire comprising 27 three-point Likert questions (1- Disagree; 2- Undecided; 3- Agree) was emailed to the participants. This way, the second Delphi stage came to an end. Measures of central tendency such as median, first quartile, third quartile, and range ($R = \text{range}$) were calculated for the views obtained after completing the second stage. The reason for computing the central tendency measures was to determine the level of consensus and disagreement (Şahin, 2001).

Third Delphi Stage

The third stage of the Delphi technique was completed with 10 participants. The results of the data collected in the second stage were prepared and resent to experts through emails, asking them to write down their views about whether their opinions have changed considering these values. The questionnaire sent in the third stage was the same in the second stage. However, while presenting this questionnaire, the median, first quartile, third quartile, and range values were also included, and what these values meant was explained at the top of the questionnaire. It was also emphasized that they should describe if their views have changed in the third round than responses they give in the second round, but skip them if there were no changes in views. According to Zelif and Heldenbrand (1993), items with an interquartile range of less than 1.2 are considered acceptable. The survey could be repeated two, three, and even ten times to ensure mobility towards consensus. In this study, it was evaluated in three stages, as the consensus among the experts was high, which remained unchanged in both stages.

3. Results

To answer the first sub-research question in the first phase of the study, the views of experts were collected using the Delphi technique, and responses given to the open-ended question were examined through content analysis.

Themes and codes were determined and the frequency values of experts' responses relating to each code were computed and tabulated. The content analysis results are illustrated using a concept map given in (Figure 2).

Themes	Codes
Design	Skills like leadership, cooperation, creativity, effective communication, emotional intelligence, entrepreneurship, global citizenship, teamwork, and problem-solving abilities should be promoted and guaranteed (f 7). Establishing technical equipment and infrastructure (f 7) Determining the learner profile very well (f 6) Determining student interest and needs (f 5)
Development	Expanding the scope of skills and values in the curriculum (f 10) Giving more space to student-centered course designs (f 7) Opting for an interdisciplinary approach (f 6)
Implementation	Producing digital content that makes students active and creating units for digital content (f 9) Establishing technical and technological counseling centers (f 8) Increasing project activities (f 7) Ensuring exam security in the digital environment (f 6) Open courses should be more common in social media, and monitoring institutions should be widespread (f 6) Using digital media for workshops and reports within the scope of evaluation (f 6) Providing enrichment in presenting learning opportunities (Doing activities such as virtual classes and activity rooms) (f 5) Providing in-service training to teachers regarding distance education and increasing the diversity of current training programs (f 5) Preparing practices that increase social activities (e.g., special days, corporate belongingness) (f 5) Taking into account the formative assessment and providing timely feedback (f 3).
Evaluation	Obtaining the views of teachers, students, and parents continually (f 10) Increasing scientific studies using different research methods and designs (f 8)

Figure 2: Content Analysis of the First Stage of Delphi

As shown in Figure 2, per responses that participants provided considering the stages of the curriculum development process, codes were created and each code was combined under four categories (Design, Development, Implementation, and Evaluation). Participants emphasized that having sufficient technological infrastructure and equipment is imperative in the design process of curriculum development. Considering other items, taking student interest and needs into consideration is also of great significance. In the development category, all participants stated that the scope of skills and values that must be included in the curriculum should be expanded. However, in the implementation stage, they mostly emphasized the significance of making digitalized content prevalent alongside the process and creating units where these contents will be produced. These statements are followed by "increasing the variety of in-service training provided within the scope of distance education to teachers." In the evaluation category, all participants suggested constantly obtaining the views of education stakeholders, namely teachers, students, and parents, and increasing studies using rich methods.

To implement the second stage of the Delphi technique, the questionnaire, created based on content analysis, was sent to the experts and the central tendency measures of the data obtained from the questionnaire were computed and presented in (Table 2).

Table 2: Median, First Quartile, Third Quartile, and Range Values of Responses Given by the Experts to Questionnaire Items

Q1	Median	Q3	R	Item
3	3	3	0	1- Working groups should be formed using an interdisciplinary approach during the curriculum design process.
3	3	3	0	2- Conducting needs analyses (students, teachers, parents, and administrators) in curriculum design processes in schools able to carry on with distance education should be given importance.
3	3	3	0	3- Preparing objectives, learning outcomes, and contents in the context of attitudes and values in the curriculum designed (effective technology utilization, time management, accountability, study skills, higher-order thinking skills, and self-directed learning) should be given importance.
3	3	3	0	4- Skills involving student and teacher activities and especially socialization in digital environments and psychological impacts that the pandemic added to our lives (patience, coping with loneliness...) should be included during the design process.
2.75	3	3	0.25	5- Social analyses of developments experienced amid the pandemic should be reflected in the curriculum during the design process.
3	3	3	0	6- In order to support teachers, units where they can take part in creating course content should be created.
2	2	3	1	7- Little room should be given to old habits when preparing teaching materials.
3	3	3	0	8- Course content should be planned in such a way that makes students active and digital content should be created in this regard.
2.75	3	3	0.25	9- The contents on the EBA platform should be enriched.
2.75	3	3	0.25	10- The variety of instructional technologies should increase.
3	3	3	0	11- Research-based classrooms like flipped classrooms should be created.
2	2	2.25	0.25	12- Online education provided by institutions such as education academies and famous educators, who are expert in their fields, should start getting more popular and people should turn to individual education.
3	3	3	0	13- Infrastructure should be well established.
3	3	3	0	14- Utilization of student-centered approaches, methods, and techniques regarding teaching-learning processes will gain significance.
3	3	3	0	15- More practical activities should be included in learning-teaching processes to support social activities.
2	2	3	1	16- Considering the financial and technical infrastructures of countries in the world, one should not expect that distance education will become the only option in low-income countries.
3	3	3	0	17- Counseling centers should be established for students and teachers.
3	3	3	0	18- Ensure that the curriculum designed represents all segments of society (urban-rural) and is implemented accordingly.
3	3	3	0	19- The variety of in-service training relevant to the curriculum designed should be increased.
2.75	3	3	0.25	20- Cooperation should sustain between group teachers that suits digital platforms.
3	3	3	0	21- Formative and authentic product-based assessments should be prioritized.
2.75	3	3	0.25	22- Measurements and evaluations should be carried out through a mixed system, with face-to-face exams included.
3	3	3	0	23- Works done for the security of exams held in digital environments should increase.
3	3	3	0	24- Obtaining the views of all stakeholders regarding the practices carried out within the scope of the designed program should be considered significant.
2.75	3	3	0.25	25- Meetings where digital media is used should be organized for evaluation activities.

Q1	Median	Q3	R	Item
2	3	3	1	26- It should be ensured that institutions taking part in monitoring online courses on social media platforms become prevalent.
1	2	2	1	27- It seems unlikely that measurement and evaluation processes are carried out entirely through online platforms in the future.

Table 2 shows values relating to statistical analyses (median, first quartile, third quartile, and range) conducted on data collected through the questionnaire. Considering the measures of central tendency, the experts have agreed generally with all items.

To implement the third stage of the Delphi technique, responses given to questionnaire items were evaluated and resent to the experts. In this process, measures of central tendency were also provided along with explanations. These analyses were conducted to determine whether the participants were sure about their decisions and whether there was a concordance between items. To ensure this concordance was met, the difference between the central tendency measures of medians and quartiles were examined, and small differences between quartiles (Q1-Q3) indicated consensus on items ($R < 1.2$). Table 3 shows the experts' consensus levels regarding items. Consensus values relating to responses the experts reconsidered are also shown in (Table 3).

Table 3: Central Tendency Values Relating to Responses Reconsidered by the Participants

Q1	Median	Q3	R	Item
3	3	3	0	1
3	3	3	0	2
3	3	3	0	3
3	3	3	0	4
2.75	3	3	0.25	5
3	3	3	0	6
2	2	2.25	0.25	7
3	3	3	0	8
2.75	3	3	0.25	9
2	3	3	1	10
3	3	3	0	11
2	2	2	0	12
3	3	3	0	13
3	3	3	0	14
3	3	3	0	15
2	2	3	1	16
3	3	3	0	17
3	3	3	0	18
3	3	3	0	19
3	3	3	0	20
3	3	3	0	21
2	3	3	1	22
2.75	3	3	0.25	23
3	3	3	0	24
2.75	3	3	0.25	25

Q1	Median	Q3	R	Item
2.75	3	3	0.25	26
2	2	2.25	0.25	27

As seen in Table 3, experts agreed on 27 out of 27 items ($R < 1.2$). For the analysis of the third stage of the Delphi technique, statistical analyses conducted in the second stage of Delphi were used. Moreover, it was examined whether the range between quartiles has decreased. When there was a decrease in ranges, it indicated that there was a consensus. Considering the range values of items, the interquartile range of 18 out of 27 items remained unchanged, but still a consensus was reached. In four out of nine items (7-9-12-20), range values decreased. In other words, there was an inclination toward consensus. Although the other five items (10-22-23-26-27) showed consistency with the equation of range value ($R < 1.2$), there was a negative inclination towards consensus. Figure 2 graphically illustrates the distribution of experts' concordance with opinions.

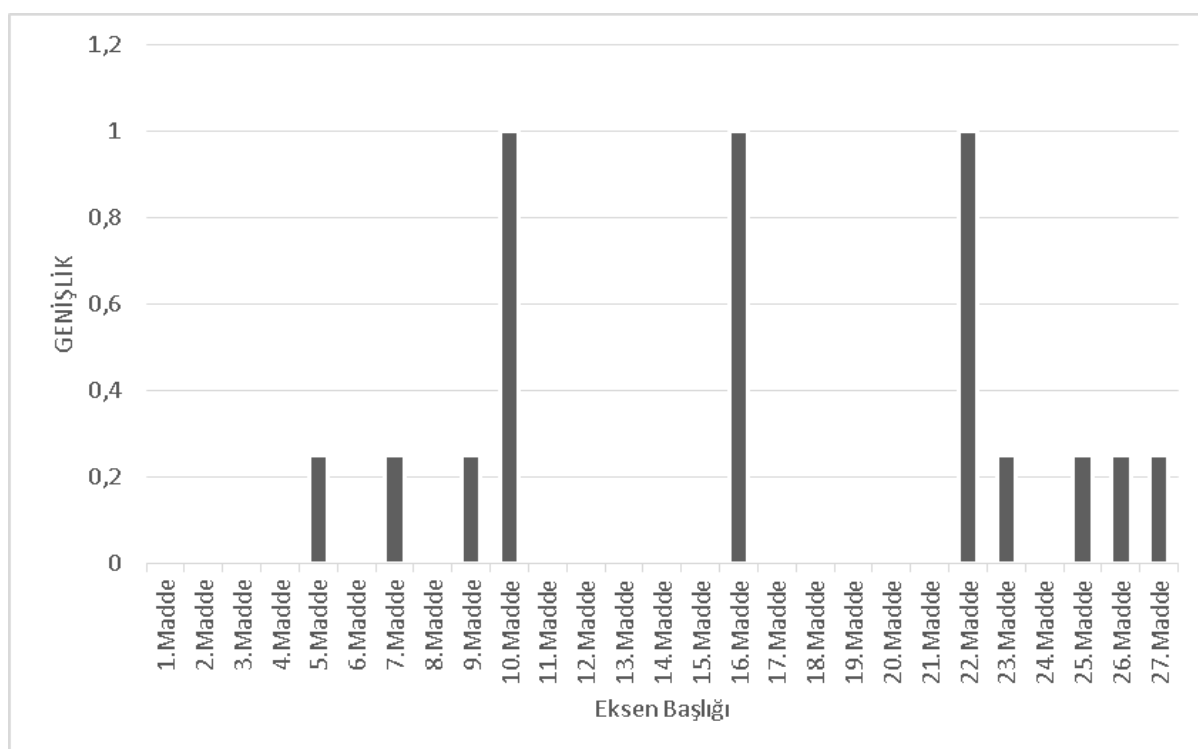


Figure 2: Distribution of Experts' Agreement with Opinions

A general evaluation of findings obtained through the Delphi technique indicated that experts had consensus and shared common opinions concerning curriculum development in distance education in near future.

The following findings were obtained based on these data and examining direct statements using content analysis and considering curriculum development stages. Opinions relating to the four stages of curriculum development given in sub-research questions were revealed through content analysis and described using the content analysis of responses given by experts to the semi-structured question.

Design Stage: Considering the items (1-5) relating to the design stage of the questionnaire presented to the experts (Table 2), there was a full consensus among experts per interquartile ranges of the first four items. In the meantime, some direct statements from the data collected from experts regarding the design stage are given below.

Exp1. "Along with the developing and evolving technology, changes should also take place in the philosophy of education and include skills of upcoming centuries that students should acquire: leadership, entrepreneurship, empathy, digital qualification, and so forth. And, relevant curriculum has to be designed accordingly..."

Exp3. *“Curriculum should be prepared in every field to educate individuals who directly feel and identify world problems, produce innovative thoughts for their solutions, and utilize right methods and techniques for solutions.”*

Development Stage: An examination of items (6-13) regarding the development stage in the questionnaire administered showed that experts had reached a consensus on all items. However, though there was a consensus per interquartile ranges between items 7, 9, and 10, one cannot say that participants had a complete consensus. Some direct statements from the data collected from experts relating to the development stage are given below.

Exp7. *“Personalized education should be developed based on an education system that is adaptable to students’ capabilities and talents. The contents of education could also be enriched according to students’ learning speeds and situations.... The main theme of courses should focus on subject knowledge and experience.”*

Exp10. *“...though different per individual characteristics, one should benefit from lectures, videos, tests, assignments, discussion platforms, and blocks in lessons. Course contents having digital infrastructure should be created and new approaches like flipped classrooms should be used.”*

Development Stage: As per items (14-20) relating to the development stage in the questionnaire administered, experts reached a consensus on all items. However, although a consensus has been reached considering the interquartile range ($R = 1$) of item 16, one cannot say that participants had full consensus. Some direct quotations from the data collected from the participants regarding the implementation stage are given below.

Exp5. *“To have students acquire these abilities, utilization of approaches such as visual learning, personalized education systems, game and scenario-based learning, project-based problem-solving, and augmented reality will be necessary.”*

Exp9. *“Education and learning activities should be conducted in different places, different times, and using different tools. A conception of education and learning everywhere and anytime should be dominant... Diversification and richness should be ensured while offering learning opportunities by using computer and internet technologies-based learning contents, materials, and learning environments besides printed, visual, and auditory learning content and materials.”*

Evaluation Stage: An examination of items (21-27) relating to the evaluation stage in the questionnaire administered indicated that experts have reached a consensus on all items. Some direct quotations from the data collected from experts regarding the evaluation stage are given below.

Exp4. *“...question and answer practices should be abandoned now. Their knowledge should be measured and their abilities of putting knowledge into practice should be tested with their project performance throughout the learning process.”*

Exp8. *“Student should be more independent during the learning process, get support from their peers. ...therefore, benefiting from peer education can make significant contributions to student achievement. As education can be carried out from distance, teachers and education institutions become more important for academic performance.”*

4. Discussion

According to the resultant study findings, experts suggested conducting a comprehensive needs analysis of all education stakeholders in the design stage of the curriculum development process, diversifying skills and abilities required by the curriculum, providing sufficient resources in creating these contents used along with the digitalization, expanding the scope of in-service training provided to teachers, and ensuring the security and fairness of measurement and evaluation processes. Considering relevant studies in the literature, we may come across similar comments on how the process should take shape (Celik et al, 2022; Çalık & Sezgin, 2005; Arslangiray, 2019). Curriculum developers and educationalists also emphasize that new stakeholders, new thoughts, and new methods will stand out in developing this system, assumed to gain persistence. According to Çeliköz (2004), there should be a positive relationship between the realization of goals, one of the elements of curriculum, and conducting activities within the scope of a program throughout the education process. People may turn to different learning environments owing to the reflection of the data yielded by these needs analyses in applications and the efficiency assumed to increase through continuous development activities (Kılıç, 2011,

p.158). According to Türkoğlu (2003), considering all the events experienced in this process, the curriculum developed “should enable thinking, focus on problem-solving and improve discussion, enable mutual learning, be student-centered and controlled, promote active participation and knowledge construction, and contribute to the mission of education in democratic society by enabling thinking abilities and learning together.”

According to the findings obtained in the development stage, the participants strongly emphasized that curriculum development should be based on an interdisciplinary approach. They stated that when forming the working groups, one should not only work with the curriculum development specialists but also with psychology, sociology, computer and instructional technologies specialists. As such, they suggested enriching the contents of the EBA (Education Information Network) platform. It was also concluded that the variety of the student-centered course designs created should be increased and even research-based practices like flipped classrooms should be put into practice. At the same time, suggestions on utilizing different digital platforms making students active, and increasing the effectiveness and variety in distance education systems using new software, applications, and online channels were in parallel to those in the literature (Başaran et al., 2020). According to Kaçan and Gelen (2020), considering that distance education has become so widespread, educational institutions and organizations should develop programs per individuals’ interests and needs and provide the skills required by the current era and support lifelong learning when creating content. Vare et al. (2019) and Zeliff and Heldenbrand (1993) also reached similar findings, and these findings are therefore similar to those in the literature.

In the implementation stage, when the responses given by participants were examined, it was concluded that digitalization will increase in content production and with this increase, units creating digital content will be established in institutions. According to a study by Sezgin and Karabacak (2020), conducted in the field of higher education, it is important to create pages on official websites of universities offering documents, information, news, and authentic content that cover digital transformation and to establish an effective sharing space by taking notice of user feedback and doing necessary evaluations. In the meantime, the participants emphasized that formative assessment will gain significance and therefore, it should be a part of the system. The measurement and evaluation process is one of the most important elements of curriculum, and this change in society will also affect the education system, whereby making changes in measurement and evaluation processes will be inevitable. According to Baran and Alzoubi (2020), student competencies, which have changed for many reasons over the centuries, should constantly develop through assessment activities, and with this growing change throughout the world, higher-order skills should be included in the assessment process. In the meantime, the study concluded that workshops and reporting held within the scope of curriculum evaluation should take place in digital environments. In the evaluation stage, the participants stated that the views of education stakeholders, namely teachers, students, and parents should be constantly obtained and that the variety of scientific studies should be increased by using different methods and designs. According to Kızılkaya (2021), educational programs are systems that develop under the influence of technology, change with the influence of society, and constantly renew themselves. Therefore, including stakeholders with whom the system has mutual interaction is of great significance. In their study, Vare et al. (2019) also suggested increasing digital assessments and establishing technical counseling centers in higher education. Therefore, one could argue that the resultant findings are consistent with the literature. As a result of the study, when the four stages of curriculum development were examined, the participants emphasized that distance education systems they used still had deficiencies in terms of development and that the infrastructural issues of the system must be resolved. They noted that there may be difficulties with accessing distance education systems used around the world and that systems should be within the inclusiveness framework. Therefore, they stated that all segments and age groups of the country should be taken into account and that all stakeholders of education should be included in the process. At the same time, they emphasized that a platform can be developed as a solution to the increasing workload during the measurement and evaluation process and that stakeholders and groups should be in constant cooperation to observe the impact of these practices. They emphasized that the use of digital opportunities in content production should increase due to the effect of digitalization on education and units undertaking this task in this process should be created. They maintained that to learn about changes and developments in the process and draw a roadmap for evaluating the curriculum, the opinion of stakeholders should be constantly obtained and

the number of scientific studies conducted using different methods and designs within the scope of curriculum development should increase.

A general evaluation of the information obtained from this research clearly shows that digital libraries, e-learning tools, and applications that contribute to teaching-learning environments allow individuals to utilize the rapidly developing technology in education more efficiently and to have quicker access to information. Various teaching-learning activities are delivered through flexible learning environments offered by constructivism-based content management systems, which also make learning more efficient and effective by facilitating access to information. In addition, learning management systems that bridge cooperation and communication between learners and instructors are also teaching tools used for information exchange and learning and are very effective in terms of ensuring diversity. Considering orientations such as various social networks, Web 2.0 and Web 3.0 tools, and MOOC, interactive environments, which increase individual motivation and interest, spread over wider areas, and help cooperative learning to take place, are established and this condition may be important for distance education. As technologies utilized in teaching-learning environments increase, saying that tendencies are growing towards distance education would not be wrong. Various e-learning applications and tools, social networks, and management systems for the increasing interests and needs should be built on solid infrastructure foundations and this, of course, requires constant change and development. Utilization of technology in education, which we will need much more than we do today, is quite important for the next generation and the significant steps taken will greatly affect the future of distance education together with the achievements gained and the needs encountered in technology-based learning.

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The Development of Pragmatics in Morris's Behavioral Semiotics: Semiotic Perspective

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Abstract

Many pragmaticists claimed that pragmatics developed mainly from 1970s and 1980s, taking the emergence of its series of pragmatic theories (e.g., Cooperative Principle, Conversation Implicature, Relevance Theory, etc.), methodology, and the official issue of *Journal of Pragmatics* (1977) in Amsterdam as its marks. However, few scholars reinstate the historical truth of the real development of pragmatics by comparing and reviewing the semiotic thoughts between Peirce and Morris so as to discover the development and prosperity of pragmatics in Morris's times (around 1930s). As one of the founders of modern semiotics, Morris's major contribution derives from his proposal of trichotomy theory of semiosis, that is, syntactics, semantics, and pragmatics, grounded on which Morris intends to establish an all-inclusive general theory of signs. Substantially, Morris's semiotic theory involves rich pragmatic thought which is inherited and developed from Peirce theory of signs that has logic and pragmatism as its foundations. This paper aims to reveal the formation and development of pragmatics in Morris's behavioral semiotics by means of comparing the semiotic thoughts between Peirce and Morris from the perspective of dynamic history. Specifically, this paper involves the analysis of the philosophical foundations of pragmatics, disciplinary classification, the establishment of pragmatics, theory of sign inquiry, the relevant specific semiotic views, and three semiotic dimensions of Morris's pragmatics, which are conducive to explore the pragmatic origin and development from the perspective of Morris's semiotic thoughts. As such, Pragmatics in Morris's behavioral semiotics is established and developed in a systematic and formal way.

Keywords: Pragmatics, Pragmatism, Semiotics, Peirce, Morris

1. Morris and his major semiotic thoughts

Charles William Morris (1901-1979) is a classic writer of semiotics. He had a decisive influence on the development of Semiotics in the 1930s and 1940s. His semiotic thoughts are the integration of Peirce's Semiotics, George Mead's social behaviorism and symbolic interaction theory, and American pragmatism, empiricism and logical positivism. Morris discusses the general theory of Semiotics in order to establish a unified science. His definition of general semiotics and the theory of three branches of semiosis is still one of the basic theories of contemporary semiotics. In applied semiotics, his semiotic thought has great influence on semiotic aesthetics and

similitude theory. What the great contribution he made is his classification of discourse pragmatics, which is the specific application of his theory of pragmatics from the perspective of semiotics. His most important semiotic work is *Writings on the General Theory of Signs*, in which the essay “Foundations of Theory of Signs” (1938) is his classic and famous paper on Semiotics. His famous trichotomy of semiotic respectively refers to syntactics, semantics and pragmatics. Morris promotes the development of the theory of pragmatics. The proposal of pragmatics as one of the branches of semiotics is the kernel of his pragmatic thought and the classifications of discourse types are the specific application of his pragmatic thought. Morris divides the common language into 16 types of discourse by virtue of connecting the two dimensions of the signifying modes of signs and the usage of signs. Grounded on the theory of behavioral semiotic, his distinctions of semiosis not only take into account the relationships between signs and objects, signs themselves, but also pay key attention to the relationship between signs and sign users, which is the specific application of his pragmatic thought.

“Semiotic, or sign theory, has come to serve for many as an all-inclusive term, subsuming such diverse enterprises as semiology, cybernetics, hermeneutics, and so forth; yet the contemporary use of the term “semiotic” derives from the highly influential theory articulated by Charles Morris, who in turn acquired it from C. S. Peirce, the founder of modern semiotic. The term semiotic was first used in modern times by John Locke, who mentioned it near the end of his masterwork, *An Essay Concerning Human Understanding* (1690). Locke only suggested a division of science in which semiotic would form the third of three sections, and would be identified with logic. It was first used as a term denoting a specific and detailed theory by Peirce, who spent the greater portion of his life working out his semiotic, which for him was a normative theory of logic” (Rochberg-Halton & McMurtrey 1983, pp.129-130). This theory is at the heart of Peirce’s philosophy, and he considered pragmatism, which he founded, to form one area within its domain.

Morris adopts from Peirce the name semiosis for the general theory of signs. Being influenced by Charles Sanders Peirce, he first used the term ‘pragmatics’ as a branch of semiotics in 1930s (Morris, 1938). Later this term was taken in linguistics for granted as a name of one of its core branches dealing with usage of language. Morris, in fact, isolates semiotics into three different branches— syntactics, semantics and pragmatics. According to his interpretation, syntactics deals with ‘the formal relation of signs to one another’, semantics denotes the study of ‘the relations of signs to the object to which signs are applicable’ and, finally, pragmatics incorporates the study of ‘the relation of signs to interpreters’ (Morris 1938, p.6; Levinson, 1983). Later Carnap (1942) (cf. Recanati, 2004) makes an order of the degree of abstraction of these three branches. More elaborately, according to Carnap, syntactics is the most abstract and pragmatics is the least abstract, whereas semantics belongs to these two in expressing the degree of abstraction. Morris’s semiotics has three dimensions of semiosis, and the pragmatic dimension is only one of them (cf. Arif 2013, pp.30-31).

2. The disciplinary classification of Morris’s pragmatics

The three components of Morris’s philosophy generate the emergence of three branches of his semiotics. As a kind of formalism, positivism studies the formal structure of scientific language, empiricism researches on the object and its relation to scientific language, pragmatism focuses on the methods and steps of clarifying ideas and communicating with each other among scientists. Grounded on the three schools of philosophy, Morris proposed three branches of semiotics, i.e., syntactics, semantics and pragmatics. By virtue of positivist research methods and achievements, Syntactics is “the study of the syntactical relations of signs to one another in abstraction from the relations of signs to objects or to interpreters,” and “is the best developed of all the branches of semiotic” (1938, p.13). “Semantics deals with the relation of signs to their designate and so to the objects which they may or do denote” by means of empirical method (1938, p.21). In reference to the term “pragmatism” first used by C. S. Peirce, Morris coined the term “pragmatics” to refer to “the science of the relation of signs to their interpreters” by means of pragmatism (1938, p.30). Morris’s three dimensions of semiotics, which are based on three philosophical thoughts, cannot be separated from the influence of Peirce’s trichotomy of signs. Peirce’s trichotomic sign is grounded on his Trinity definition of signs and the trivium taught in medieval universities. A sign, or representamen, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object (CP

2.228). “Representamen is a subject of a triadic relation to a second, called its object, for a third, called its Interpretant, this triadic relation being such that the Representamen determines its interpretant to stand in the same triadic relation to the same object for some interpretant” (CP 1.541). The medieval trivium refers to grammar, dialectic, and rhetoric. Peirce reformed the trivium into three branches of semiotics: the first branch is speculative Grammar (also known as pure grammar), which studies the form, function and classification of all symbols; the second branch is the critical logic, which studies the relationship between signs and their objects and the validity and conditions of objects being conformity to signs; The third branch is pure rhetoric, which studies the conditions for signs producing interpretants and the methods to obtain truth. This method is mainly called pragmatic maxim, i.e., the meaning of signs can be interpreted as the interpreter’s response---interpretant according to the actual effects. In words, the three branches of Morris’s Semiotics basically correspond to Peirce’s trichotomy of signs. Morris’s trichotomy is indeed related to Peirce’s, who distinguished between speculative grammar, critical logic (previously dialectic) and methodeutic (previously rhetoric) (cf. CP 1.191ff and CP 2.93). Syntactics and pure grammar focus on the syntactical dimension of semiosis, semantics and critical logic focus on the semantical dimension of semiosis, pragmatics and pure rhetoric focus on the pragmatism dimension of semiosis. In this sense, semiotics consists of three subdisciplines: ‘speculative grammar’, which gives us a physiognomy of forms, a classification of the function and form of all signs; ‘critic’, the study of the classification and validity of arguments (divided into three parts: the logic of abduction, induction and deduction); and ‘methodeutic’, the study of methods for attaining truth (Petrilli 2004, p.297). Pragmatism, which is based on the thesis that the meaning of a sign can be explicated by considering its practical consequences as the response of an interpretant, is a methodeutic theory in Peirce’s sense (cf. Petrilli 2004, p.297; Helmut Pape, Art.100, ‘Peirce and his followers’, in S/S, 2: 2020).

3. Morris’s inheritance and development of Peirce’s pragmatic theory: a semiotic perspective

Peirce’s obvious and direct influence on Morris is embodied in pragmatics. In terms of terminology, “Pragmatics” is made by Morris with the reference to the word “pragmatism” coined by Peirce, of which relationships shows that Peirce’s pragmatism plays a special role in the foundation of Morris’s pragmatics. The importance of pragmatism in Peirce’s pure rhetoric lies in that it attaches more importance to the relationship between signs and their users than ever before, and pays more attention to the relevance of this relationship in understanding intellectual activities. Morris believes that Peirce’s works have made no less contribution to semiotics, specifically to pragmatics, and his pragmatic theory paves the way for the development of modern pragmatics. According to Peirce, the interpretant of a sign must lie in a habit, not only in the direct psychological reaction or the image or emotion accompanying the psychological reaction caused by the sign. Interpretant is the influence of signs on the interpreter. Habit is the tendency to act in a similar way under similar circumstances in the future. It is the tendency to respond to a given stimulus in a specific way. Habit will affect the actual action. Morris extracted some properties from pragmatism and integrated them into his pragmatics: The interpreter of a sign is an organism; the interpretant is the habit of the organism to respond, because of the sign vehicle, to absent objects which are relevant to a present problematic situation as if they were present (Morris 1971, p.45). Therefore, Morris defines pragmatics as the science of the relationship between the sign and the interpreter. Peirce has ever expounded on the relationship between men and signs, interpreters and interpretants in the article “Some Consequences of Four Incapacities” (1868). Peirce explicates that in man’s consciousness, every element has its counterpart in words. “It is that the word or sign which man uses is the man himself. For, as the fact that every thought is a sign, taken in conjunction with the fact that life is a train of thought, proves that man is a sign, [...] thus my language is the sum total of myself; for the man is the thought” (CP 5.314). From Peirce’s point of view, there is no substantial distinction between a man and a word. Both men and words are signs. Our concept of a symbol cannot surpass the effect of signs on us. Every effect on the interpreter, i.e., the interpretant is a sign. The interpreter is a sign, and the interpretant is a sign as well, so men are in the open chain of signs. Therefore, Peirce’s semiosis becomes the pivot of Morris’s pragmatics. In Peirce’s view, interpretant is the influence of sign on interpreter. In order to understand the meaning of a sign, we have to discern the behavior habits caused by signs. Peirce’s emphasis on behavior is highly praised by Morris, who believes that only human behavior can provide a clear empirical criterion for defining signs (Morris 1971, p.339).

Morris explores pragmatic rules from the perspective of behavioral habits, i.e., the expected habits of the interpreter while employing signs under certain circumstances. Pragmatic rules include formative rules and transformative

rules, which corresponds to the actual combination and transformation of signs employed by the interpreter or the regulations made by the interpreter for the application of signs. These rules are the same as other behavior rules that the interpreters attempt to consciously control. From the perspective of pragmatics, language structure is a set of behavioristic systems (Morris 1971, p.45). Pragmatic rules indicate the conditions under which the interpreter interprets a sign vehicle as a sign. Any rule in practical application works as a type of behavior. In other words, pragmatic factors are existed in both syntactic and semantic rules. Even if it is impossible to express it in terms of syntactical rules or semantical planning, we can also find a standpoint of pragmatic rules, such as the employ of interjections and some rhetorical devices. Morris proposes the term “pragmatic rule” to further expound the signs, sign vehicles, interpreters from the perspective of pragmatics, defining “pragmatical rules as the statement of the conditions in the interpreters under which the sign vehicle is a sign. Any rule when actually in use operates as a type of behavior, and in this sense, there is a pragmatical component in all rules” (Morris 1971, p.48). In Morris’s view, behavior affects the interpreter’s habit of using the sign vehicle in specific context. Conversely, when the interpreter uses signs, it also produces the expectations in the pragmatic dimension. Morris explores pragmatic rules from behavioral habits, i.e., the expected habits of the interpreter while employing signs under certain context. In terms of pragmatics, a linguistic sign is used in combination with other signs by the members of a social group; a language is a social system of signs mediating the responses of members of a community to one another and to their environment (Morris 1971, p.48). Thereby, a linguistic structure is a behavioral system. In the process of sign combination, designative signs direct the interpreter’s attention to some parts of the environment, while descriptive signs limit the expected response. When both designative and descriptive functions are performed, the interpreter needs to make judgment, but the sign combination itself is a kind of judgment as well, which is equivalent to sentences in syntax and propositions in semantics. Actually, “to understand a language is to employ only those sign combinations and transformations not prohibited by the usages of the social group in question, to denote objects and situations as do the members of this group, to have the expectations which the others have when certain sign vehicles are employed, and to express one’s own states as others do - in short, to understand a language or to use it correctly is to follow the rules of usage (syntactical, semantical, and pragmatical) current in the given social community” (Morris 1971, p. 48). To a certain extent, when the interpreter’s expectation is consistent with the reality, the sign is confirmed, but only part of the sign can be confirmed generally. From the behavioral point of view, when the sign correctly reflects the expected reaction of the sign user, the sign is “genuine”. Morris’s Semiotics, especially pragmatics, mainly originates from Peirce’s pragmatism. Grounded on Peirce’s sign theory, Morris inherits and develops Peirce’s Semiotics.

4. Morris’s development of Inquiry in Pragmatics

Pragmatic thought in Peirce’s pragmatism is represented in his trichotomy sign theory grounded on pragmatism, but this pragmatic thought has not been formed in a systematic way, is presented in fragments. It turns out to be the initial proposal of the term “Pragmatics” in Morris’s groundbreaking essay “Foundations of Signs of Theory” that stands for the establishment and formation of Pragmatics. With the further various specific explication of the meanings and functions of signs in Morris’s behavioral semiotics, pragmatics, as one of the three dimensions in semiosis, has been developed, so as to lay the foundations of the modern pragmatics developed in the post-semiotic period.

As one of the important theories in Morris’s semiotics, inquiry theory is closely related to the development of Pragmatics in the semiotic dimension. Pragmatics determines the relationship between the interpreter and the sign, and focuses on the employment of the sign. So how is the meaning of the symbol determined and transmitted among the members of the community to reach consensus? Morris answers this question according to Peirce’s Inquiry theory. Inquiry is interpreted by Morris as a process of reflection involving signs and problem solving oriented (Morris 1964, p.26). Peirce described the task of pure rhetoric as a process of inquiry, i.e., [...] “the study of those general conditions under which a problem presents itself for solution and those under which one question leads to another” (CP 3.430). In other words, inquiry is a psychological activity or struggle to determine the meaning of a sign or proposition so as to make people enter a state of belief. Peirce holds that if a group of inquirers has enough time to inquire something, their opinions will eventually be converged and fixed in a common stable belief which is the “true conclusion” of an issue or a sign. In Peirce’s view, inquiry is directional from individual to community, which is a public process. The limitations of individual inquirers in environment, power, preference,

etc. are the sources of mistakes, which are filtered out in the process of public inquiry. People will arrive at the final opinion agreed by all inquirers to overcoming their one-sidedness and establishing the common knowledge. In principle, the meaning of all things could be available to people. In regarding to the proposition that the truth is given to birth from people's final agreement, the meaning of a sign is determined depending on the consensus among subjects from the perspective of inquiry theory, i.e., the habitat of knowledge is not individuals, but communities.

Morris inherits Peirce's inquiry method in his semiotic theory, and distinguishes problem from non- problem in his inquiry theory as well. Every problem to be analyzed appears in a context, such characteristics of this context as object, meaning and belief, are non-problems as such, which are taken for granted as the starting point or preconditions to solve the problem. However, Morris holds a dynamic and dialectical view on the relationship between the problematic and the unproblematic, i.e., What is problematic in one context may become unproblematic in another context and vice versa. The object or sign being the problematic is the object of inquiry or research, while the object or sign being the unproblematic becomes the instrument of inquiry. The theory of inquiry is specifically applied to the analysis of scientific terms (including Semiotic nomenclatures) by Morris. He believes that the inquiry of signs is completed by signs that are not necessarily analyzed in this process of inquiry. Corresponding to the problematic and the unproblematic, Morris divides the sign into an inquiry into two classes: the analyzed sign and the unanalyzed sign. The unanalyzed signs of a given inquiry may be those of an established science or they may be terms of the everyday language in which the inquiry is being carried on (Morris 1971, p.435). The question of the adequacy of the unanalyzed terms depends on the purpose for which they are used. In science, for example, the fixation of unanalyzed terms should be widely recognized by partners, while the analyzed terms should be either completely or partially analyzed according to the necessary conditions of their application (Morris 1971, pp. 435-436). In reality, inquiry in science is only one kind of inquiry. Morris divides inquiry into three types according to the three dimensions of semiosis. Inquiry about what has happened, is happening or will happen and the result of the designative statement are called designative inquiry; the inquiry about what should be done ends with prescriptive discourse, which could be called prescriptive inquiry; the inquiry about what to prefer ends with appraisive discourse, which could be called appraisive inquiry. Peirce mainly discussed the first kind of inquiry, focusing on the field of natural science, while the latter two kinds of inquiries are common in the field of Humanities and social sciences. In the process of inquiry, the inquiry of the problematic always depends on the unproblematic which become the premise or standard of inquiry. When the result of an inquiry is acknowledged by the community, it is transformed into a non-problem.

5. Morris's behavioral pragmatics as the development of Peirce's pragmatist semiotics

It may be drawn a conclusion from the above that, in terms of the basic framework and principles of semiotics, Morris inherits and develops Peirce's Semiotics. From some specific points of view, the former is a loyal follower of the latter. Morris claims that his book *Signs, Language, and Behavior* (1946) is "an attempt to carry out resolutely the insight of Charles Peirce that a sign gives rise to an interpretant and that an interpretant is in the last analysis 'a modification of a person's tendencies toward action'" (Morris 1971, p.444). Peirce's exemplary role for Morris could be explored in the respect of borrowing the semiotic academic terminologies, such as "semiotics", "semiosis", "sign", "interpretant", "interpreter", "representamen", etc., The employment of these semiotic academic terminologies without the inquiry shows that Morris regards these terms as the unanalyzed ones, i.e., the non-questions in semiotic research, which is the axiom for the further semiotic research. In other words, in the field of semiotics represented by these terms, Morris directly inherits Peirce's viewpoints. In terms of semiotic methodology, both Morris and Peirce are good at creating semiotic academic terms, such as Peirce's "representamen", "interpretant", etc., and Morris's "significatum", "discriminatum", "locatum", "valuatum", and "obligatum", etc. These neologisms respectively show their innovative ideas in the field of semiotics. From the perspective of semiotics ontology, Morris, like Peirce, attempts to establish an all-inclusive and comprehensive semiotics. Peirce points that the sign is full of the whole universe, such as a book, a building, a man, etc. Even the whole universe is in signs, which is the sign of a creator. Thought, as a medium to connect the sign vehicle and its object in the semiosis, is expressed as interpretant in the sign process. Thought is not necessarily connected with a brain. It appears in the work of bees, of crystals, and throughout the purely physical world (CP 4.551). Hereby, Peirce's semiosis is not confined to human beings. He does not make a strict distinction of sign processes between

humans and non-human animals. Peirce's practice lay the foundations for Morris to bring animal sign process into the category of Semiotics in the future. In book of *Sign, Language and Behavior*, Morris often employs two typical examples to interpret sign behavior: one is that the sound of the buzzer is a sign designating food for dogs; the other one is the words of the informant to driver are signs designating the conditions of road ahead. Morris applies the word "organism" to summarize animal interpreter and human. Morris tries to establish an all-round semiotics based on human beings. He studies not only rational behavior signs, but also irrational and even anti-rational behavior signs. He studies both Western Christian culture and pagan culture, as well as Eastern Buddhist culture, and put all kinds of signs into the scope of semiotics, such as mystical semiotics, pathological semiotics, semiotics of social alienation, semiotics of mental illness, etc. In the article "Man-Cosmos Symbols", Morris draws a conclusion that organic process and non-organic process, science and art, man and the world are completely interlinked and integrated, i.e., Man is once more in the world and the world is in man. Similar processes and similar structures are within and without (Morris 1971, p.464). Although Morris was in accord with Peirce's description of semiosis as the 'action of a sign' (CP 5.473), he limited his concept of action to behavior directed toward a goal. This approach implies the presence of a subject, an organism, its goal-oriented behavior and a goal-object, that is, a 'final object' outside semiosis.

In the aspect of the expression of sign modes, Morris thinks that he is basically faithful to that of Peirce, but has made some minor and subtle improvements. Peirce's trichotomic signs include "representamen, or sign", "object", and "interpretant". In the book of *Signs, Language, and Behavior* and the essay "Foundations of Theory of Signs", Morris points out "the three components in semiosis, which may be called, respectively, the sign vehicle, the designatum, or significatum, and the interpretant; the interpreter may be included as a fourth factor" (Morris 1938, p.3). Again, in the book of *Signification and Significance*, Morris adds the fifth factor, context, but not discuss in detail. Although Peirce's semiotic model does not include the interpreter and context both of which are regarded as the premises of the unanalyzed term in the process of interpreting signs, Peirce comments that "A sign, or representamen, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object" (CP 2.228). With the reference to Peirce's definition of signs here, "somebody" is equivalent to the interpreter, while "some respect" is related to context. Therefore, there is no substantial difference of sign models between Morris and Peirce. However, the terms of the two semioticians are not completely corresponding, but exists subtle differences with the example that Peirce's interpretant sometimes corresponds to Morris's interpretant, or significatum in other time. For Morris, the interpretant refers to the interpreter's responsive tendency to a sign, while the significatum refers to the interpreter's response to the relevant conditions of the sign, both of which express the effects of the sign on the interpreter. Therefore, it is natural for Morris to introduce the "interpreter" into the sign models. In fact, Peirce has also addressed inquiries to the effect of signs on interpreters, i.e., the nature of interpretant. He assumes that the effects of signs on the interpreter are the change of habits, the change of a man's behavior tendency, while habit is defined by Peirce as the interpreter's tendency to respond to a given stimulus in a specific way (CP 5.484-5.487). From the perspective of their sign models, specifically the relationship between the interpretant and the interpreter, both talk of effects of signs on interpreters, both describe interpretants in terms of such effects, both regard the interpretant as an effect on an interpreter such that the interpreter tends to act in a certain way under given circumstances when actuated by a given need (Morris 1971, p. 446). In Peirce and Morris's view, the nature of interpretant is, in a sense, the effects of signs (MS 318:14-5,1907).

In addition, Peirce's view that the semiosis is a mediating process also influences Morris. Peirce interprets the mediating process of signs by virtue of the three categories of phenomenology. In phenomenology, there are three modes of being. Firstness is the mode of being of that which is such as it is, positively and without reference to anything else. Secondness is the mode of being of that which is such as it is, with respect to a second but regardless of any third. Thirdness is the mode of being of that which is such as it is, in bringing a second and third into relation to each other (CP 8.328). Peirce believes that in the triadic relationships of signs, the relationship between representamen and the objects is the first and the second, and the connection between them is inseparable from interpretants being as the third which plays a role of mediator between the representamen and the objects. Peirce connects the signing process with the mediating process involved the being as the third, while the interpretant for

Peirce is the process of mental effect, thereby, Peirce basically equates the sign process with the mental process, which Peirce himself attempts to avoid psychology as well in his semiotics after 1898.

Morris doesn't fully agree with Peirce's viewpoints of mediating process in semiotics. He advises "to delimit in some way sign-processes within the general class of processes involving mediation", as "there seem to be many processes involving mediation other than conditioning which would not ordinarily be regarded as signs; the eye, for example, in seeing is a genuine mediating element in the relation of certain responses to certain objects, and yet the eye (or even the retinal image) would hardly be called a sign in such cases" (Morris 1971, p.338).

In terms of the meaning of signs, Morris also inherits and develops Peirce's viewpoints of signs. Peirce proposes that every sign has two objects: immediate object and dynamic object. The former is the object represented by the sign, for example, the direct object of the rainbow is the seven-color ribbon available to people, while the latter is the object that really functions but does not appear directly, i.e., the dynamic object of the rainbow is the refraction of sunlight through water drops after rain. Correspondingly, each sign has an immediate interpretant, i.e., its meaning, represented or signified in the sign, and a dynamic interpretant, i.e., the actual effect of the sign in the mind of the interpreter. In addition, a sign will get an acknowledged final interpretant after the full inquiry. Peirce seldom employs the word "meaning", Morris also uses the word "meaning" cautiously, which expresses the complexity and diversity of meaning. For Morris, meaning includes the following contents: (1) denotatum, what signs represent (Morris 1971, p.361); (2) designatum, the properties of the object or context that a sign refers to (Morris 1971, p.361); (3) interpretant, the behavioral responsive tendency or mental effects of signs on the interpreter (Morris 1971, p.363); (4) significatum, the conditions of being the object of a specific sign, according to the means of signifying, it can be subdivided into five subclasses: discriminatum, locatum, valuatum, obligatum, formatum (Morris 1971, p.366).

Peirce's influence on Morris's semiotics is shown in many aspects, but it cannot cover up Morris's expansion and revision of the semiotic viewpoints of Peirce. For example, Peirce's definition of interpretant is limited in a cognition of a mind to some extent, which Morris thinks it difficult in defining a sign in terms of mind or thought. Without the ground of behavior situations in attempting to define "sign", Morris argues that Peirce's definition of signs from the perspective of psychology cannot furnish an empirical criterion for determining whether a certain thing is or is not a sign until a satisfactory criterion for the occurrence of mind or thought could be available (Morris 1971, p.339). Therefore, Morris would rather choose Peirce's emphasis on behavior and behavior habits as the starting point of semiotics research. In addition, Peirce always defines 'signs' in such a way that the interpretant of a sign is itself a sign, and so ad infinitum (Morris 1971, p.339). With the regard to Peirce theory of unlimited semiosis ("semiosis ad infinitum"), Morris agrees that signs are usually grown into new signs and produce a series of sign processes, i.e., a sign is just a link in the endless chain of signs, but he opposes to bring this fact of unlimited semiosis into the scientific definition of signs, which may trigger the suspicion of circular argument in defining a sign. In conclusion, Peirce's pragmatic semiotics is an important source of Maurice's behavioral semiotics. The former has a great influence on the latter, in which the revision of Peirce's view cannot erase Peirce's influence on him. Conversely, Morris's semiotic theory is a development of Peirce's sign theory, specifically, as one of the branches of Morris's semiotic, pragmatics is not only formed with its ontology and methodology, it is also developed grounded on Peirce's pragmatism or pragmaticism. Pragmatics is actually a discipline pertaining the effects of sign on interpreter, which is closely related to Peirce's pragmaticism, and formed and developed in Morris's behavioral semiotics.

6. The three semiotic dimensions of Morris's developed pragmatics

This paper argues that Morris's proposal of pragmatics as the development of pragmatic thought of Peirce has at least three distinctive properties of semiotic.

(1) Pragmatics as science and scientific tool. Morris (1938, p.2) pointed out that "Semiotics has a double relation to the sciences: it is both a science among the sciences and an instrument of the sciences. The significance of semiotic as a science lies in the fact it is a step in the unification of science, since it supplies the foundations for any special science of signs". Every science must use signs and the means of signs to express its research results. Therefore, semiotics must provide relevant signs and principles needed for research. Semiotics must use meta-

signs of indices. He regards all the terms in generalized semiotics as “Semiotics”, including “pragmatism” (Morris 1938, p.8), and such terms as ‘interpreter’ ‘interpretant’ ‘convention’ (when applied to signs), ‘taking-account-of’ (when a function of signs), ‘verification’, and ‘understands’ are terms of pragmatics, while many semiotic terms such as ‘sign’ ‘language’ ‘truth’ and ‘knowledge’ have important pragmatic components (Morris 1938, p.33). In Pragmatic terminology, many are new words or new meanings of old words, such as speech act, performative, perlocutionary action, conversational implicature, cooperative principle, etc. Pragmatics itself is also a pragmatic term, which cannot be defined separately without semantics and syntax. Morris distinguished pure semiotics from descriptive Semiotics (Morris 1938, p.9), which is also the distinction between metasemiotics and semiotics.

(2) Pragmatics as meta-semiotics and meta-linguistics. Morris also pointed out that the science which takes semiotics as an instrument to study science is meta science; Metapragmatics, which was proposed by Silverstein (1976) in the field of linguistic anthropology, is a discipline that describes the pragmatic structure of language, which is similar to the principle of meta semantics in describing semantic and grammatical structure. Mey (2001) discusses metapragmatics based on the research of metapragmatics of Caffi (1994). He doesn’t recognize Morris’s contribution to pragmatics, so he doesn’t notice the inspiration of Morris’s metasemiotics to metapragmatics. However, he proposed the importance of “metapragmatic thinking” (Mey 2001, p.178) on pragmatics itself and its research objectives and methods, revealing an important semiotic dimension of pragmatics. Morris pointed out that the language used to discuss scientific language is metalanguage (Morris 1938, p.9, p.22). He later emphasized that semiotics could “provide meta language for Linguistics”, which could generate a science of linguistics grounded on the Theory of Semiotics (Morris 1946, p.221). The fact that modern Logic and Linguistics distinguish object language and metalanguage (Tarski1936/2002) divides linguistics into linguistics and metalinguistics. What’s more, the application of “metalanguage” can be divided into metalingual and metalinguistic levels (Feng, 2005). Leech (1983) put forward “meta implicature” “metaproposition” and “meta maxim” on the basis of pragmatic terms such as “meaning” “proposition” and “maxim”, which includes the quality of “metagrammar” in the process of description, the problem of “metalanguage” of politeness, and the “metalinguistic strategy” used by the speaker, all of which are applied in the exploration of meta theory. The theory of metalanguage and metatheory is another semiotic dimension of contemporary pragmatics.

(3) Pragmatics as social semiotics. Social semiotics is an important branch of contemporary semiotics, which is developed from Saussure’s Semiotics Theory. It studies the social dimension of human beings in the process of designing and interpreting the meaning of signs. Social Pragmatics proposed by Leech (1983) is actually the definition of another semiotic dimension of pragmatics under the influence of Halliday (1978)’s “language is social sign”. Halliday has a further analysis of the “situational context” of language communication, and has noticed the direct “pragmatic relationship” between discourse and environment. It is believed that pragmatic language is language representing action, which has the social functions (Halliday 1978, pp.29-32). Wierzbicka (1991) challenged the classical pragmatic theory and called his pragmatic study “interpersonal interaction semantics”. Semantics from the perspective of social semiotics, especially discourse and discourse semantics, is an important part of contemporary pragmatics. Therefore, social semiotics is also an important semiotic dimension of contemporary pragmatics.

Pragmatics is closely related to the qualities of Semiotics in many aspects. Eco defines that “Semiotics is concerned with everything that can be taken as a sign” (Eco 1976, p.9) and Semiotics also focuses on anything meaningful in the fields of Linguistics and Science of Language. Morris’s semiotics is a summary of three philosophical schools: pragmatism, empiricism and logical positivism. In 1934, he put forward three kinds of relations of signs (with people, with objects, with other signs). It was only in 1938 that pragmatics, semantics and syntax were put forward in the framework of sign theory. Saussure’s semiotics is the direct theoretical basis of modern linguistics, but it did not have a wide influence in the English world until 1959. Although Saussure did not put forward pragmatics, his semiotics has the nature of pragmatic semiotics, which is a method of discourse research that has been developed traditionally by Barthes’ semiotics since the late 1960s (Sturrock 2003, p.41). The pragmatic scope of classical pragmatics is much narrower than that of Morris Semiotics (Levinson 1983, p.2). Therefore, Pragmatics is developed and prosperous in the connection with Semiotics, as one of the fastest growing fields in “contemporary linguistics and philosophy of language” (Huang 2007, p.1), Pragmatics has become one of the most

vigorous one in “contemporary linguistics and philosophy of language”, of which kernel of the fastest development lies in its nature of semiotic dimension.

7. Conclusion

Morris was influenced by pragmatism such as Pierce and Mead in his early years, and then influenced by logical positivism such as Carnap. In all his life, he tried to build a bridge between pragmatism and logical positivism and advocated to combine the both to establish a kind of “scientific empiricism” which consists of semiotics and axiology, whose thoughts have played an important role in the development and integration of English American pragmatics and Continental pragmatics. Morris directly inherited and applied the early American pragmatism, especially the behaviorism caused by pragmatism and Peirce’s Semiotics, according to which Morris founded the behaviorist pragmatics theory. Morris first put forward three dimensions of semiotics, namely syntactics, semantics and pragmatics which is generally accepted by semioticians and linguists. Later, Morris redefined Pragmatics: pragmatics is a part of semiotics, which studies the origin, application of signs and the *effects* of signs in action. Morris clearly expounds that “pragmatics” is coined from the word “pragmatism”, which emphasizes the relationship between signs and the interpreters of signs, and solves the biological aspects of semiotics, i.e., dealing with psychological, biological and social phenomena existing in the effects of signs; From the perspective of pragmatics, language structure is a kind of behavioral system. What Morris proposed is actually a kind of behaviorist pragmatics, which not only lays great influence on philosophy of language, but also gives birth to pragmatics. His behaviorist pragmatics summarizes the pragmatic thinking since the beginning of pragmatism, which makes the pragmatic thoughts in American philosophy widely spread. It is in this context that pragmatics, as a new discipline, has been established and developed prosperously.

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Argumentation-Based Teaching in Science Education: Meta-Analysis

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Abstract

The aim of this study is to conduct a meta-analysis study to examine the effectiveness of the argumentation-based teaching method in terms of sample, subject, years and some variables (academic success, attitude, interest, etc.). Meta-analysis method was used in this study. In order to gather the studies included in meta-analysis, various sources were used in the study. Three type studies were brought together for the meta-analysis: journal articles, doctoral and master thesis. The Social Science Citation Index (SSCI) journals, Turkish Academic Network and Information Center Social Science Database, national printed journals, Academic Search Complete, Education Research Complete and ERIC databases were searched for journal articles. The Council of Turkish Higher Education Thesis Center was scanned to get the dissertations/theses. While scanning these platforms, the key concepts of "argumentation", "argumentation-based science teaching", "argumentation-based science education", "discussion-oriented teaching method to science" were used. So, 47 studies were used in the meta-analysis. In the study, as a result of the meta-analysis on the argumentation-based teaching process at the national level, it was determined that there was no significant difference in terms of the level of classes in which the studies were conducted and the independent variables examined in the studies, but there was a significant difference between the subject areas in favor of the subject area of chemistry.

Keywords: Argumentation, Meta-Analysis, Science Education

1. Introduction

Science education has played a key role in the development of societies from the past to the present, and for this reason, it has been the focal point of scientific reform movements and discussions of countries. In this context, among the primary objectives of today's science education; There is training of well-equipped manpower who can research, question, think analytically, use scientific ways and methods in solving problems, and develop new knowledge and processes with the knowledge they have acquired. In order to raise these individuals, it is necessary to create learning environments where students can develop their social aspects, cooperation and communication skills, and provide them with the opportunity to choose, collect, question and use information (Hasançebi, 2014). As one of the methods that can be used in such learning environments, the argumentation method has come to the

fore in recent years. The argumentation method (Hand & Keys, 1999), which helps students form arguments in a scientific inquiry (Choi, et al., 2010) and thus construct scientific knowledge (Hand & Keys, 1999), is characterized as an important tool for the teaching process (Aktamış & Hiğde, 2015; Çaycı, 2019; Günel, Kınır & Geban, 2012; Kınır, 2011; Martin & Hand, 2007; Nam, Choi & Hand, 2011; Şahin-Kalyon & Taşar, 2020). With this method, it is expected that students will not only construct knowledge correctly, but also improve their communication, cooperation and social aspects (Hasançebi, 2014). In this respect, the argumentation method is also capable of contributing to the training of individuals targeted by the future age. In this sense, in recent years, many studies investigating the reflections of the argumentation process on learning in national and international dimensions have been revealed (Cavagnetto, Hand & Norton-Meier, 2010; Chin & Osborne, 2010; Çaycı, 2019; Günel, Kınır & Geban, 2012; Martin & Hand, 2007; Hand & Norton-Meier, 2011; Kınır, 2011; Nam, Choi & Hand, 2011; Şahin-Kalyon & Taşar, 2020). The common point of the studies is that the argumentation method affects the learning-teaching process in many ways, cognitively, culturally and socially.

Argumentation method has started to be included in the Science course curriculum within the scope of the change made in the curriculum by the Ministry of National Education in 2013. In the continuation of this situation, studies have been conducted and are being conducted in the national literature in which the effectiveness of this method is examined at many educational levels and on different subjects, and opinions are taken. Studies examining the effectiveness of the method are comparative studies. Generally, experimental and control groups were formed, while the subject determined in the experimental group was taught with the argumentation-based teaching method, no intervention was made in the control group. In the studies examined, it is seen that the effectiveness of the method based on argumentation in socioscientific issues as well as the subjects such as Matter and Change, the structure of the Atom, Electric energy, Solar system and beyond, Matter and heat, Human and environment, Acids and bases in the Science curriculum are examined. In addition, samples were studied at the 5th, 6th, 7th, and 8th grade levels. The effect of the method on many variables such as academic success, interest and attitude towards science lesson, interest in the environment, scientific process skills, and willingness to discuss were examined. In addition, there are also meta-analysis studies in which the studies on the argumentation-based teaching method are analyzed. These studies are generally aimed at examining the effects of the method on some variables (academic achievement, scientific process skills, attitude, conceptual understanding) (Çömek, Sarıçayır & Erdoğan, 2015, Karakuş & Yalçın, 2016, Özer, 2019). There are no studies examining in more detail on the basis of grade level, subject, and years. By analyzing the studies on the ABL method in detail, general results can be obtained about which grade level, on which subjects, on which variable, and between which years the argumentation method is more effective. Thus, it can contribute to the more effective use of this method in science education. In addition, such detailed meta-analysis studies on the argumentation-based teaching method, ABTM, will also facilitate the researchers in literature review. In this context, there is a need to categorize this applied educational research, evaluate its trends and research results, and synthesize it in order to provide clear recommendations on future research, practices, and policies related to the subject area. In this way, both the points where the studies on the same subject support or contradict each other can be revealed, and similar studies can be avoided and studies that take different perspectives into account can be produced.

In this sense, the aim of this study is to conduct a meta-analysis study to examine the effectiveness of the argumentation-based teaching method in terms of sample, subject, years and some variables (academic success, attitude, interest, etc.). Meta-analysis; It is a quantitative application that includes statistical operations used to combine, synthesize and interpret the experimental findings of individual studies conducted at different times and places on the same subject. The aim here is to identify or compare the changes related to the researched subject according to the effect values of the studies by determining a common criterion (Bayraktar, 2000). Thus, it is aimed to obtain more reliable, consistent, compatible and accurate results with a holistic perspective on the researched subject (Cohen & Manion, 2001).

2. Method

Meta-analysis method was used in this study. Meta-analysis can be defined as “a research method that aims to quantitatively integrate the results of a group of primary studies on a particular topic in order to be able to decide on the latest developments on that topic” (Kulik et al., 1985). In this study, Kulik et al. (1985) and Glass, McGaw,

and Smith (1981) had similar effect values. First, the literature was scanned. Criteria were determined for the studies to be included in the sampling. After the studies were coded, the effect values were calculated. Finally, statistical methods were applied on the results of the studies.

2.1 Data Sources

In order to gather the studies included in meta-analysis, various sources were used in the study. Three type studies were brought together for the meta-analysis: journal articles, doctoral and master thesis. The Social Science Citation Index (SSCI) journals, Turkish Academic Network and Information Center Social Science Database, national printed journals, Academic Search Complete, Education Research Complete and ERIC databases were searched for journal articles. The Council of Turkish Higher Education Thesis Center was scanned to get the dissertations/theses. While scanning these platforms, the key concepts of "argumentation", "argumentation-based science teaching", "argumentation-based science education", "discussion-oriented teaching method to science" were used. So, 47 studies were used in the meta-analysis.

2.2 Inclusion Criteria

The following criteria were taken into account in determining the studies included in the research;

- Studies about the subject or concepts in the science course curriculum in which the argumentation-based teaching method is used.
- Studies had to include an experimental method with a experimental and a control group. Studies with no comparison group were not used in the analysis.
- Studies had to report means, standard deviations and number of subjects of experimental and control groups separately (If these were not reported, F or t values had to exist).
- Studies had to include Turkish students as subjects.
- Studies had to have been published between 2010-2021 years.
- The sample consists of the 5th, 6th, 7th and 8th grades of primary schools in Turkey.

2.3 Coding

Studies were chosen to use in the meta-analysis. Then, a coding paper was prepared for the coding process. Two researchers' coded variables and quantitative data needed to calculate effect sizes to the paper for each study separately. The researchers compared the coding papers for coding reliability. Agreement was obtained 0.87 between the coding papers. The different codings were discussed by the researchers.

2.3. Variables

Five variables were coded for each study:

1. Type of publication (journal article, dissertation/thesis)
2. Grade level (5th, 6th, 7th and 8th grades of secondary schools)
3. Subject area (physics, chemistry, biology)
4. The variables affected by argumentation (Willingness to participate in the discussion, success, the nature of science, critical thinking, problem solving skills, attitude, environmental awareness)

2.3. Calculation of Effect Sizes

Many approaches are used to calculate the impact value. In this study, the method used by Hunter and Schmidt (1990) was used. The formulas used in the calculation of the effect value in the study are given below.

Meanings of abbreviations used in formulas:

d = effect value

t = result from t test

F = result from the F test

What = number of students in the experimental group

N_c = number of students in the control group

X_e = experimental group success average

X_c = control group success mean

S_p = total standard deviation

S_e = experimental group standard deviation

S_c = control group standard deviation

If the value of t is given
$$d = t \times \sqrt{\frac{1}{N_e} + \frac{1}{N_c}}$$

If the value of F is given
$$d = \sqrt{F} \times \sqrt{\frac{1}{N_e} + \frac{1}{N_c}}$$

In cases where F and t values are not given
$$d = \frac{\bar{X}_e - \bar{X}_c}{S_p}$$

$$S_p = \sqrt{\frac{(N_e - 1)S_e^2 + (N_c - 1)S_c^2}{N_e + N_c - 2}}$$

2.3 Analysis of Data

The SPSS package program was used to compute the ESs and variability measurement. Each variable was evaluated as a factor in an analysis of variance (ANOVA) to investigate whether there were significant differences within each variable on the ESs.

3. Results

When the literature is examined, there are many studies examining the effectiveness of ABTM. However, the studies selected in accordance with the above criteria were classified according to the type of publication and the classification made is presented in Table 1.

Table 1: Type of studies reviewed

PhD Thesis	Master Thesis	Article
Cömert, 2019 (a)	Akman, 2019	Kardaş, 2013(a)
Cömert, 2019(b)	Altun, 2010 (a)	Kardaş, 2013(b)
Çınar, 2013(c)	Altun, 2010 (b)	Kaya,2018(a)
Çınar, 2013 (a)	Altun,2010 (c)	Kaya,2018(b)
Çınar, 2013(b)	Aydoğdu, 2017(a)	Köse,2019(a)
Demirel, 2017	Aydoğdu, 2017(b)	Köse,2019(b)
Memiş, 2011(a)	Aydoğdu, 2017(c)	Kutluer, 2020
Memiş, 2011(b)	Aydoğdu, 2017(d)	Kuyucu, 2019(a)
Şentürk, 2020(a)	Balcı, 2015 (a)	Kuyucu, 2019(b)
Şentürk, 2020(b)	Balcı, 2015(b)	Okumuş, 2012
Şentürk, 2020(c)	Baydar, 2018(a)	Öksüz,2019(a)
	Baydar, 2018	Öksüz,2019(b)
	Baydar, 2018	Öksüz,2019(c)
	Ceylan, 2012(a)	Özcan, 2019(a)
	Ceylan, 2012(b)	Özcan, 2019(b)
	Ceylan,2012©	Özelme, 2019
	Doğru, 2016(a)	Özkara,2011(a)
	Doğru, 2016(b)	Özkara, 2011 (b)
	Doğru, 2016(c)	Özkara,2011©
	Eryılmaz, 2019(a)	Öztürk, 2013 (a)
	Eryılmaz, 2019(b)	Öztürk,2013 (b)
	Güler, 2020	Öztürk, 2013 ©
	Gür, 2019(a)	Polat, 2014
	Gür, 2019(b)	Şengül, 2017(a)
	Gür, 2019(c)	Şengül, 2017(b)
	İlk, 2019(a)	Tola, 2016(a)
		Akkaş ve Memiş, 2020
		Aktaş ve Doğan, 2018(a)
		Aktaş ve Doğan, 2018(b)
		Çinici vd., 2014
		Demirel ve Özcan, 2021
		Demirel, 2016
		Er ve Kırındı, 2020(a)
		Er ve Kırındı, 2020(b)
		Eroğlu ve Yıldırım, 2020(a)
		Eroğlu ve Yıldırım, 2020(b)
		Gülseven, Tüysüz ve Tozlu, 2021(a)
		Gülseven, Tüysüz ve Tozlu, 2021(b)
		Oral ve Bozkurt, 2021(a)
		Oral ve Bozkurt, 2021(b)
		Oral ve Bozkurt, 2021(c)
		Oral ve Bozkurt, 2021(d)
		Türkoğuz ve Cin,2013
		Ulu, 2019
		Uluay ve Aydın,2018

İlk, 2019(b)	Tola, 2016(b)
Karacalı	ve Tola, 2016(c)
Özkan,2021	Tüccaroğlu,2018(a)
Karaman, 2019(a)	Tüccaroğlu,2018(b)
Karaman, 2019(b)	Uçar, 2019(a)
	Uçar, 2019(b)
	Uçar, 2019(c)
Total: 5	30
	12

As seen in Table 1, the data obtained from 47 scientific publications within the scope of the study were evaluated. However, since more than one variable was examined in some of the publications, these studies were coded as a, b, c, and d. Therefore, the total number is high. Of the 47 publications included in the study, 12 are articles, 5 are doctoral dissertations, and 30 are master's thesis.

The subjects on which the effectiveness of ABTM was examined in studies are presented in Table 2.

Table 2: Topics and frequencies where the effectiveness of ABTM was examined

Topics	Frequency
Acids and bases	1
Structure of the atom	1
Let's get to know the living world	2
Reproduction, growth and development in living things	
Human and environment	4
Environmental education	
Matter cycles and environmental problems	
Earth and universe	5
Solar system and beyond	
Conduction of electricity	5
Electricity in our life	
Electrical energy	
Cell division and heredity	2
Interaction of light with matter, light	3
Force and energy, force and motion	5
Matter and heat, states of matter and their distinctive features, change and recognition of matter, particulate nature of matter	14
Socioscientific issue	3
Pressure	2

When Table 2 is examined, it is seen that most of the studies have been done on the subject of the matter.

When the samples of the studies are examined, it is seen that there are studies at different grade levels. The table showing the distribution of studies according to grade levels is presented below.

Table 3: Class levels, frequencies and percentages of the samples of the studies

Class levels	Frequencies	Percentages
5.	9	19
6.	10	21
7.	18	39
8.	10	21

Table 3 shows that there are studies in which the argumentation-based teaching method is used at all grade levels in secondary school.

When the effectiveness of the ABTM method is examined on which variables in the literature, it is seen that there are variables such as academic achievement, attitude, attitude towards the environment. These variables and their frequencies are given in Table 4.

Table 4: Variables examined in studies and their frequencies

Variables	Frequencies
Success, conceptual understanding, conceptual change	41
Scientific thinking, nature of science, Scientific process skills, Epistemological belief	9
Environmental awareness, interest in the environment, attitude towards the environment, Climate change awareness	4
Problem solving skills, Decision making skills	6
Willingness to join the discussion	7
Attitude, Interest, Motivation	13
Critical thinking, Inquiry thinking, Reflective thinking, Logical thinking skills, Metacognitive thinking, Creative thinking, Reflective thinking	11

When Table 4 is examined, it is seen that the studies mostly focus on Achievement, conceptual understanding, and conceptual change.

The distribution of studies conducted in the literature by years is given in Table 5.

Table 5: Distribution of studies by years

Year range	Frequency
2010-2015	13
2016-2021	34

In Table 5, it is seen that the studies on the argumentation-based teaching method intensified after 2016.

As can be seen from Table 6, the study reported the results of 92 effect sizes included in 42 studies, since some studies performed multiple comparisons within the same study.

Table 6: Publishing year, number of comparisons and effect sizes of each primary study

Authors and years of the studies	Number of ES	ES
Akkaş ve Memiş, 2020	1	0,779409
Akman, 2019	1	0,536352
Aktaş ve Doğan, 2018	2	1,066667 0,365388
Aydoğdu, 2017	4	6,913011 1,332026 2,85296 -0,18111
Balcı, 2015	2	0,609448 -0,00038
Çınar, 2013	3	0,297502 0,7951 -0,3848
Çinici vd., 2014	1	0,203977
Demirel ve Özcan, 2021	1	1,377558
Demirel, 2016	1	-1,11702
Er ve Kırındı, 2020	2	0,472347 0,514774
Eroğlu ve Yıldırım, 2020	2	0,176034 0,595993
Gülseven, Tüysüz ve Tozlu, 2021	2	0,002023

		0,08275
İlk, 2019	2	-14,9449
		-5,93625
Karacalı ve Özkan,2021	1	0,770655
Kardaş, 2013	2	0,719983
		0,28414
Kaya,2018	2	1,072561
		0,162579
Köse,2019	2	-9,93705
		0,480122
Memiş, 2011	2	0,232379
		0,076911
Oral ve Bozkurt, 2021	4	0,871087
		0,608816
		0,789752
		-1,40986
Özcan, 2019	2	-0,90645
		0,549074
Tüccaroğlu,2018	1	-0,33505
Türkoğuz ve Cin,2013	1	-4,39853
Ulu,2019	1	-16,0894
Uluay ve Aydın,2018	1	2,40858
Kutluer, 2020	1	1,174337
Demirel, 2017	1	1,420018
Şentürk, 2020	3	1,014601
		0,929321
		0,784535
Güler, 2020	1	1,535793
Özelme, 2019	1	0,995741
Cömert, 2019	2	0,019463
		0,196022
Gür, 2019	3	0,500375
		0,585113
		-0,73388
Öksüz,2019	3	1,011656
		0,023364
		-0,27036
Eryılmaz, 2019	2	6,229587
		-0,60633
Karaman, 2019	2	0,10692
		-0,04899
Uçar, 2019	3	0,859489
		0,184067
		-0,07705
Kuyucu, 2019	2	0,948411
		-0,1042
Baydar, 2018	3	0,57878

			-0,1629
			0,476612
Şengül, 2017	2		-0,29872
			0,323411
Doğru, 2016	3		1,005597
			2,14329
			0,621547
Tola, 2016	3		-0,00948
			1,796537
			1,27558
Polat, 2014	1		0,871669
Ceylan, 2012	3		0,000266
			0,718218
			0,36728
Öztürk, 2013	3		0,769844
			0,730032
			0,37108
Okumuş, 2012	1		1,233288
Özkara, 2011	3		1,099852
			0,311769
			0,334863
Altun, 2010	3		0,546857
			0,534257
			0,05393
Grand Mean Of ESs			0,047265

When Table 6 is examined, it is seen that the majority of the effect values are positive values and the arithmetic averages are 0.047265.

Table 7 shows the F values and descriptive statistics for the four variables. One variable (Subject area) indicated statistically significant effects

Table 7: Descriptive statistics and the results of ANOVA for the variables

Variables	N	Mean of ESs	SD	F	p
Subject area					
Biology	34	0,361	0,484	0,348	0,001
Physic	39	-0,361	3,68		
Chemistry	15	0,693	1,17		
Variables affected by argumentation					
Willingness to participate in the discussion	7	-1,54	3,79	0,872	0,519
Success	41	0,466	2,95		
The nature of science	10	0,629	0,543		
Critical thinking	10	-1,24	5,28		
Problem solving skills	6	0,0523	0,704		
Attitude	13	0,0260	1,97		

Environmental awareness	6	0,248	0,596		
Grade level					
5	24	0,606	0,558	0,257	0,856
6	21	-0,0140	4,27		
7	35	0,0897	2,02		
8	15	-0,0884	4,43		

When table 7 is examined, it is seen that there is a significant difference in favor of chemistry only among the subject areas among the studies on the argumentation-based teaching process.

4. Discussion

Due to the differences in education and training approaches since the 2000s, the science course curriculum has been changed three times in 2005, 2013 and 2017, and updates have been made on the 2017 curriculum in 2018. Argumentation method, on the other hand, started to take place in the Science course curriculum within the scope of the change made in the curriculum in 2013. In the continuation of this situation, studies have been conducted and are being conducted in the national literature in which the effectiveness of this method is examined at many educational levels and on different subjects, and opinions are taken. When Table 1 is examined, it is seen that 5 of the studies examined within the scope of this research are doctoral, 30 of them are master's and 12 of them are articles. One of the doctoral theses was published right after the program change in 2013, another in 2011, and the others in 2017, 2019 and 2020. While master's theses were published between 2010-2020, it is seen that the articles are concentrated between 2020 and 2021. When the distribution of the studies conducted is also examined by years (Table 5), it is seen that the number of studies has increased after 2016.

The aim of this study is to conduct a meta-analysis study to examine the studies on the effectiveness of the argumentation-based teaching method in terms of sample, subject, and some variables (academic success, attitude, interest, etc.). In this sense, 47 studies on the subject from the literature were examined. In the examined studies, when the subject areas (Physics, Chemistry, Biology) in the science course were examined, it was observed that 16 of the studies were in the subject area of chemistry (Acids and bases, structure of the atom, pressure, matter, etc.), and 20 of them were in the subject area of physics (electricity, the interaction of light with matter, light, force and energy, force and motion etc.). interaction of light with matter, light, force and energy, force and motion, etc.) and 11 of them in biology (Let's get to know the world of living things, reproduction, growth and development in living things, cell division, heredity, etc.) (Table 2). When examining whether there is a significant difference between these subject areas, it is seen in Table 7 that there is a significant difference and this difference is in favor of chemistry subjects. When the chemistry subjects in the science curriculum are examined, it is seen that the subjects mostly consist of events that students can encounter at any time in their daily lives, such as matter, states of matter, material changes, and concepts that they can easily embody (MEB 2013, 2018). Due to this structure of topics and concepts, students can form their own claims about the problem situations given to them during the argumentation process, present evidence, and participate actively in the discussion process. In this case, it may have enabled the students to be successful in the argumentation process, especially in chemistry subjects. In the literature, there are many studies in which the argumentation process on chemistry concepts is operated and this process is examined in terms of many variables, and the results are positive (Burke & Greenbowe, 2006; Deveci, 2009; Gümrah, 2013; Ulu, 2019).

When the studies on ABMT at the level of grades are examined, it is seen in Table 3 that 10 studies were conducted with 6th and 8th grades, and 18 studies were conducted with 5th grades and 9th and 7th grades. It was determined that there was no significant difference between grade levels (Table 7). Based on this finding, it can be said that argumentation-based teaching is a method that can be used at every grade level in secondary school. Middle school students are between the ages of 11-15. For children in this period, it is very important for the next grade levels to be able to construct abstract science concepts in a meaningful way. Because the concepts they learn in this period will form the basis for the concepts they will learn in high school years. Argumentation-oriented learning environments provide students with; generating questions about concepts, participating in classroom activities

curiously and actively to answer these questions, questioning preformed models in their minds, defending one's own model or using support, justification, and evidence to refute their friends' models, thus further reflecting on concepts and It provides the opportunity to examine the issues in depth (Aslan, 2010; Okumuş, 2012). In this process, students contribute to each other's learning, question and evaluate their own and other friends' ideas (Arlı, 2014; Burke & Greenbowe, 2006; Driver et al., 2000; Günel et al., 2010; Hand, Wallace & Yang, 2004). The fact that students are in constant interaction with their peers, create their claims in interaction, strengthen or abandon their claims, refute them, and realize their limitations allows many new ideas to emerge (Cevher, 2015), enabling students to construct their knowledge structures at the conceptual level in a meaningful way (Çelik & Kılıç, 2007; Özkara, 2011). In this sense, it can be said that the argumentation method, which was included in the science curriculum in 2013, has positive effects on all secondary school students' conceptual understanding, academic achievement, attitudes towards the course, their willingness to participate in the discussion, etc., regardless of grade level.

When examining which variables (academic success, attitude, nature of science, critical thinking, problem solving skills, etc.) the ABTM has effects on, it is seen that the studies mostly focus on academic achievement (Table 4). Then there are attitudes, interests and motivation, critical thinking and reflective thinking etc. It is also seen that studies have been done on it. When examining whether there is a significant difference between these variables, it is seen in Table 7 that there is no significant difference. When the results of the studies on these variables were examined, it was determined that the results were generally positive. Argumentation includes thinking exercises and allows students to make judgments by reflecting on events, situations or facts (Erduran et al., 2004). More importantly, science education often proceeds by arguing, disagreeing, and proving or disproving claims rather than consensus. In this way, students can better understand scientific knowledge (Clark & Sampson, 2007; Niaz et al., 2002). Deep thinking and practice are important for learning. Such an argumentation process will have significant effects on students' critical thinking, reflective thinking, problem solving skills, and scientific thinking skills, and then academic success will increase. Therefore, it can be said that the reason why there is no significant difference between the variables examined is due to this dynamic interaction in the argumentation process.

5. Suggestions

In the study, as a result of the meta-analysis on the argumentation-based teaching process at the national level, it was determined that there was no significant difference in terms of the level of classes in which the studies were conducted and the independent variables examined in the studies, but there was a significant difference between the subject areas in favor of the subject area of chemistry. Considering the suggestions that can be made in line with the results obtained from the study, it is thought that the comparison of the results of the studies on the argumentation process in the international literature and the results of the national studies will be meaningful and contribute. The learning process can be enriched by comparing the data obtained from a study conducted in this direction with the studies conducted at national and international level, by determining the similarities and differences in the process.

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Translation Ethics: An Investigation into Lady Welby's Upward Translation from the Perspective of Meaning Triad

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Abstract

This paper offers a comprehensive survey of translation ethics within the theoretical frame of Lady Welby's meaning triad concerning the relationship between ethics and translation in the meaning process of sign activities. The paper mainly discusses such aspects as: (1) the relationship between meaning triad and translation ethics, (2) upward translation as a method to maximize ethical value and (3) enhancement of translation ethics as a goal of upward translation. The results of the paper can be found as the following: 1. the evolutionary process of meaning from sense to meaning and then to significance is the path for the improvement of translators' cognitive ability and the sublimation of translator or interpreter's ethics and morality. 2. Upward translation serves as a key to enhancing translators' ethical consciousness. 3. translation, meaning and ethics are correlated and interrelated mechanisms. Therefore, the implications of the dynamic and dialogic view of translation and meaning will provide an interdisciplinary theoretical vision for the construction of translation ethics.

Keywords: Meaning Triad, Upward Translation, Translation Ethics

1. Introduction

"The whole world is filled with signs" (Peirce CP 5.441). Human beings not only think, express and transmit ideas with signs, but also reflect on signs and interpret the meaning of signs. The process of understanding and interpreting sign meaning is the process of translation, and the meaning is formed in the process of translation. American modern Semiotician Charles Morris (1901-1979) pointed out "meaning" refers not only to the semantic aspect of the sign, but also to the evaluation aspect – "what something represents and the value or meaning of what it represents." (Morris 1964: VII) In *Philosophy of Translation and Language*, Liu Miqing (2001:98-115) regarded meaning as a very complex multidimensional entity involving concept, context, intention, cultural background, aesthetics and so on. According to Victoria lady Welby (1837-1912), meaning has three dimensions: sense (instinctive or response to the environment), meaning (intentional or willing) and significance (moral). Welby's meaning triad aims to explore the relationship between various forms of human sign activities (such as translation) and meaning, consciousness and value (practical value, social value, aesthetic value and ethical value). As a typical sign activity, translation is inseparable from meaning and value, because the translation process

involves a variety of value choices and judgments of different subjects, such as the choice of translators'; translation strategies and the evaluation criteria of translation critics, which are related to value judgment. Value judgment runs through translation activities. Welby's exposition of the essence of translation and the relationship between translation and meaning, value, especially ethical value, from the perspective of her signification theory serves as an indispensable theoretical supplement to the construction of translation ethics, which has attracted more and more attention of scholars in translation research.

2. Meaning triad as a trajectory for developing translation ethics

2.1 Meaning triad

Meaning triad is the core of Welby's signification theory, including "sense," "meaning" and "significance" which are these three terms employed by Welby to indicate three different stages in the process of meaning interpretation. **Sense** stage is the sign interpreter's direct feeling and grasp of the sign and its context (not only the context, but also the broad context of communication situation, society and culture). Sense is the response of the sign interpreter to the sign, which is the sign interpreter's translation and interpretation of the sign. **Meaning** is the second stage of sign activity. Meaning is not the lexical feature of words as signs, but the intention of sign users when using signs in specific communication situations. As the third level of meaning, **significance** includes sense and meaning, but goes beyond them in scope, and includes the far-reaching results, hints, final results or results of certain events or experiences, its emotional power, ideal value, moral aspect, universal or at least social scope (Welby 1903: 5-6). The value of meaning hierarchy emphasizes the influence of signs on sign recipients and interpreters. This influence can be emotional, practical and ethical. This influence and effect are based on the reasoning and evaluation of the sign receiver and interpreter on the basis of the perceived value of the sign preliminarily identified in the first stage and the intended value of the sign sender in the second stage. From sense, meaning to significance, the hierarchical development of the interpretation process of sign meaning by sign interpreters clearly shows the relationship between translation, meaning and value in signification theory.

2.2 Enhancing translation ethics in the trajectory of meaning triad

From "sense" to "meaning" and then to "significance," with the continuous promotion of the translation interpretation activities of sign interpreters (such as translators), translation interpretation grasps the elements of the context of signs in the way of "dialogue," predicts the interpretation strategies to be adopted and predicts the results of interpretation behavior, and the sign meaning is clarified in the context, At the same time, the sign interpreter's own cognition has also been deepened. The context is constantly updated and upgraded in the dialogue, and the meaning is gradually clear in the dialogue until the maximum effect of meaning is obtained, that is, ethical, practical or aesthetic value. Under the guidance of the sign interpreter, the sign interpreter and the context carry out continuous dialogue to promote the dynamic promotion of meaning; This sense of "dialogue" highlights the ethical dimension of meaning process by grasping the sign context, the intention of sign users and paying attention to the effect of signs. So that people can know the "meaning," that is, to explore the ideal value containing ethical value, which can be called the direction of signification (Sun Feng, 2019:53).

The triad of meaning is a universal and effective way for human beings to understand the world through signs and sign activities. Meaning is divided into sign activities, that is, the direction and track of the development of the translation process. From one sign system to another, linguistic or nonverbal translation behavior. When analyzing the three stages of Welby's meaning, Petrilli pointed out: sense, meaning and significance correspond to instinctive value, intended value, inferential value respectively. (Petrilli, 2009:265) Values are related to each stage of the sign process, and each stage involves different degrees or types of values. The highest level of meaning, that is, the formation of ethical value, is related to reasoning ability. The establishment of ethics can be a gradual growth process from low to high. The increasingly involved translative-interpretative activities result in the spiraling growth tendency of meaning and the sign users' ethical awareness develops along the way.

3. Upward translation as a method for internalizing translation ethics

3.1 "Upward translation"

The subject of sign interpretation adjusts his translation behavior, reflects and predicts the translation effect at any time in the changing context. This positive and responsible translation view is called "upward translation" in Significs. The meaning triad is not only the "upward" evolution process of meaning, but also the process of upward translation. As the third level of "meaning triad," significance refers to the final stage of activity, and directly points to ethical value. According to Taylor (1989), Chomsky (1995) and Lakoff & Johnson (1999), meaning is essentially an individual psychological phenomenon, which is closely related to human cognitive activities. It is not difficult to see that what is closely related to the problem of meaning is people's cognitive ability embodied in the process of translation and the ethical orientation of pursuing meaning.

Translation under the framework of Welby's significant theory is the logical thinking and reasoning ability of the sign interpreter in the form of nonverbal signs in the brain of the sign interpreter in the communicative context. This process of integrating various contextual elements is the translation interpretation behavior that runs through the three stages of meaning derivation. From the perspective of significs, the generation of sign meaning is synchronized with translation interpretation activities. The meaning of signs increases with the increase of this "upward translation" process, which means the continuous dialogue between the sign interpreter (translator) and the context in which the sign text is located, promoting sign meaning until the highest-level ideal value, including aesthetic, practical and ethical values are achieved.

Welby's theory of meaning triad provides a methodology for cultivating translators' internal pursuit of the most ideal effect and the highest meaning (ethical value) through upward translation. Cultivating the translator's sense of responsibility with the goal of obtaining "meaning" is of great significance to improve the quality of translation, realize effective communication and resolve cross-cultural communication conflicts and contradictions. If the translator's translation behavior is "meaning" oriented, that is, constantly reflect on the impact and effect of his translation behavior on others outside himself, that is, the translation may have on society, culture, aesthetics and ethics, the quality of the translation will be more guaranteed.

3.2 Internalizing translation ethics -- the goal of "upward translation"

Every translation interpretation of sign meaning means an attempt to approach higher meaning and value. The translation process in which sign interpreters capture the meaning of signs is a process of constantly reflecting and considering the social, economic, aesthetic and ethical effects of their own translation behavior. As translation activities are concerned with difference, how to deal with the existing differences and how to deal with the relationship between self and others is an ethical problem in the final analysis. The fact is that translation itself is regarded as an ethical activity (Goodwin, 2010; Baker & Maier, 2011) it can be regarded as an activity with a set of ethics and ideology, not just a language activity (Tymoczko, 2006:443)

People use signs to think and exert influence on the surrounding world using signs (especially language signs), which requires translators to have a strong sense of responsibility and ethics, and to pursue "upward translation" and "upward" translation value. "Upward translation" is not only an appeal for higher translation quality, but also the requirement of the times for the continuous improvement of translators'; cognitive ability and the sense of responsibility for others. The dynamic meaning triad emphasizes the (ethical) value dimension, that is, a reflective and critical attitude towards the possible impact and results of human behavior. The most basic responsibility of the translator is to pursue the promotion of the meaning and value of the translation. Welby's "upward translation," to enhance value and enhance ethical awareness, is not only suitable for interlingual translation in the conventional sense, but also closely related to the promotion of morality and ethics at the level of human social and cultural life. Whether it is specific translation practice or our daily life, what the meaning triad of significs needs to cultivate is such a thinking habit and reflective critical attitude. What the meaning triad explores is a sense of responsibility that always maintains the interest in questioning the meaning of things and seeks the highest ethical value.

Conclusion

As discussed above, the conclusion can be drawn as follows: Firstly, from the perspective of Welby's meaning triad theory, ethics is more an attitude of reflection and criticism on sign behavior, an ethical pursuit existing in the translator's heart, emphasizing the attention to the translation context and dialogue with the context, conscious sense of responsibility and the moral requirements of pursuing higher meaning and value. Secondly, this internalized and spontaneous ethical quality and pursuit complement and support each other with the translation ethics that translators need to abide by, both of which constitutes the internal and external integration of translation ethics. Thirdly, to cultivate the translator's translation interpretation ability, is to establish the ability of connection and transformation between different fields. Only those translators who have this cognitive ability of translation and have an internal upward pursuit of morality and value can they actively abide by the norms of translation ethics and shoulder the cross-cultural mission of "respecting differences and respecting civilization" in the era of globalization.

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Investigation of Life Skill Levels of University Students in the Covid-19 Pandemic

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Abstract

It was aimed to reveal whether there is a statistically significant relationship between the gender, age, sportive activity status and duration of the students studying at xxx University in the 2020-2021 academic year on their life skills levels. In this study descriptive survey method was used. A personal information form was used to obtain information about the demographic characteristics of 215 students, 71 male and 144 female and "Life Skills Scale" which was developed by Bolat and Balaman (2017) was used to determine the life skills levels, who participated in the study. Independent sample T test was used to determine the significant difference between two independent variables and life skills. Anova Analysis of Variance techniques were used to determine the difference between more than two variables and life skills. Pearson correlation analysis was made to determine the relationship between Life Skills Scale and ages of students and duration of sports activities. The results were evaluated according to the $p < .05$ significance level. It has been determined there is a significant difference in the sub-dimensions of coping with stress and emotions, empathy and self-awareness, decision making and problem solving about students gender and life skills scale according to the data obtained. It has been determined there is a significant difference in all sub-dimensions of the students' sportive activities and life skills scale. It has been determined there is a positive significant relationship in students' weekly sporting activity time and life skills scale on the sub-dimension of decision making and problem solving.

Keywords: University Students, Covid 19, Life Skills, Sportive Activity, Low Case, Comma, Paper Template, Abstract, Keywords, Introduction

1. Introduction

In late December 2019, a new type of virus (SARS-CoV-2), which had not been detected before, emerged in the city of Wuhan, China. This virus, which was later named Covid-19, spread rapidly all over the world, especially in European countries, due to its high contagious nature and caused a large number of deaths. For this reason, the World Health Organization (WHO) has declared this period as a "Pandemic" (WHO, 2020). The pandemic

process includes uncertainties on various issues such as; getting an infection, whether the infection is transmitted to people, objects or surfaces around it, the type of treatment or protective measures, the stage of the pandemic or whether it has ended. Those with a high degree of uncertainty intolerance try to reduce uncertainty through controlling and reassurance-searching behaviors. In cases of health-related uncertainty, the behavior of repeatedly checking the internet for medical information and constantly searching reassurance from doctors can be seen (Taylor, 2019).

Fear and anxiety are physiologically fundamental emotions that involve activating the "fight or flight" response of the sympathetic nervous system and it allows us to react quickly when faced with an imminent threat. The most important reason why the pandemic creates fear or anxiety in both society and health workers; the infection being contagious, posing a near threat, being invisible, increasing its area of influence gradually (Pappas et al., 2009). The psychological symptoms that can be seen in quarantine and isolation are as follows; anxiety, concern, panic attacks, fear, disturbance, nervousness, desperation, alertness, muscle aches, health anxiety, feelings of worthlessness, guilty, loss of motivation, reluctance, difficulty concentrating, loss of appetite or increased appetite, insomnia, anger and intolerance, burnout syndrome.

Anxiety is an appropriate symptom in quarantine and isolation situations. People notice that their plans for the near future change suddenly and dramatically. They may be taken to an unfamiliar environment and have to leave their social relationships. Their anxiety may be increased by the inability to run their business or meet the needs of their dependents (Huremović, 2019).

The most common psychiatric disorders in the pandemic; mood disorders, anxiety disorders, and post-traumatic stress disorder (PTSD). PTSD can be triggered by various stress factors associated with the pandemic, including witnessing deaths and the death of loved ones. In a study over a 2-46 month period, 44% of SARS patients developed PTSD (Huang et al., 2009).

Life can be expressed as the struggle to preserve the originality of the individual through efforts to produce and maintain freedom as well as a process that consists of the pursuit of acquiring the skills required by living together. From this perspective, life; confronts the individual with a fundamental dilemma at every stage. This dilemma can be expressed as the necessity of the individual to be able to be himself and to live together in the same life process simultaneously. Life skills are the competencies that an individual must possess in order to maintain their existence effectively in the process of change. (Erbil et al., 2000). In general, life skills focused on psychological, physical, sexual, occupational, cognitive, moral, emotional and self-aspects of development (Picklesimer, Miller, 1998). Life skills reduce the stigma and shame associated with drug use and addiction by avoiding diagnosis and labeling and training programs. Teenagers will be more interested in new experiences where they will learn how to deal with life. From this point of view, behavioral changes turn into a "journey of discovery" rather than "healing and recovery" (Hawkins, Cummins, Marlatt, 2004). Life skills facilitate the development of psychological skills needed to cope with the challenges and demands of daily life (Papacharisis, Goudas, Danish, Theodorakis, 2005). Life skills, which enable the individual to perform different roles successfully (Khalil, 2018) and consist of the skills and knowledge needed for a healthy life, help to maintain a happy and healthy life in the physical and mental sense (UNESCO, 2013).

Sport has an important role in the socialization of the individual due to its feature of being a social activity that enables the individual to participate in dynamic social environments. Considering that sport is mostly a collective activity in modern societies, individuals interested in sport engage in social relations with different groups of people through sportive activities. Sports enable the individual to get rid of her own narrow world and to be in dialogue with people from other social environments, beliefs and thoughts, to be affected by them and to influence them. With this aspect, it can be said that sports support the establishment, reinforcement and social cohesion of new friendships. Sports constitute an important conversation topic not only among those who do sports but also among the audience (Çaha, 2000). The increasing interest of today's societies in doing and watching sports is one of the distinguishing features of contemporary social life. There is no other event that can gather millions of people from all over the world at the same time in front of the stands and televisions, without discrimination of language, religion, race and gender (Yetim, 2000). On the behalf of this information, the aim of

the study is to examine the life skill levels of university students in terms of different variables (gender, age, sportive activity status) during the Covid-19 pandemic process.

2. Method

The Method section describes in detail how the study was conducted, including conceptual and operational definitions of the variables used in the study. Different types of studies will rely on different methodologies; however, a complete description of the methods used enables the reader to evaluate the appropriateness of your methods and the reliability and the validity of your results. It also permits experienced investigators to replicate the study. If your manuscript is an update of an ongoing or earlier study and the method has been published in detail elsewhere, you may refer the reader to that source and simply give a brief synopsis of the method in this section.

2.1 Type of Research

In this study, the singular survey model that was used in quantitative research was used. In the survey model, in which the views of the participants included in a research are taken about the event or phenomenon that is the subject of the research, the event, individual or object that is the subject of the research is tried to be defined as it is in its own conditions and the current situation is tried to be described as it exists (Büyükoztürk, Kılıç Çakmak, Akgün, Karadeniz, et al. Demirel, 2012; Karakaya, 2012; Karasar, 2015). In order to carry out a study in accordance with the screening model, a representative sample group of the research population should exist and it is necessary to collect the data systematically by means of a data collection tool and to analyze the obtained data statistically (De Vaus, 1991; Neuman, 2016).

Include in these subsections the information essential to comprehend and replicate the study. Insufficient detail leaves the reader with questions; too much detail burdens the reader with irrelevant information. Consider using appendices and/or a supplemental website for more detailed information.

2.2 Participant (Subject) Characteristics

The study group of this research consists of a total of 215 students, 144 female and 71 male, studying in different departments of Ege University in the 2020-2021 academic year.

2.3 Data Collection Tools

The survey technique, which is frequently used in the searching method, was used for data collection in the research (Nachmias & Nachmias, 1996). The web-based survey forms prepared during the Covid-19 pandemic process were applied to the individuals included in the research with the relevant link, and the valid and acceptable survey data were transferred to the analysis program for evaluation. In order to collect data, apart from the "Personal Information Form" created by the researchers, the "Life Skills Scale" developed by Bolat ve Balaman (2017) was used. The life skills scale, which consists of 30 items and a total of 5 sub-dimensions, including coping with emotions and stress, empathy and self-awareness, decision making and problem-solving, creative and critical thinking, communication and interpersonal relations, is a 5-point Likert type.

2.4 Analysis of Data

Before proceeding to the statistical analysis, assumptions such as normality, homogeneity, stationarity, linearity, if any, related to these analyzes should be checked and statistical information should be given about which assumptions are provided. In the light of this information, the researcher should justify which analysis techniques he prefers and which he does not prefer (Tozoğlu and Dursun 2020).

In the research, firstly studies on data processing were carried out for the data obtained through scales could be analyzed. For this, first of all, the demographic information form filled by the students and the "Life Skills

Scale" was checked in detail. Incomplete or incorrectly filled surveys were not taken into consideration. Then, the scales suitable for the research were transferred to the computer and evaluated in the analysis of the data. SPSS 21.00 package program was used in the analysis of the data. While analyzing the data, primarily descriptive analysis (frequency, arithmetic mean, standard deviation, percentile distribution) techniques were used. These are frequency, arithmetic mean, standard deviation, and percentile distribution. "T-test for Independent Samples" was conducted to determine the difference between two different independent variables and Life Skills Scale sub-dimensions, from parametric tests in normally distributed data, Pearson correlation analyzes were conducted to determine the relationship between students' ages and duration of sportive activity and the Life Skills Scale sub-dimensions and the results were evaluated according to the $p < .05$ significance level (Bursal, 2019; Büyüköztürk et al., 2012).

3. Results

Table 1: Descriptive Statistics Distribution

	Coping with Stress and Emotions (CSE)	Empathy and Self Awareness (ESA)	Decision Making and Problem Solving (DMPS)	Creative and Critical Thinking (CCT)	Communication and Interpersonal Relations (CIR)
N	215	215	215	215	215
Mean	25,009	29,251	29,451	21,339	17,232
Median	25,000	29,000	30,000	22,000	17,000
Mode	26,00	28,00	35,00	25,00	20,00
Std. Deviation	4,908	4,148	4,203	2,938	2,294
Skewness	-,004	-,466	-,513	-,534	-,518
Kurtosis	-,484	,022	-,430	-,067	-,530

Frequency distributions are given for categorical variables in the analysis of the data. In addition, mode, median and arithmetic mean values, skewness and kurtosis coefficients were taken into account in order to look at the condition that the data have a normal distribution. Coping with stress and emotions (CSE) sub-dimension of life skills scale as shown in the table Skewness -.004 and Kurtosis -.484, empathy and self-awareness (ESA) sub-dimension Skewness -.466 and Kurtosis .022, decision making and problem-solving (DMPS) Skewness -.513 and Kurtosis -.430, creative and critical thinking (CCT) Skewness -.534 and Kurtosis -.067, and communication and interpersonal relations (CIR) Skewness -.518 and Kurtosis -.530. Mode, median, arithmetic mean, skewness and kurtosis values of the sub-dimensions of the life skills scale are close to each other, within the limits specified by Büyüköztürk (2012), Tabachnik and Fidell (2015), and George and Mallery (2010); -1.5 to +1.5; -2.0 to +2.0) data set has a normal distribution. Parametric tests were used because it showed a normal distribution.

Table 2: Demographic Characteristics of the Students Participating in the Research

Variable	n	%	
Gender	Male	71	33,0
	Female	144	67,0
	Total	215	100,0
Sports Activity	Yes	142	66,0
	No	73	34,0

The research was conducted on a total of 215 students, 71 male and 144 female. It was determined that 142 of the students participating in the study did sportive activities and 73 of them did not do sportive activities.

Table 3: Age and Duration of Sports Activity of the Students Participating in the Research

	Age	Weekly Total Sports Activity Time
N	215	142
Mean	21,898	5,852
Median	21,000	5,000
Mode	21,0	4,00
Std. Deviation	3,477	3,701

It has been determined that the average age of the students participating in the research is $21,898 \pm 3,4774$ and the average of weekly sportive activities is $5,852 \pm 3,701$.

Table 4: The t-Test Results of the Levels Between the Life Skills Scale Sub-Dimensions of the Students Participating in the Study by Gender

Life Skills Sub-Dimensions	Gender	n	x	ss	t	p	Difference	
CSE	Male(1)	71	27,042	4,6581	4,447	,000	1>2	3,035
	Female (2)	144	24,006	4,729				
ESA	Male (1)	71	31,028	3,9459	4,615	,000	1>2	2,653
	Female (2)	144	28,375	3,9734				
DMPS	Male (1)	71	30,901	3,7650	3,653	,000	1>2	2,165
	Female (2)	144	28,736	4,2360				
CCT	Male (1)	71	21,816	3,1319	1,680	,095	
	Female (2)	144	21,104	2,8203				
CIR	Male (1)	71	17,605	2,2581	1,691	,094	
	Female (2)	144	17,048	2,2972				

After the t-test analysis between the genders of the students and the sub-dimensions of the life skills scale, it was found that there was a significant difference in the sub-dimensions of coping with stress and emotions (CSE), Empathy and Self-Awareness (ESA) and Decision Making and Problem Solving (DMPS) at the $p < .05$ level detected. It was found that the mean score of male students was higher than the mean score of female students in these three dimensions, where there was a significant difference. It was found that there was no significant difference between the genders in the sub-dimensions of Creative and Critical Thinking (CCT) and Communication and Interpersonal Relations (CIR).

Table 5: The t-Test Results of the Levels Between the Life Skills Scale Sub-Dimensions of the Students Participating in the Study According to their Sportive Activity Status

Life Skills Sub-Dimensions	Doing Sports Activity	n	x	ss	t	p	Difference	
CSE	Yes	142	25,901	4,972	3,834	,000	1>2	2,627
	No	73	23,274	4,308				
ESA	Yes	142	29,943	3,788	3,503	,001	1>2	2,039
	No	73	27,904	4,500				
DMPS	Yes	142	29,985	4,175	2,638	,009	1>2	1,574
	No	73	28,411	4,088				
CCT	Yes	142	21,802	2,783	3,297	,001	1>2	1,364
	No	73	20,438	3,041				
CIR	Yes	142	17,690	2,196	4,237	,000	1>2	1,347
	No	73	16,342	2,231				

After the t-test analysis between the students' sportive activity and life skills scale sub-dimensions, it was determined that there was a significant difference in all sub-dimensions at the $p < .05$ level. In all sub-dimensions, it was found that the mean score of the students who do sports activities is higher than the mean scores of the students who do not do sports activities.

Table 6: The Results of the Correlation Analysis of the Ages and Weekly Sporting Activity Duration of the Students Participating in the Study and the Sub-Dimensions of the Life Skills Scale

		Coping with Stress and Emotions (CSE)	Empathy and Self Awareness (ESA)	Decision Making and Problem Solving (DMPS)	Creative and Critical Thinking (CCT)	Communication and Interpersonal Relations (CIR)
Age	r	,080	,095	,030	,038	,076
	p	,244	,166	,658	,578	,270
	n	215	215	215	215	215
Sporting Activity Time	r	,096	,112	,177*	,078	,084
	p	,256	,186	,035	,358	,319
	n	142	142	142	142	142

When the correlation analysis results between the sub-dimensions of the Life Skills scale of the students and their age, and the duration of weekly sportive activities were examined, it was determined that there was no significant relationship between the sub-dimensions of the life skills scale and the ages of the students. It has been determined that there is a positive and significant relationship between the students' weekly sports activities and the decision-making and problem-solving sub-dimensions of the life skills scale.

4. Discussion

In this study, it was aimed to examine the life skill levels of university students during the Covid-19 pandemic process. A total of 215 students, 71 male and 144 female, studying in different departments of Ege University participated in the research. In the first finding of the study, according to the results of the t-test analysis between the gender of the students and the sub-dimensions of the life skills scale, coping with stress and emotions (CSE), it was determined that there was a significant difference in the sub-dimensions of Empathy and Self-Awareness (ESA) and Decision Making and Problem Solving (DMPS). It was determined that the mean score of male students was higher than the mean score of female students. This can be interpreted as male students' ability to cope with stress and emotions, empathy and self-awareness, and decision-making and problem-solving skills are higher. In the study conducted by Göksoy, Arıcan, and Eriş (2015) in the literature, it was determined that female teachers experienced more stress than male teachers. In the study conducted by Tozoğlu et al. (2017) on university students, it was determined that female students had higher stress levels than male students. In the study conducted by Boysak (2020) on classroom teachers, it was determined that male teachers had a higher level of skills in coping with negative emotions and controlling their emotions. The results of these studies are consistent with our study result. On the other hand, in the study conducted by Serin (2010) on classroom teachers, it was seen that female teachers' problem-solving skills were higher than male teachers. Suleymanoglu et al. (2021), the scores of female students in the sub-dimensions of "Coping with Emotions and Stress," "Decision Making and Problem Solving Skills" and "Creative Thinking and Critical Thinking Skills" were relatively higher. These results differ from the results of our study.

It has been determined that there is a significant difference in all sub-dimensions of the students' sportive activities and life skills scale. In all sub-dimensions, it was found that the mean score of the students who do sports activities is higher than the mean scores of the students who do not do sports activities. In studies conducted in the literature, it has been determined that individuals engaged in sports activities learn life skills related to emotional skills, social skills and leadership, decision making, problem-solving and time management (Vella, Oades, & Crowe, 2013; Buğan, 1999; Gould, Collins, Lauer, & Chung, 2007). When we look at the

studies that differ with our research result, Öztürk (2018) found a significant difference between the sporting variable and social skill levels in the study named "Investigation of Social Skill Levels of Secondary School Students Who Do and Don't Do Sports." A study made by Suleymanoglu et al. (2021) was found a significant difference between students' regular physical activity status and life skill levels in favor of students who do not engage in physical activity. It has been determined that there is no significant relationship in the sub-dimensions of students' lives. In the study conducted by Türk (2015), which examined how doing sports will affect the acquisition and development of life skills in young people, it was found that age has no effect on young people's acquisition and development of life skills. This result is consistent with our study result. In the last finding of the study, it was determined that there was a positive and significant relationship between the duration of weekly sports activities and the decision-making and problem-solving sub-dimensions of the life skills scale. In the study conducted by Ryan and Dzewaltowski (2002) in the literature, it was determined that doing sports contributes to the increase of self-confidence, the development of problem-solving skills and being more social in young people. In another study conducted by Girmen (2012), it was determined that doing sports activities increased decision making, problem solving skills, communication skills and quality of life. As a result, there are many variables that can affect life skills. These variables vary according to needs. Among these variables, the variable of doing sportive activity is very important. Because it is thought that the students who do not do sports activities will start doing sports activities, increase their life skills and contribute positively to their academic and social lives. In this context, it is recommended to encourage both university students and students at different levels to sports activities.

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The Effect of the Phenomenon of Phubbing on the Organizational Behavior of Administrators Working in Vocational Education Schools in The Light of the Variables of Appreciation and Provision of Attention to Employees

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Abstract

The aim of this research is to identify the effect of the phenomenon of Phubbing on the organizational behavior of administrators working in vocational schools in the light of the variables of appreciation and Provision of Attention to Employees. The research community consisted of (45) administrators, who were selected in a stratified random manner. The descriptive survey method was used in the current research. To achieve the objectives of the research, a questionnaire was developed, and its validity and reliability were confirmed. The results showed that the effect of the phenomenon of Phubbing on the organizational behavior of administrators working in vocational education schools in the light of the variables of appreciation and concern for workers was medium. The results of the research also showed that there were statistically significant differences at the significance level ($\alpha \leq 0.05$) according to the gender variable in favor of the male category. And there were no statistically significant differences according to the educational qualification variable, and there were no statistically significant differences according to the years of experience variable. In light of these results, the research recommended that the administrations of vocational education schools attach great importance to organizational behavior And work on treating it and alleviating the obstacles it faces and trying to tackle the phenomenon of Phubbing, So that it works to stimulate conducting studies and research from time to time to find out the effects of this phenomenon on organizational behavior in various circumstances and organizational variables in the educational administrative environment.

Keywords: Phubbing, Organizational Behavior, Vocational Education Schools

1. Introduction

Organizational behavior is a comprehensive attempt to understand the practices of employees in the organization, whether they are individuals or small groups. The organizational behavior also expresses the organization's interaction with its external environment, such as political, economic, social, cultural and civil influences and factors. And with the behavior of its employees and the feelings, attitudes, attitudes, motives, expectations, efforts and capabilities they hold, Organizational behavior aims to improve performance, administrative effectiveness and

job satisfaction among employees. In order to achieve the common and desired goals of the employee as an individual and for the organization in which he works, in order to achieve the goals of society as a whole, the organizational behavior has crystallized within the framework of the development of contemporary administrative thought, especially in the field of organizational thinking. It has become the most influential factor in achieving administrative goals, because of its great role in shaping and formulating the behavior of individuals, as well as being a function of the level of interaction between the individual and his environment.

Therefore, recognizing the nature of the prevailing organizational behavior in any organization in its various dimensions is necessary and important, it seeks to adopt policies and procedures that enhance the positive aspects and correct the negative aspects, and the advancement of the mental health of its employees, their morale, and their moral values, which is reflected positively on the efficiency and effectiveness of the process of achieving the organization's goals, and satisfying individual and organizational needs and desires (Al-Saud, 2015).

It is worth noting that the good human relations, which prevail among individuals in the same organization, help to create and create healthy organizational behavior, based on the way managers treat their subordinates, the philosophy of senior management, working conditions, the quality of goals and objectives that the organization seeks to achieve, Where the level of organizational behavior is affected by the change in the general atmosphere that prevails in the internal environment, with all its conditions and variables, With its level of civilization and stability, and the extent of the rule of democratic dimensions in it, which is based on the fundamental idea that the multiplicity of healthy minds is more capable of presenting correct ideas than a single, sound mind (Al-Mutairi, 2016).

From here, the prevailing organizational behavior of individuals works to formulate and shape the characteristics of the organization in all its dimensions, and work to identify the difficulties and obstacles that may stand in the way of the organization's realization of its programs, Which may weaken the organization's ability to create the appropriate climate if the prevailing organizational behavior is negative, this is on the grounds that individuals working in the organizational environment who do not feel their importance at work, and the value of the tasks they perform, And they do not receive the appreciation they deserve, which may weaken their ability to achieve organizational goals successfully, and generate mutual mistrust between them and the management of the organization. This reflects negatively on the nature of the work environment prevailing in the organization, and then the organized values of hatred, envy and jealousy are generated, Conspiracies and intrigues abound, and a state of melancholy organized affection and lack of sincerity in performing tasks and duties prevails, Organizational diseases, feelings of injustice, widespread depression and unwillingness to continue working are prevalent in the workplace, But the organizational behavior may lead to stability and organizational stability and the achievement of the goals and objectives set in the organization's plans if the behavior of the employees and the management of the organization tends to be positive, And in a way that achieves the organization's vision, mission and goals efficiently and effectively so organizations, while living the modern administration with an accelerating pace, work to establish a conscious understanding of the level of organizational behavior, And work on analyzing its elements in order to identify the direct and indirect influences on the actions and motives of individuals in order to treat, improve and develop performance, Increasing productivity in light of satisfying the functional, psychological, social and material needs of the individual (Al-Baher, 2021).

The organizational behavior is a true reflection of the interaction of many factors that appear on the individual in the course of his practices towards his work, whether those factors are related to the individual himself; as the experience gained, Or the academic qualification obtained from a university, college or institute, or its gender, whether male or female, With all its physiological, psychological or sociological characteristics and characteristics (Al-Qaryouti, 2006).

But in light of the spread of the phenomenon of Phubbing, especially among senior management in various organizations, this led to creating gaps in the nature of the prevailing organizational behavior in those organizations, As the manager's distraction with his phone at the expense of his interaction with the workers and the inability to communicate with them effectively may reflect on the psychological feeling of the workers This may take another curve, which is represented in the misjudgment and poor evaluation of the superior effort and

the lack of reward for outstanding work on the one hand, and the poor attention to workers on the other hand, Such a matter may generate a state of organizational animosity between workers and their higher management, Several studies have confirmed the negative impact of the phenomenon of Phubbing, such as the study of James A. Roberts in 2015, The media reported that these researches about ignoring the individual because of his preoccupation with the phone or the so-called “Phubbing phenomenon” found that 22.6% caused them problems in their relationship, And 66.3% said their partners ignored them (Caglare, 2013).

Therefore, in light of this, the phenomenon of Phubbing constitutes an organizational concern in organizations, especially those concerned with learning and education, this is on the basis that this phenomenon may create a state of estrangement between employees and their management and may lead to the emergence of organizational diseases such as work turnover, High levels of absenteeism, poor performance of tasks and duties to the fullest, and lack of efficiency and effectiveness, Weak exploitation of human and material resources and the failure of the organization to achieve its goals, The loss of the educational service recipients’ trust in the organization and its services, and the prevailing organizational climate based on catching mistakes, And the spread of conspiracies as a result of the higher management giving its attention to administrators rather than administrators and to matters without other matters.

2. Research problem

Any administrative or educational organization seeks to achieve the highest levels of efficiency in work and effectiveness in the performance of its employees, so that it is keen on everything that would raise the level of employees, In a manner that ensures a high level of interaction and integration, and active participation in fulfilling the duties and tasks assigned to them, Looking at vocational education schools, the researcher noticed a decrease in the level of organizational behavior among the administrators working in them as a result of the presence of the phenomenon of phubbing in the departments of vocational education schools, Where a large degree of disparity has been established in the level of practices, behaviors and ethical values that must be available to workers to ensure the proper completion of their work, And in a way that ensures the highest levels of interaction and integration in their jobs, so it was important to research the impact of the Phubbing phenomenon that led to the emergence of that problem and related to the level of organizational behavior in the light of the variables of appreciation and concern for workers, Therefore, this study comes as a step towards contributing to the establishment of a solid base for organizational behavior in these institutions. Perhaps what confirms the impact of the phenomenon of Phubbing on organizational behavior that may occur in any organization, the results of the study of; Caglare (2013), Erbas (2014), Sulu (2015), and Chotpitayasunondh, Douglas (2018).

3. Research questions

The research seeks to identify the impact of the phenomenon of Phubbing on the organizational behavior of administrators working in vocational schools in the light of the variables of appreciation and concern for workers, By answering the following questions:

- The first question: What is the effect of the phenomenon of Phubbing on the organizational behavior of administrators working in vocational schools in the light of the variables of appreciation and concern for workers?
- The second question: Are there statistically significant differences at the significance level ($\alpha \leq 0.05$) between the arithmetic averages of the responses of the study sample members towards the effect of the phenomenon of Phubbing on organizational behavior in vocational education schools due to the variables (gender, years of experience, and educational qualification)?

4. Research aims

This research aims to achieve the following:

- Adding new knowledge in the field of the phenomenon of Phubbing and its impact on organizational behavior in educational organizations.

- Helping those in charge of decision-making and policies in the administrative and educational fields to create an environment for the social system within vocational schools by reducing the spread of the phenomenon of Phubbing in those educational institutions.
- Work to generate a state of harmony in the work of the employees, and their good management of the functional affairs that they carry out, and to ensure that the goals of vocational education schools are achieved efficiently and effectively.

5. Research terms

The search included the following terms:

- **Phubbing:** A term coined as part of the Macquarie Dictionary campaign to describe the habit of ignoring someone in favor of a mobile phone, It is an acronym for 'phone snubbing' or 'ignoring others for using the phone', It is a term used to describe the habit of ignoring the person sitting with you due to the preference for using a mobile phone (Chotpitayasunondh, Douglas, 2018).
- **Organizational Behavior:** It is concerned with studying the behavior of employees in different organizational units, their tendencies, tendencies and performance (Al-Baher, 2021).
- **Vocational education schools:** they are educational institutions concerned with education, training and rehabilitation, the aim of which is to prepare students for the labor market directly (Al-Saud, 2015).

6. Research limits

Research limitations include:

- Human limits: administrators working in vocational education schools.
- Time limits: the second half of the 2021/2022 school year.
- Spatial boundaries: Jordanian vocational education schools.

7. Related previous studies

This part will include a presentation of the previous studies that were reviewed, both Arab and foreign, arranged historically from the most recent to the oldest, as follows:

Garrido (2021) conducted a study represented the practice of phubbing has become an emerging phenomenon of worldwide interest to researchers. The cause is due to the fact that smartphones are ubiquitous and are often used in co-present interactions. This behavior is generally considered inappropriate and is called "phubbing." Phubbing, as described by Chotpitayasunondh is the act of snubbing someone in a social setting by looking at one's phone instead of paying attention to the other person. The aim of this article is to provide an overview of research studies on phubbing through a review of the current literature. To do this, a search was carried out in an international database, finding 84 relevant articles in English that appeared in peer-reviewed journals published between 2012, the year in which the term 'phubbing' appears, and January 2020. The review covers the main fields of research studies on phubbing behaviors. Likewise, the results of the study show the distribution of published articles on phubbing by year that detail the type of study and the methodological approach and, finally, the research journals that have published articles on phubbing. The results of this review are expected to stimulate and guide future research in this field.

Nazir (2019) conducted a study represented by the use of social networking sites and other mobile applications that have been growing intensively. Several researches indicated that it is one of the factors that impact the relationship maintenance between one another. It is highly desirable for all citizens to have a good interpersonal communication to maintain and develop further relationships. Bad communication skills may have harmed the interpersonal relationships. With technology advancing, Smartphone's play an important part in people's lives. It's easy to see people talking, slipping, or even playing on their phones in public places. Certainly, when people are concentrating on the small screens in hands, they won't care about their plights. So the probability of an accident is higher than before. Some countries even set up the "mobile phone sidewalk" to reduce potential hazards. But that is just palliatives. People needed to find a solution that "describe the annoying situation and

further remind people to put their phones down, and get talking to each other again.” In response to this request, a new word “phubbing” was created.

Chotpitayasunondh, Douglas (2018) conducted a study experimentally investigated the social consequences of “phubbing” – the act of snubbing someone in a social setting by concentrating on one’s mobile phone. Participants viewed a three-minute animation in which they imagined themselves as part of a dyadic conversation. Their communication partner either phubbed them extensively, partially, or not at all. Results revealed that increased phubbing significantly and negatively affected perceived communication quality and relationship satisfaction. These effects were mediated by reduced feelings of belongingness and both positive and negative affect. This research underlines the importance of phubbing as a modern social phenomenon to be further investigated.

The study of Massad (2016) aimed to measure the relationship between the level of organizational behavior and job performance among workers in engineering departments. The study population was represented by all employees in the various engineering departments in the ministry, including department managers, department heads, and engineers. The method that was followed in selecting the sample is the stratified random sampling method, where the total sample size was distributed over seven layers representing the employees of the Ministry's Presidency and its branches. What is the tool that was used in collecting the data are the questionnaires, where a questionnaire was designed consisting of three sections, Each section contains a set of questions directed to employees directly to inquire of them about their feelings and opinions about many issues related to themselves, their work, and the organization as a whole. The statistical analysis program (SPSS) was used to analyze the data and show the final results and circulate them to the study population. The study found out the reasons that lead to a sense of dissatisfaction among workers, the most important of which were: The lack of opportunity for renewal and innovation through job performance, and the promotion system in the ministry is not satisfactory, freedom of opinion is not available in the job, The working conditions and the physical environment are not appropriate, the method of supervision and direction by the administration on the workers is not satisfactory, the organizational structure in the ministry is not clear, Job tasks are changing from time to time, slow communication process between the various parties inside and outside the ministry, poor coordination and information exchange between different departments within the ministry, unfair distribution of incentives.

The study of Sulu (2015) came to identify the relationship that organizational behavior causes between two important variables in the business sector, namely, organizational injustice and organizational loyalty, and whether organizational behavior affects health care workers. The descriptive analytical method and questionnaire were used as a tool for the current study, and the researchers tested these relationships in a sample of 383 healthcare professionals (nurses and doctors) from public and private hospitals in Istanbul. The results of the study showed that there was a statistically significant correlation between the dimensions of job behavior and organizational loyalty due to the benefit of the dimensions of job alienation. The results showed that there is a relationship between workers in the health sector for the variable of organizational injustice and organizational loyalty in favor of females in the two variables.

Abu Wassan (2015) conducted a study aimed at knowing the role of organizational behavior in the performance of business organizations and determining the role of organizational behavior in the performance of these organizations. To achieve this goal, three commercial banks were selected as a sample representing the Sudanese banking sector. The student used the questionnaire as a main tool for collecting primary data from a stratified random sample of 220 individuals from the study population, which consists of the upper, middle and lower departments of the selected banks. (190) valid questionnaires were retrieved and analyzed using the SPSS statistical analysis package, and the descriptive analytical method was used for its suitability to the nature of the study. The study proposed a model consisting of some dimensions of organizational behavior, where (attitudes, motivation and motivation, work pressures, administrative leadership, organizational conflict, and organizational culture) were identified as dimensions for measuring organizational behavior. Also, (efficiency, effectiveness, quality of performance and organizational commitment) were used as dimensions to measure the performance of banks, as for the internal environment of the organization (modified variable), the study chose (organizational structure, technology, physical environment, and procedures) as dimensions to be measured.

And Erbas (2014), conducted a study, the aim of this study was to determine the relationship between the levels of organizational behavior and the attitudes and attitudes of students nominated for a physical education teacher, Towards the teaching profession in faculties of physical education, sports faculties and the Department of Education, and determining the relationship between their levels of behavior and attitudes, Whether there are any statistically significant differences between the variables: type and grade. The study group consisted of 695 candidates from teachers who study in the departments of education, physical education and sports. The correlational approach and the correlational research model were used in this study, in order to determine the relationship between two or more variables. The study revealed that the differences between the levels of functional behavior and the attitudes of physical education teacher candidates towards the teaching profession were moderate, the levels of alienation predicted significant levels of attitudes towards the teaching profession due to the grade variable.

Caglarc (2013) conducted a study that aimed to ascertain the relationship between the levels of organizational behavior of students of the College of Education, and their attitudes towards the teaching profession. The research sample consisted of 875 students, and they were selected by simple random sampling of 2,600 students from the Faculty of Education at Adiyaman University. In this study, the questionnaire "Personal Information Model" was used, which consists of two scales, the first: the alienation of students scale and the scale of attitudes towards the teaching profession, In order to collect data and analyze it using the t-test for independent groups, in order to determine whether the levels of alienation and attitudes towards the teaching profession differ according to the variables of gender and teaching method, While the one-way analysis of the teams was performed to determine if there was any discrimination according to the program type and class variables In order to determine the source of the difference between the groups, Regression analysis was also used in order to determine the level of relationship between levels of organizational behavior and attitudes towards the teaching profession. The results obtained showed that the experienced students had a medium level of alienation. While their attitudes toward the teaching profession were at a high level in the two dimensions, according to gender and class variables, statistically significant differences were seen only at the level of behavior in light of the teaching method variable.

As for the study of Ghobadi and Valadbigi (2012), it aimed to study the elements of functional behavior in a factory in Iran, This study came to clarify the state of job behavior in order to analyze the elements that create job behavior in the factory, By developing a questionnaire that was distributed to a sample of 90 employees. The results of the study indicated that there are fundamental differences in job behavior according to social status in favor of married couples. And found statistically significant differences in job behavior due to the nature of work in favor of non-administrative employees. And in job behavior and employee satisfaction with salaries and wages in favor of higher-paid employees, And in job behavior and the nature of relationships between managers and employees in favor of managers.

8. Summary of previous studies and the location of the current research

Previous studies have benefited from the knowledge of the appropriate methodology and statistical processes, and through which the theoretical framework of the study's subjects and variables was identified. In building the search tool, especially Nazir (2019), Garrido (2021), and Erbas (2014) the current research agrees with previous studies in reviewing the concept of the phenomenon of Phubbing and organizational behavior. The current research is similar to previous studies, especially the study of; Garrido (2021), and Erbas, 2014) in some study variables such as estimation, However, it was distinguished from those studies in its focus on administrators working in vocational education schools, in addition to its focus on variables that were not addressed by previous studies.

9. Methods and Procedures:

To meet the study's goals, the researchers adopted a descriptive survey-based approach

10. Research Population:

The study population consists of all the (650) administrators working in Jordanian vocational education schools.

Table 1: The distribution of the study population

Variable	Category	Frequency	Total
Gender	Male	520	650
	Female	130	
Academic qualification	Postgraduate degree	55	650
	BA degree	345	
	Diploma degree	250	
Years of experience	Five years or less	390	650
	More than five years	260	

11. Research sample

The research sample consisted of a number of administrators working in vocational education schools, and their number is (45) administrative, and table (2) shows the distribution of the research sample according to the research variables.

Table 2: Distribution of the sample according to the research variables

Variable	Category	Frequency	Total
Gender	Male	28	45
	Female	17	
Academic qualification	Postgraduate degree	9	45
	BA degree	25	
	Diploma degree	11	
Years of experience	Five years or less	25	45
	More than five years	20	

12. Research tool

The research tool was developed, with reference to the theoretical literature, and some previous studies such as; Massad study (2016), and Erbas study (2014), In order to achieve the objectives of the research and answer its questions.

The final form of the research tool consisted of (10) paragraphs distributed over two areas: the area of interest in workers, and it consisted of (5) paragraphs, and the assessment field consisted of (5) paragraphs.

To verify the validity of the tool, the validity of the content was approved in terms of the formulation of the paragraphs, and their relevance to the field in which they were placed by presenting those to (8) arbitrators.

To verify the stability of the tool, the internal consistency coefficient was used according to the Cronbach Alpha equation to extract the stability of the study tool by domains, and Table (3) shows the stability coefficients of the tool fields:

Table 3: Cronbach Alpha invariance coefficients for Research tool fields

No.	Area	Cronbach Alpha coefficient value
1.	Provision of attention to employees	0.90
2.	Appreciation	0.89

It is evident from Table (3) that the stability coefficients were acceptable, and to judge the effect of the phenomenon of Phubbing on organizational behavior in vocational schools, the following scale was adopted: low availability (2.33 and less), medium availability (2.34-3.67), and high availability (3.68 and more).

13. Research results and discussion:

Results related to answering the first question, which states: What is the effect of the phenomenon of Phubbing on the organizational behavior of administrators working in vocational schools in the light of two variables; Appreciation, and concern for workers?

To answer this question, the arithmetic averages and standard deviations of the responses of the study sample members in general and for each field of study were calculated, and Table (4) shows this.

Table 4: Means, standard deviations, and rank of the effect of the phenomenon of Phubbing on the organizational behavior of administrators working in vocational schools in the light of the variables of appreciation and concern for workers

No.	Area	Mean	Std.	Rank	Level
1	Provision of attention to employees	3.57	0.89	1	Moderate
2	Appreciation	3.43	1.03	2	Moderate
	Total	3.48	0.92		Moderate

It is noticed from Table (4) that the effect of the phenomenon of Phubbing on the organizational behavior of administrators working in vocational education schools was medium, as the arithmetic mean reached (3.48) and standard deviation (0.92), The domains were medium, and the field of interest in workers came in the first rank, with an arithmetic mean (3.57) and a standard deviation (0.89). In the last rank, the field of estimation came with an arithmetic mean (3.43) and a standard deviation (1.03). As for the paragraphs of each field, the results were as follows:

1. The field of interest in workers: the arithmetic averages, standard deviations, and ranks were calculated for the paragraphs of this field, and Table (5) shows this:

Table 5: Mean, standard deviations, order and degree in the field of employee interest, arranged in descending order

No.	Statement	Mean	Std.	Rank	Level
2	I feel satisfied in light of the privileges available to me	3.52	0.82	1	Moderate
4	I feel safe and secure in my work environment	3.53	1.01	2	Moderate
3	I feel fair where I work	3.57	0.86	3	Moderate
1	I feel satisfied with the possibilities available to me to carry out my administrative duties	3.58	0.92	4	Moderate
5	The school administration is keen to maintain the continuity of the work of the administrators	3.59	1.00	5	Moderate
	Total	3.57	0.90		Moderate

It is noted in Table (5) that the effect of the phenomenon of Phubbing on the organizational behavior of administrators working in vocational education schools in the light of the field of concern to workers was moderate, The arithmetic mean was (3.57) and the standard deviation was (0.90), as the arithmetic means ranged between (3.52 - 3.59), Paragraph (2) came in the first place, which states: "I feel satisfied in light of the privileges available to me." Paragraph (5) came in the last rank, which states: "The school administration is keen on the permanence of the work of the administrators." This may be due to the ability of administrators to join hands despite the presence of social distancing resulting from Phubbing, or they may go through similar circumstances, which did not increase each other's area of interest, This may be attributed to the school administration's ability to provide privileges that simulate the level of ambition of administrators working to raise the standard of living that they hope to reach. This may also be due to the high expectations of administrators that may be commensurate with the

size of the possibilities available in vocational education schools, especially in light of the presence of the phenomenon of Phubbing.

2. Estimation field: The arithmetic averages and standard deviations were calculated for the paragraphs of this field, and Table (6) shows this:

Table 6: Arithmetic means, standard deviations, rank and availability for the estimation field

No.	Statement	Mean	Std.	Rank	Level
3	I feel the presence of moral appreciation in the school	3.35	1.10	1	Moderate
5	I feel the presence of financial motivation in school	3.41	1.06	2	Moderate
2	The school administration considers workload responsibilities when awarding rewards	3.41	1.06	2	Moderate
4	Any achievement I make is instantly rewarded	3.47	1.10	4	Moderate
1	The school administration works to enhance the organizational loyalty of the administrators	3.55	1.05	5	Moderate
	Total	3.43	0.89		Moderate

Table (6) shows that the effect of the phenomenon of Phubbing on the organizational behavior of administrators working in vocational education schools in the field of estimation was Moderate, The arithmetic mean was (3.43) and the standard deviation was (0.89), and all the paragraphs of the field were average. Paragraph (3) came in the first rank, which states: "I feel the presence of moral appreciation in the school." Paragraph (1) came in the last rank, which states: "The school administration works to enhance the organizational loyalty of the administrators." This may be due to the ability of the school administration as well as the working administrators to express their appreciation for the tasks and burdens placed on the administrators themselves. This may also be due to the school administration's belief in the necessity of providing other grading systems. This is in view of the fact that the available assessment systems are insufficient and do not address the human needs of administrators. Such a matter alleviated the impact of the phenomenon of Phubbing, which prevails in the majority of senior administrations of educational institutions.

Results related to the answer to the second question, which states: Are there statistically significant differences at the significance level ($\alpha \leq 0.05$) between the arithmetic averages of the responses of the study sample members towards the effect of the phenomenon of Phubbing on the organizational behavior of administrators working in vocational schools due to the variables (Gender, years' experience, and educational qualification)?

This question was answered as follows:

a. Gender variable: The arithmetic means and standard deviations were calculated, and the t-test was calculated according to the gender variable, and Table (7) shows that.

Table 7: Arithmetic means, standard deviations, and t-test according to the Gender variable

Area	Gender	Frequency	Mean	Std.	T value	Sig.
Provision of attention to employees	Female	17	3.79	0.74	2.441	0.004**
	Male	28	3.64	0.82		
	Total	45	3.68	0.76		
Appreciation	Female	17	3.57	0.88	0.862	0.016
	Male	28	3.49	0.90		
	Total	45	3.52	0.89		
Total	Female	17	3.68	0.76	1.639	**0.009
	Male	28	3.52	0.89		
	Total	45	3.57	0.80		

** The difference is statistically significant at the significance level ($\alpha \leq 0.05$)

To determine whether the differences between the means are statistically significant at the significance level ($\alpha \leq 0.05$), the t-test was applied. The results in Table (7) indicate that there are statistically significant differences at the significance level ($\alpha \leq 0.05$) according to the gender variable based on the calculated (T) value. It reached (1.639) with a significance level of (0.009), Where the difference was in favor of males, as evidenced by the increase in their arithmetic averages, This may be attributed to the ability of the phenomenon of Phubbing to influence the organizational behavior of males, given that males have the need to secure a safe standard of living capable of maintaining the family level in which they live, They also have the responsibilities of spending and following up on the revenues that enter their homes. On the other hand, we find that males may feel depressed and unable to continue working, especially in light of the phenomenon of Phubbing in their workplace, This is an inevitable result of the direct official's indifference to the administrator's needs and his constant preoccupation with his phone at the expense of taking into account the needs of workers who may feel disappointed if their ongoing needs are ignored, And such a matter has contributed to a significant decrease in the level of their organizational behavior.

B. Years of experience variable: The arithmetic averages and standard deviations were calculated, and the (t-test) test was done according to the years of experience variable, and Table (8) shows that.

Table 8: Arithmetic averages, standard deviations, and t-test according to the variable years of experience

Area	Experience	Frequency	Mean	Std.	T value	Sig.
Provision of attention to employees	Five years or less	25	3.69	0.74	1.673-	0.074
	More than five years	20	3.82	0.83		
	Total	45	3.78	0.78		
Appreciation	Five years or less	25	3.41	0.93	3.428-	0.013**
	More than five years	20	3.64	0.89		
	Total	45	3.53	0.92		
Total	Five years or less	25	3.78	0.78	1.272-	0.202
	More than five year	20	3.53	0.92		
	Total	45	3.64	0.87		

** The difference is statistically significant at the significance level ($\alpha \leq 0.05$)

To determine whether the differences between the means are statistically significant at the significance level ($\alpha \leq 0.05$), the t-test was applied. The results in Table (8) indicate that there are no statistically significant differences at the significance level ($\alpha \leq 0.05$) according to the years of experience variable based on the calculated (T) value, It reached (-1.272) and at a level of significance (0.202), as the difference was in favor of those whose years of experience reached more than five years, as evidenced by the high arithmetic averages. This may be attributed to the prevailing management style, which was characterized by not caring only for its phone and the applications available to it at the expense of providing motives and financial aid and reducing the possibilities that flow into the framework of caring for workers, Which was reflected in the low level of organizational behavior among workers whose years of experience reached more than five years, In addition to the weak interaction between this category of workers; Considering that their tasks intersect with each other, Which led to more complexity in interacting and synergizing with each other on the one hand, And with the school administration on the other hand, and thus the weakness of the school administration's ability to deal with the difficulties and obstacles faced by the workers, Providing more attention to their affairs, providing a great deal of potential, and working on their development, development, and motivation, Rewarding their efforts and raising their standard of living.

c. Educational qualification variable: Arithmetic averages and standard deviations were calculated according to the educational qualification variable, and Table (9) shows that:

Table 9: Arithmetic averages and standard deviations according to the educational qualification variable

Area academic qualification	Category	Frequency	Mean	Std.
Provision of attention to employees	Postgraduate degree	9	3.79	0.55
	BA degree	25	3.88	0.82
	Diploma degree	11	3.76	0.79
	Total	45	3.76	0.76
Appreciation	Postgraduate degree	9	3.54	0.85
	BA degree	25	3.68	0.86
	Diploma degree	11	3.59	0.90
	Total	45	3.73	0.87
Total	Postgraduate degree	9	3.58	1.61
	BA degree	25	3.67	1.70
	Diploma degree	11	3.52	1.62
	Total	45	3.58	1.48

It is noticed from Table (9) that there are apparent differences between the arithmetic averages, according to the educational qualification variable, Those in the (Bachelor's) category got the highest arithmetic average of (3.67), and those in the (Postgraduate) category ranked second with an average of 3.58. And in the last rank came from those in the (diploma) category, as the arithmetic average reached (3.52), To determine whether the differences between the averages are statistically significant at the significance level ($\alpha \leq 0.05$), the One Way ANOVA has been applied, and the results of the analysis of variance are as shown in Table (10).

Table 10: Scheffe test for dimensional differences due to educational qualification variable

Academic qualification	Mean	Postgraduate degree	BA degree	Diploma degree
		3.59	3.68	3.52
Postgraduate degree	3.59	-	0.952	0.934
BA degree	3.68	0.952	-	0.387
Diploma degree	3.52	0.934	0.387	-

The difference is statistically significant at the level ($\alpha \leq 0.05$)

It appears from Table (10) that the difference came: in favor of the category of administrators who are in the category (bachelor) when compared with administrators who are in the category (diploma).

14. Recommendations

After reviewing the results of the study, the researchers recommend the following:

1. The need to pay attention to the development of a set of practices and behaviors prevalent among workers in vocational education departments through deepening appreciation and developing its aspects and taking care of workers in a way that leads their organizational behavior in an effective manner.

2. Conducting more studies on the impact of the phenomenon of Phubbing on the various organizational aspects in educational institutions of all kinds and the state of organizational alienation it caused, and maintaining a close social distance between the administrations of vocational education schools and administrators on the one hand, and the administrators themselves on the other.

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A Causal Relationship Model of English Language Learning Strategies and Achievement Motivation among Physical Education Students at Thailand National Sports University

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Abstract

The objectives of this research were 1) to study the level of English language learning strategies, 2) to study the level of English language learning achievement motivation, and 3) to establish and validate a causal relationship model of English language learning strategies and achievement motivation with empirical data. The population of this study was 1,597 second-year physical education students from 17 campuses of Thailand National Sports University. The sample size was determined for 20 people per 1 observed variable (Hair, et al., 2010), in which there were 22 observed variables in this research. The sample size was calculated to be 440 people (20 x 22) and the sample proportion was determined according to the population of each campus. The questionnaire used in the research was a 5-rating scale questionnaire with a content validity ranged between 0.67-1.00 and the reliability value of the English learning strategy questionnaire, the reliability value of the English language learning achievement motivation questionnaire and the reliability value of the whole questionnaire were 0.936, 0.958 and 0.967, respectively. The results of this research indicated that 1) The English language learning strategies of physical education students at Thailand National Sports University were at a moderate level in both overall and individual strategies. 2) The level of English language learning achievement motivation of physical education students at Thailand National Sports University was at a high level and (3) the causal relationship model of English language learning strategies and achievement motivation among physical education students at Thailand National Sports University was consistent with empirical data.

Keywords: English language learning strategies, achievement motivation

1. Introduction

Thailand National Sports University's Physical Education undergraduate students are highly skilled students. They can be a large number of national team athletes who have the opportunity to compete and train abroad on a regular basis, as well as work with foreign coaches. As a result, being able to communicate effectively in English is critical. Students at Thailand National Sports University's Physical Education Department will be motivated to improve their English language skills until they are able to communicate fluently in English, which will be a factor in helping them develop more effective sports skills. However, learning English is difficult for Thai children from elementary to tertiary levels, so teachers need to find a way of teaching and learning to make sure that students are interested in learning, focus on learning to develop students' learning achievements. According to related research

studies, there are several factors influencing the ability to learn English, and one of them is achievement motivation (Chaiwat Bowonwattanasate, 2020 and Sangducan Boonyam, 2018).

Achievement motivation is the drive that propels people to achieve their goals, overcome adversity, and triumph over others. Achievement or competitive motivation affects thoughts, feelings, and behaviors, so achievement motivation is the force that motivates a person to be motivated, to try, to persist. People with high achievement motivation have perseverance, hardworking, planning, setting high expectations and trying to overcome obstacles in order to get the job done well (Preeyaporn Wonganuttaroch, 2005). In regards to learning a second language, Al-Tamimi and Shuib (2009) stated that motivation is a complex variable but can be used to improve learners' learning in order to achieve better foreign language learning outcomes because proper motivation can create behaviors that lead to goals, consistent with Chang and Liu's (2013) notion that language proficiency learners were associated with motivation, causing language learning behaviors to be positively correlated to enhance second language learning.

Language learning strategies are specific methods or techniques that learners use to help learners get the most out of language learning. The use of good learning strategies also results in good language proficiency in learners. (Oxford, 1990). Therefore, to be successful in learning a foreign language, learners must have appropriate and consistent strategies in their study and use those strategies in their studies appropriately and continuously. As Bialystok (1981) said, language-learning strategies are the best way that learners make the most of their language learning to improve their ability to learn that language.

As an English language teacher in a higher education institution, the researcher is interested in studying English language learning strategies and how they influence students' English language learning achievement motivation in order to motivate the research findings in learning English that will lead to the development of students' learning outcomes until they can use for quality communication.

2. Objectives

1. To study the English language learning strategies of Physical Education students at Thailand National Sports University.
2. To study the level of English language learning achievement motivation of Physical Education students at Thailand National Sports University.
3. To establish and validate a causal relationship model of English language learning strategies and achievement motivation among physical education students at Thailand National Sports University with empirical data.

3. Research hypothesis

The causal relationship model of English language learning strategies and achievement motivation among physical education students at Thailand National Sports University is consistent with the empirical data.

4. Research conceptual framework

The purpose of this research was to study the motivation for learning English as it is important for learning English as a second language. Motivation consists of four components: Goal, Effortful behavior, A desire to attend the goal and Attitude. Motivation can be divided into 2 types including integrated motivation and instrumental motivation. It is positively correlated with foreign language learning achievement. (Gardner, 1985). Therefore, developing motivation to learn a second language for students is one of the ways that learners can achieve higher levels of language learning achievement.

Factors affecting motivation to pursue academic achievement that are important are learners (Sophana Sudsomboon, 2021), such as self-worth, attitudes towards learning, relationship between students and friends, relationships between students and parents (Nootchanate Kansamut and Prasopchai Phasunon, 2015) and in

language learning, one of the most important factors that the learner must develop or be developed for learning is a second language learning strategies, according to the Oxford (1990) model of language learning which states that in order to be successful in foreign language learning, students must have strategies to study and use them in their studies appropriately and consistently. It's a self-directed learning. Language learning strategies can be divided into two groups: 1) Direct strategies, consisting of 3 types: memory strategies, cognitive strategies, and compensation strategies, and 2) Indirect strategies consisting of 3 types: metacognitive strategies, affective strategies, and social strategies. In this research, the researchers applied the Oxford English Learning Strategies (1990) and Gardner's Second Language Achievement Motivation (Gardner, 1985) to form a research conceptual framework and “a causal relationship model of English language learning strategies and achievement motivation among physical education students at Thailand National Sports University” as shown in Figure 1 and Figure 2, respectively, as follows:

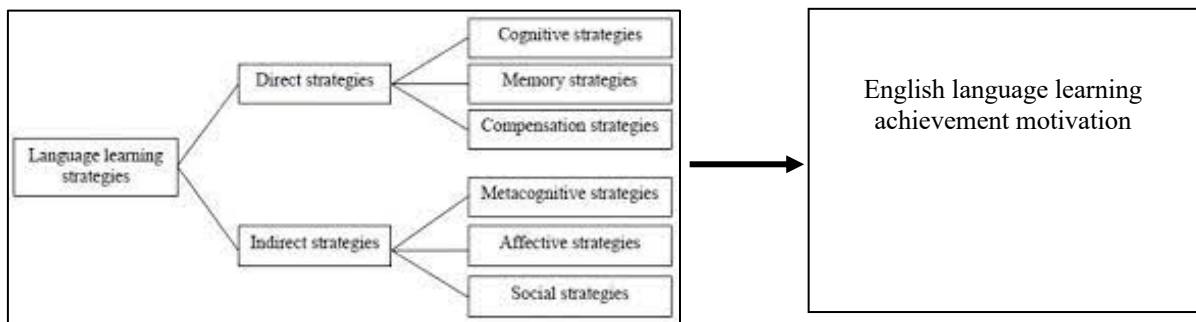


Figure 1: Research conceptual framework

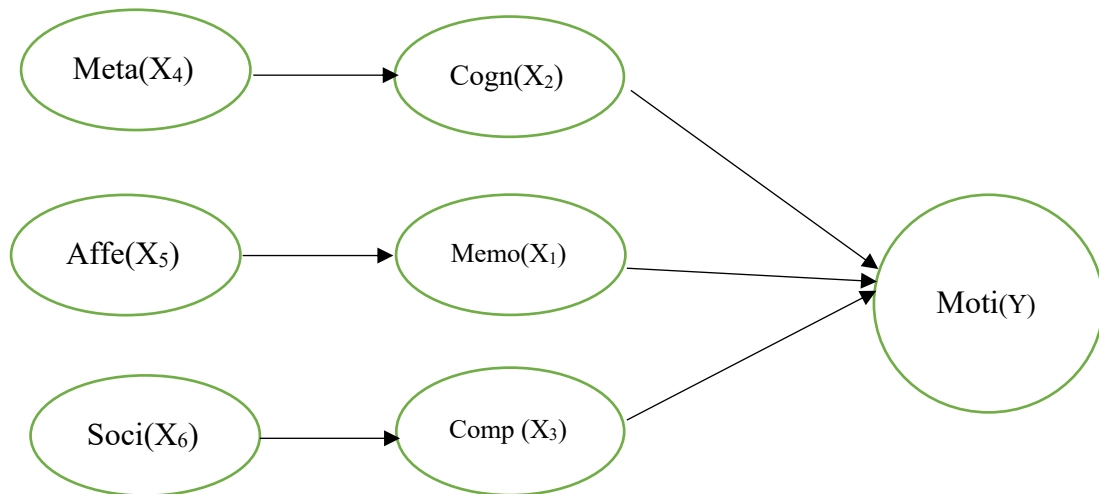


Figure 2: Theoretical causal relationship model

Research variables

Forecasting variable: English learning strategies, consisting of

- 1) Memory strategies (X₁)
- 2) Cognitive strategies (X₂)
- 3) Compensation strategies (X₃)
- 4) Metacognitive strategies (X₄)
- 5) Affective strategies (X₅)
- 6) Social strategies (X₆)

Criterion variable

English learning achievement motivation (Y)

Method

Population and sample

The population used in the study was 1,597 second-year students in Physical Education from 17 campuses of Thailand National Sports University. The sample size was determined for 20 people per 1 observed variable (Hair, et al., 2010), in which there were 22 observed variables in this research. The sample size was calculated to be 440 people (20 x 22) and the sample proportion was determined according to the population of each campus.

5. Research tool

The tool used in the research was a 5-rating scale questionnaire based on Likert's concept (1967), consisting of a questionnaire on 6 strategies for learning English language strategies as follows: Memory strategies, Cognitive strategies, Compensation strategies, Metacognitive strategies, Affective strategies, and Social strategies with a content validity of 0.67-1.00, the reliability value of the English learning strategy questionnaire of 0.936, the reliability value of the English language learning achievement motivation questionnaire of 0.958 and the reliability value of the whole questionnaire was 0.967.

6. Data analysis results

The results of data analysis of English learning strategies and achievement motivation of 2nd year physical education students of Thailand National Sports University as shown in Table 1.

Table 1: Mean and standard deviation scores for English language learning strategies and achievement motivation among physical education students at Thailand National Sports University

Strategies and motivation	X	SD	Level
1. Memory strategies (X1)	3.43	0.39	Moderate
2. Cognitive strategies (X2)	3.31	0.22	Moderate
3. Compensation strategies (X3)	3.33	0.27	Moderate
4. Metacognitive strategies (X4)	3.39	0.44	Moderate
5. Affective strategies (X5)	3.49	0.42	Moderate
6. Social strategies (X6)	3.30	0.30	Moderate
Total	3.38	0.38	Moderate
English language learning motivation (Y)	3.67	0.46	High

The results of a causal relationship model analysis of English language learning strategies and achievement motivation among physical education students at Thailand National Sports University as shown in Table 2

Table 2: The statistics for the causal relationship of English language learning strategies and achievement motivation among physical education students at Thailand National Sports University

Statistics tested	Statistics	Criteria*
Chi - Square Statistic	3516.691	
Chi - Square Statistic/df	1.801	<3**
degree of freedom : df	1953	
p	.000	>.05**
Goodness of Fit Index : GFI	0.80	0.80***
RMSEA	0.044	<0.08
Comparative Fit Index (CFI)	0.935	>0.90

*Yuth Kaiyawan (2013), ** Bollen (1989), ***MacCallum, R. C., & Hong, S. (1997).

A theoretical causal model of English language learning strategies and achievement motivation among physical education students at Thailand National Sports University as shown in Figure 3 .

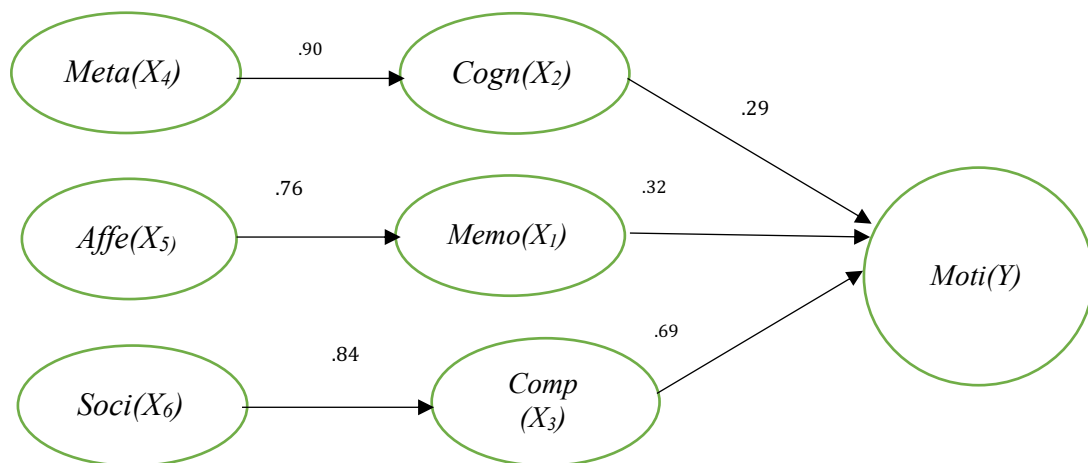


Figure 3: A theoretical causal model

7. Conclusion

The results of the research according to the objectives can be summarized as follows:

1. The overall strategies for English language learning for physical education students at Thailand National Sports University was at a moderate level, and when considering each strategy, it was at a moderate level in all strategies.
2. The level of motivation for English language learning achievement of physical education students at Thailand National Sports University was at a high level.
3. A causal relationship model of English language learning strategies and achievement motivation among physical education students of the Thailand National Sports University corresponded to the empirical data. which was in accordance with the research hypothesis taking into account the chi-square (χ^2) which was equal to 3516.691, the probability (p) was .000, degrees of freedom (df) was 1953, the goodness of fit index (GFI) and the root mean square error of approximation (RMSEA) were 0.801 and 0.044, respectively. The reason why probability part (p) was equal to .000 was because the value χ^2 depended on the sample size. The larger of sample size, the higher of χ^2 value. Therefore, the Bollen's (1989) method was used for the revision based on the Chi - Square Statistic/df of 1.801, which was less than 3.

8. Discussion

1. The overall strategies for English language learning for physical education students at Thailand National Sports University were at a moderate level, and when considering each strategy, it was at a moderate level in all strategies. This may be because physical education students are exceptionally talented in sports skills but have a moderate level of academic background in common subjects, especially English. This is consistent with the data from the Faculty of Humanities and Social Sciences, Chandrakasem Rajabhat University in the year 2/2012. It was found that 75 physical education students enrolled in the English for Communication course. Most of the students had a low level of academic achievement, namely 15 persons got F grade, 28 persons got D grade, 21 persons got D+ grade and 11 persons got C grade. This is considered a high level of concern and should be addressed urgently (Thanomjit Sarot et al., 2016), and in line with the research results of Siwanon Ninpanit (2017) who found that first year students of Valaya Alongkorn Rajabhat University under royal patronage Those enrolled in the VGE 103 English for Communication course in the first semester of Academic Year 2016 used all English language learning strategies at a moderate level.
2. The level of English language learning achievement motivation of physical education students at Thailand National Sports University was at a high level. This may be because when students enter higher education, they realize that learning English is essential to their future work and study, and that English

is also a communication tool that helps in developing athletic proficiency and because after graduating as a graduate, they must be able to use English to work. Wiley and Wrigley (1987) stated that English is important to students and individuals moving to work. This is consistent with the research results of Sudkanung Naruponjirakul and Sirisopha Saenbunwet (2019), which found that the overall level of motivation in learning English among elementary school students, Faculty of Education, Kamphaeng Phet Rajabhat University was at a high level.

3. A causal relationship model of English language learning strategies and achievement motivation among physical education students of the Thailand National Sports University corresponded to the empirical data, which was in accordance with the research hypothesis. This may be because the researcher had formulated a causal relationship model derived from Oxford (1990's) conceptual second language learning strategies which prescribed strategies for learning a second language into 2 groups of strategies: 1) Direct strategies, consisting of 3 types: memory strategies, cognitive strategies, and compensation strategies, and 2) Indirect strategies consisting of 3 types: metacognitive strategies, affective strategies, and social strategies. The strategies of both groups work to support each other.

Strategies that directly affect the motivation for English language learning achievement of physical education students at Thailand National Sports University consist of Cognitive strategies, memory strategies, and compensation strategies with weights of 0.29, 0.32 and 0.69, respectively. This may be because Memory Strategies are techniques that learners use to store important information and to reuse them, which makes learning a language easier for students. Cognitive strategies are techniques that allow learners to connect new and old information or information they already have through critical thinking; this type of strategy can help learners manage language learning more systematically. As for compensation strategies, they are strategies that consist of making theoretical guesses, using synonyms while listening or reading, and using body language and mother tongue to help in speaking and writing skills (Kusom Yamiroudeng, 2018).

Strategies that indirectly affect the English language learning achievement motivation of physical education students at Thailand National Sports University consist of: metacognitive strategies which affect through the cognitive strategies, the affective strategies which affect through the memory strategies, and social strategies which affect through the compensation strategies with weights of 0.96, 0.76 and 0.84, respectively. This is consistent with the research results of Khamkhien (2013) as follows:

Metacognitive Strategies that affect through the Cognitive Strategies may be because Metacognitive Strategies are techniques of attention, commitment, organization, learning planning and self-assessment of the learner's learning, which help learners to manage the association of new and old or existing information and in learning the language in a better system.

Affective strategies that affect through the Memory strategies may be because Affective Strategies are techniques that make learners love the language they are learning. As a result, they have emotional, attitude, and motivation to learn languages and value in language learning which will allow students to be diligent and patient in remembering what they have learned on a regular basis.

Social strategies that affect through the compensation strategies are techniques that encourage learners to learn about communicating with others in a society to aid language learning and improve language skills so they give learners the need for compensation strategies to overcome speaking and writing problems in English.

9. Suggestions for implications

1. English teachers should prepare students by educating and raising awareness of the importance of implementing English language learning strategies.
2. English teachers should organize teaching activities that allow students to apply a variety of English learning strategies.

10. Suggestions for future research

1. Research should be conducted to develop innovative English teaching activities that are appropriate to the nature of physical education students in order to stimulate their motivation to learn English.
2. Research should be conducted to explore other factors affecting the effectiveness of English language learning among physical education students.
3. There should be experimental research by applying language learning strategies to develop English language learning management activities to improve English language learning achievement of physical education students.

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Investigation of Stress, Anxiety, Depression and Psychological Well-Being Levels of Individuals who Regularly Play Tennis

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Abstract

This research was carried out to examine the stress, anxiety, depression and psychological well-being levels of individuals who regularly play tennis. The research group consisted of 450 individuals. In the study, “Depression, Anxiety and Stress Scale,” “Spielberger State-Trait Anxiety Inventory” and “Psychological Well-Being Scale” were used as data collection tools. In the analysis of the data the normality test of the data was carried out by applying the Kolmogorov-Smirnov technique and the Skewness-Kurtosis coefficients. T-test was used to determine whether the stress, anxiety, depression and psychological well-being levels of individuals differ in terms of gender variable. One-way analysis of variance (Anova) technique was used to determine whether they differed in terms of tennis playing time. Pearson correlation coefficient analysis technique was used to examine the relationship between stress, anxiety, depression and psychological well-being. In addition, multiple regression analysis was applied to test how stress is a predictor of anxiety, depression and psychological well-being. According to the results obtained in the study, while there was no significant difference in the levels of stress, anxiety, depression and psychological well-being in terms of the gender variable ($p>0.05$), there was a significant difference in terms of the duration of playing tennis ($p<0.05$). While a positive and significant relationship was observed between stress, anxiety and depression, it was observed that there was a negative significant relationship between psychological well-being and stress, anxiety and depression. It has also been found that stress is a strong predictor of anxiety, depression and psychological well-being.

Keywords: Stress, Anxiety, Depression and Psychological Well-Being

1. Introduction

Stress is a negative emotional state that negatively affects the daily lives of individuals and causes different psychological and physiological diseases in the long run. Disputes between individuals, feeling of loneliness, negative experiences in the past, worries about the future, diseases, economic problems, social violence and work-

related problems are known as the most important causes of stress (World Health Organization, 2020). Selye (1952) defined stress as an organism's response to a set of stimuli.

Although stress is stated as a negative emotional state, it can also be considered as a positive situation for individuals if it is perceived at an optimal level or provides an individual gain (Robbins, DeCenzo, & Coulter, 2013). However, excessive and uncontrolled stress can cause health problems such as high blood pressure, heart attack, headaches and stomachaches, and even bring individuals face to face with undesirable situations such as anxiety, depression and poor performance (Alpertonga, Unsar, & Akin-Koldere, 2016). Individuals can experience stress quite often in sports environments, as in all areas of life.

Stress causes athletes to see themselves as inadequate by damaging their physical energy and self-confidence. In addition, it can prevent the skills gained by working for many years, as well as cause injuries, which are the biggest fear of athletes (Ozdevecioglu & Yalcin, 2010). Therefore, it is extremely important for athletes to be aware of negative emotional states such as stress and to know the necessary practices on how to deal with stress in order to perform successfully. Because stress causes physiologically increased blood pressure, heart rate and muscle tension, mental insecurity, loss of concentration, restlessness and feelings of inadequacy in athletes, resulting in coordination disorder and errors in technical and tactical skills (Altungul, 2006). Another emotional state that has a respectful and nervous basis intertwined with stress is anxiety (Daviu, Bruchas, Moghaddam, Sandi, & Beyeler, 2019).

Anxiety is a leading concept in psychology. It is expressed as an emotional state that occurs in individuals depending on internal and external factors (Spielberger, 1966). It has also been the subject of many studies, especially since it has an effect that can increase or decrease performance in sports (Ramakrishnan, Sathya, & Ghelani, 2015).

It is a negative emotional state that is generally defined as anxiety, worry, anxiety and nervousness and is associated with the arousal of the body (Weinberg & Gould, 2011). Anxiety in sports environments is defined as an unpleasant psychological response to stress caused by task performance under pressure (Cheng, Hardy, & Markland, 2009). If anxiety is felt at a disproportionate level, it causes serious mental disorders in individuals (Kapur, 2020). It can affect the quality of life and relationships of individuals negatively, as well as cause a decrease in the performance of the athletes who struggle in sports environments, which is the most important factor in reaching their goals (Khan et al., 2017; Palazzolo, 2019; Sahin, 2019). Therefore, it is thought that the optimal level of anxiety, which can be seen especially in athletes, is an important issue for them to perform well.

Basically, anxiety is expressed as state and trait anxiety (Martens et al., 1990; Oner & Le Compte, 1983). While state anxiety expresses stimuli for threats existing in the environment in a certain time period depending on any situation, trait anxiety is expressed as a tendency to perceive stimuli as worrying depending on personal experiences (Oner & Le Compte, 1983). As it can be understood from the expressions, individuals can experience anxiety depending on any situation, as well as show a tendency to worry for a long time. Another mood disorder that is frequently seen in the community and primary health care services, such as anxiety, is depression (Adwas, Jbiral, & Azab, 2019).

Depression is a serious mental disorder that can be seen in individuals of all ages and negatively affects the productivity and ability of getting along with others (Kisch, Leino, & Silverman, 2005; Pratt & Brody, 2008). Depression is a syndrome with symptoms such as constant sadness, stagnation, unwillingness, feeling of worthlessness, sadness, inadequacy, pessimism, and physiological slowdown in functioning (Goodwin, 2006). It is expressed as a social health problem in that it becomes chronic in individuals and has a high probability of recurrence (Kivrak et al., 2016). Therefore, it is thought that some measures should be taken in order to minimize the negative effects of depression and to prevent especially healthy individuals from falling into depression. It can be said that it is at the forefront of these measures in participation in sports. Because it is known that regular participation in sports reduces the risk of depression and contributes to the psychological well-being of individuals (Cicek et al., 2015; Matamoros-Catalan et al., 2016; Schuch et al., 2016).

Psychological well-being is expressed as maintaining meaningful goals, personal development, establishing quality relationships with others, self-actualization when faced with difficulties, being fully functional, and living a meaningful life (Deniz et al., 2017; Keyes, Shmotkin, & Ryff, 2002). How individuals evaluate themselves or the quality of their life is also explained as psychological well-being (Ryff, Magee, Kling, & Wing, 1999). Özen (2010) states that psychological well-being is within the responsibility of the individual. It can be mentioned about a concept consisting of good developments in terms of people taking all the responsibilities of their lives and the acceptability of their preferences.

Ryff (1989) states that there are six sub-dimensions in the concept of psychological well-being. These sub-dimensions include self-respect, establishing positive relationships with other people, personal development, domain dominance, and autonomy. Psychological well-being provides a number of positive contributions to people's lives. It is stated that these contributions include maintaining a healthy and longer life, having more functional social relationships, and positive increases in individuals' work lives and performances. Diener & Chan (2011) stated that psychological well-being has an important contribution to individuals' living a healthier and longer life, which is discussed and examined in relational, experimental and quasi-experimental studies.

Ryan & Deci (2001) explained that well-being is related to psychological needs. Autonomy, competence and establishing relationships are stated to be basic psychological needs. It has been argued that the ability to meet these explains well-being. It has been stated that individuals' psychological well-being will make them happier (Ryan & Deci, 2001).

Forgeard, Jayawickreme, Kern, & Seligman (2011) stated that psychological well-being is characterized by living well and doing good things rather than feeling good. Therefore, it is possible to say that participation in sports activities has some positive effects on the psychological structure of individuals. In different studies in the literature, it is stated that participation in sports activities has positive effects on psychological health (Arslan et al., 2011; Aytan, 2010).

Sport is expressed as a pedagogical and social effort that develops mental, spiritual and social behaviors, keeping the competition among individuals in the foreground within certain rules (Sunay, 2010). Sports are all kinds of physical activities aimed at improving physical fitness, mental health and social interaction between individuals through organized participation (Sutula, 2018). World Health Organization (2018) stated that regular sports have an important effect on preventing and controlling diseases that threaten human life such as heart disease, stroke, diabetes, cancer and hypertension, and improving quality of life and mental health; stated that physical inactivity negatively affects the health system, quality of life and mental health. A counter-approach can be made to a positive assessment of the situation for further evaluation of the sport.

World Health Organization (2013) stated that there is an important relationship between physical activity and mental health. Heggelund, Kleppe, Morken, & Vedul-Kjelsas (2014) stated that regular physical activity could be a treatment method for preventing psychological disorders that develop in individuals. Schultchen et al. (2019) stated that individuals who do sports experience less stress and have less negative emotions. Ekeland, Heian, Hagen, & Coren (2005) stated that sports activities have positive effects on individuals' self-esteem and some psychological characteristics. The effect of sport on psychological characteristics may differ according to the sport branch of the individual. The type of sport can affect the psychological and emotional state of the individual in different ways due to some psychological characteristics it contains (Salar, Hekim, & Tokgoz, 2012). It is thought that tennis is one of these sports branches. Tennis is a sport that individuals often prefer as a daily activity, as it can be played outdoors and with two people. These features of tennis lead individuals to play tennis regularly and thus help them meet the daily physical activity needs recommended by experts in order to become a healthier individuals. Therefore, it contributes significantly to the preservation of people's physical and psychological health.

Tennis is an individual sport played with a racket on a court that is divided into two with a net and requires intense strength, speed, endurance, mobility and skill (Coskun & Eyuboglu, 2020; Sar, Yuksek, & Ayan, 2020). Although tennis is stated as an individual sport, it has become one of the most preferred sports branches by people in terms

of being played by two people against each other and being a sport that individuals can play in their spare time, both indoors and outdoors, apart from professional tennis (Buyukergun, 2020). It has become a widely played sport, especially since it allows the athletes to develop their technical tactical skills by playing only with their partners without the help of a trainer (Unierzyski & Crespo, 2007).

As in every branch, there is a struggle to prevail against the opponent in tennis. Tennis is expressed as a racquet sport that includes short rallies, each game usually lasts 4-12 seconds and rest times vary between 20-90 seconds (Ozkatar-Kaya & Karahan, 2019). Therefore, the ability of the athletes to make the right decisions about the game is as important as the strategic and tactical approaches during the game for a good performance (Turner, 2003). Depending on the fact that it is an individual sport, the athletes in the tennis branch have to make different decisions during the game, and accordingly, the athletes need to provide emotional and mental control in order not to be mentally disconnected from the game. Because athletes may feel pressure depending on the demands of the environment, they may be afraid of failing and they may lose interest in being successful. Therefore, athletes may be exposed to such emotional states that can negatively affect their performance and cause them to break away from their goals. Stress, anxiety and depression are some of these emotional states.

It is thought that the game of tennis has a positive effect on human health in many aspects, as well as psychologically, and especially reduces negative mood states such as stress, anxiety and depression. For this reason, it is thought that it is important to examine stress, anxiety, depression and psychological well-being in individuals playing tennis. Therefore, the aim of this study was to examine the stress, anxiety, depression and psychological well-being levels of individuals who regularly play tennis.

2. Method

2.1 Research Model

The research was designed in a screening model in order to examine the stress, anxiety, depression and psychological well-being levels of individuals who play tennis regularly. The scanning model is a model that aims to describe a situation that existed in the past or that is still ongoing (Karasar, 2013).

2.2 Research Group

The research group consisted of a total of 450 individuals, 220 (48.9%) female and 230 (51.1%) male, who live in different provinces of Turkey and play tennis regularly. When the distribution of the individuals participating in the study according to the duration of playing tennis was examined, it was seen that 163 (36.2%) played tennis 1-2 days a week, 155 (34.4%) played tennis 3-4 days a week, and 132 (29.3%) played tennis 5-6 days a week. It was determined that there was no one who played tennis 7 days a week among the participants. The distribution of individuals according to independent variables is shown in Table 1.

Table 1: Distribution of the Research Group According to Independent Variables

<i>Gender</i>	<i>f</i>	<i>%</i>
Female	220	48.9
Male	230	51.1
Total	450	100
<i>Tennis Playing Duration</i>	<i>f</i>	<i>%</i>
1-2 days a week	163	36.3
3-4 days a week	155	34.4
5-6 days a week	132	29.3
Total	450	100

2.3 Data Collection Tools

The personal information form created by the researcher was used in the collection of data in order to determine the characteristics of individuals such as gender and tennis playing time. In addition, "Depression, Anxiety and Stress Scale," "Spielberger State-Trait Anxiety Inventory" and "Psychological Well-Being Scale" were used in the study.

2.3.1 Personal Information Form

It was created by the researcher in order to determine the characteristics of the individuals in the research group, such as gender and duration of playing tennis. In the personal information form, which includes the variables that are thought to affect individuals' stress, anxiety, depression and psychological well-being levels, questions about your gender and duration of playing tennis were asked

2.3.2 Depression, Anxiety and Stress Scale (DASS)

In the study, the Depression, Anxiety and Stress Scale (DASS) was used to determine the stress and depression levels of individuals. DASS was developed by Lovibond & Lovibond (1995) and adapted into Turkish by Yildirim, Boysan, & Kefeli (2018). It is a three-dimensional scale: depression, anxiety, and stress. In this study, the sub-dimensions of stress and depression were discussed. The scale is a 21-item scale, with 3, 5, 10, 13, 16, 17, and 21 items depression, 2, 4, 7, 9, 15, 19, and 20 items anxiety, 1, 6, 8, the 11th, 12th, 14th and 18th items measure stress. The scale, which consists of never (0), sometimes (1), quite often (2), and always (3) statements, is a 4-point likert type scale. In the study, the total Cronbach's alpha reliability coefficient for the scale was calculated as 0.89. Cronbach's alpha reliability coefficient was calculated as 0.83 for stress, which is the sub-dimensions of the scale, and 0.85 for depression.

2.3.3 Spielberger State-Trait Anxiety Inventory (STAI)

The State-Trait Anxiety Inventory (STAI) was used to determine the anxiety levels of the individuals participating in the research. STAI was developed by Spielberger, Gorsuch, & Lushene (1970) and adapted into Turkish by Oner & LeCompte (1983). In this study, in which state and trait anxiety inventory was used, trait anxiety was discussed. The scale is a 20-item scale and consists of two different statements, direct statements and reversed statements. 22, 23, 24, 25, 28, 29, 31, 32, 34, 35, 37, 38 and 40 items of the scale are direct statements, 21, 26, 27, 30, 33, 36 and 39 items are reverse statements. The scale, which consists of almost never (1), sometimes (2), often (3) and almost always (4) statements, is a 4-point likert type scale. In the study, the total Cronbach's alpha reliability coefficient for the scale was calculated as 0.81

2.3.4 Psychological Well-Being Scale

In the study, Psychological Well-Being Scale was used to determine the psychological well-being levels of individuals. Psychological Well-Being Scale was developed by Diener, Wirtz, Tov, Kim-Prieto, Choi, Oishi, & Biswas-Diener (2010) and adapted into Turkish by Telef (2013). The scale is a total of 8 items and there is no reverse item. The scale, which consists of strongly disagree (1), disagree (2), somewhat disagree (3), undecided (4), somewhat agree (5), agree (6) and strongly agree (7), is a 7-point likert type scale. In the study, the total Cronbach's alpha reliability coefficient for the scale was calculated as 0.84.

2.4 Research Publication Ethics

This study was carried out considering ethical rules. The necessary ethical approval was obtained with the letter of Aksaray University Human Research Ethics Committee dated 21.12.2021 and numbered 2021/08-05.

2.5 Analysis of Data

In the research, firstly, the measurement tools used were examined and incomplete or incorrectly filled questionnaires were not included in the analysis. SPSS 21 package program was used in the analysis of the data and the significance level was accepted as 0.05. In order to test normality, Kolmogorov-Smirnov (K-S) test was used and Skewness-Kurtosis (S-K) coefficients were applied. Tabachnick & Fidell (2013) stated that if the S-K coefficients are between -1.5, +1.5, and George & Mallery (2010) are between -2,+2, it can be assumed that the data are normally distributed. As a result of the examinations, it was seen that the data were distributed normally ($p>0.05$), and the S-K coefficients were found to be within the specified ranges for stress (0.845; 0.775), anxiety (0.014; 0.100), depression (0.083; 0.116) and psychological well-being (0.095; 0.119). Arithmetic mean and standard deviation techniques from descriptive statistics were used to determine the stress, anxiety, depression and psychological well-being levels of individuals who play tennis regularly. The t-test was used to determine whether there was a significant difference in terms of gender variable, and one-way analysis of variance (Anova) technique was used to determine whether it differed significantly in terms of tennis playing duration. Tukey test was used to examine the source of variance. In addition, Pearson correlation coefficient analysis technique was used to examine the relationship between individuals' stress, anxiety, depression and psychological well-being levels. Multiple regression technique was used to determine how stress is a predictor on anxiety, depression and psychological well-being.

3. Results

In this section, the findings obtained from the research and the tables with the interpretations of these findings are given. Table 2 shows the mean scores obtained from the depression, anxiety and stress scale, trait anxiety inventory and psychological well-being scale of individuals who play tennis regularly.

Table 2: Stress, Anxiety, Depression and Psychological Well-Being Levels of Individuals who Play Tennis Regularly

	N	M	S*
Stress	450	8.96	1.44
Anxiety	450	23.10	2.77
Depression	450	8.96	1.44
Psychological Well-Being	450	49.61	3.77

*Standard Deviation

The results of stress, anxiety, depression and psychological well-being of individuals who regularly play tennis are given in Table 2. Accordingly, individuals' stress levels were calculated as $M=8.96\pm 1.44$, anxiety levels as $M=23.10\pm 2.77$, depression levels as $M=8.96\pm 1.44$, and psychological well-being levels as $M=49.61\pm 3.77$.

Table 3: Individuals' Levels of Stress, Anxiety, Depression and Psychological Well-Being in Terms of Gender

	Gender	N	M	S	t	sd	p
Stress	Female	220	9.03	1.58	0.901	448	0.368
	Male	230	8.90	1.30			
Anxiety	Female	220	22.52	2.80	0.413	448	0.438
	Male	230	23.65	2.64			
Depression	Female	220	9.03	1.58	0.901	448	0.368
	Male	230	8.90	1.30			
Psychological Well-Being	Female	220	49.68	3.95	0.400	448	0.689
	Male	230	49.54	3.61			

In Table 3, the t-test was applied to examine whether there was a significant difference in the levels of stress, anxiety, depression and psychological well-being of the individuals in the research group in terms of gender. As a

result of the examinations, no significant difference was found in the levels of stress, anxiety, depression and psychological well-being in terms of gender ($p>0.05$).

Table 4: Individuals' Levels of Stress, Anxiety, Depression and Psychological Well-Being in Terms of Tennis Playing Duration

	*T.P.D.	N	M	S	F	sd	p	Tukey
Stress	1-2 days a week	163	10.52	0.501	2563.61	2 447 449	0.010	I-II I-III II-III
	3-4 days a week	155	8.94	0.318				
	5-6 days a week	132	7.07	0.383				
	Total	450	8.96	1.448				
Anxiety	1-2 days a week	163	26.34	1.403	1183.31	2 447 449	0.020	I-II I-III II-III
	3-4 days a week	155	22.07	1.128				
	5-6 days a week	132	20.30	0.523				
	Total	450	23.10	2.779				
Depression	1-2 days a week	163	10.52	0.501	2563.61	2 447 449	0.010	I-II I-III II-III
	3-4 days a week	155	8.94	0.318				
	5-6 days a week	132	7.07	0.383				
	Total	450	8.96	1.448				
Psychological Well-Being	1-2 days a week	163	46.46	1.182	1414.91	2 447 449	0.005	I-II I-III II-III
	3-4 days a week	155	48.41	1.220				
	5-6 days a week	132	54.90	1.788				
	Total	450	49.61	3.779				

*Tennis Playing Duration

In Table 4, one-way analysis of variance (Anova) technique was applied to examine whether there is a significant difference in the levels of stress, anxiety, depression and psychological well-being of individuals who regularly play tennis in terms of the duration of tennis. As a result of the examinations, it was observed that there was a significant difference in the levels of stress, anxiety, depression and psychological well-being in terms of the duration of playing tennis ($p<0.05$). It was determined that those who spend 5-6 days a week for tennis have lower levels of stress, anxiety and depression, and higher levels of psychological well-being than those who spend 1-2 and 3-4 days a week for tennis (Table 4).

Table 5: The Relationship Between Individuals' Levels of Stress, Anxiety, Depression and Psychological Well-Being

		Stress	Anxiety	Depression	Psychological Well-Being
Stress	R	-	0.858**	0.941**	-0.865**
	p		0.000	0.000	0.000
Anxiety	R	0.858**	-	0.829**	-0.763**
	p	0.000		0.000	0.000
Depression	R	0.941**	0.829**	-	-0.865**
	p	0.000	0.000		0.000
Psychological Well-Being	R	-0.865**	-0.763**	-0.865**	-
	p	0.000	0.000	0.000	

**Correlation is significant at the 0.01 level.

In Table 5, the relationship between stress, anxiety, depression and psychological well-being levels of the individuals in the research group was examined. Pearson correlation coefficient analysis technique was used to determine the relationship between them. In the study, it was determined that there is a strong positive relationship between stress and anxiety ($r=0.858$; $p<0.05$), between stress and depression ($r=0.941$; $p<0.05$), and between

anxiety and depression ($r=0.829$; $p<0.05$). In addition, it was concluded that there is a strong negative relationship between stress and psychological well-being ($r=-0.865$; $p<0.05$), between anxiety and psychological well-being ($r=-0.763$; $p<0.05$), and between depression and psychological well-being ($r=-0.865$; $p<0.05$).

Table 6: The effects of individuals' stress levels on anxiety, depression and psychological well-being

Stress	R	R ²	B	Std. Error	β	t	F	p	Part r	Partial r
<i>Constant</i>			-1.00	0.321		-3.126		0.002		
Anxiety	0.858	0.736	0.432	0.014	0.858	31.317	98.075	0.000	0.858	0.858
<i>Constant</i>			3.65	0.178		62.758		0.003		
Depression	0.941	0.885	0.343	0.005	0.941	34.563	75.782	0.000	0.941	0.941
<i>Constant</i>			2.54	0.452		56.189		0.001		
Psyc. Well Being	0.865	0.748	-.331	0.009	-.865	-36.459	13.292	0.000	-.865	-.865

In Table 6, the predictor of individuals' stress levels on anxiety, depression and psychological well-being was examined. Multiple regression analysis technique was used to determine the predictiveness of each other and the analysis was found to be statistically significant ($p<0.05$). It was concluded that stress is a strong predictor of anxiety ($F=98.075$; $R^2=0.736$), depression ($F=75.782$; $R^2=0.885$) and psychological well-being ($F=13.292$; $R^2=0.748$).

4. Discussion

In the study, the stress, anxiety, depression and psychological well-being levels of individuals who regularly play tennis were examined. In addition, the stress, anxiety, depression and psychological well-being levels of the individuals participating in the research were discussed in terms of both gender and duration of playing tennis. On the other hand, the relationship between stress, anxiety, depression and psychological well-being levels of individuals was examined in the study and the predictor of stress on anxiety, depression and psychological well-being was tested.

In the study, stress, anxiety, depression and psychological well-being levels of individuals who regularly play tennis were examined in terms of gender, and no significant difference was observed in the study ($p>0.05$). In a study examining the stress levels of individuals who do and do not do sports, similar results were found and it was concluded that the stress levels of individuals who actively do sports do not differ according to gender (Mumcu, 2019). In another study examining the anxiety levels of athletes, it was determined that there was no significant difference in the anxiety levels of individuals in terms of gender (Karabulut & Mavi-Var, 2019). In a different study examining the depression status of individuals who regularly participate in sports, it was concluded that the level of depression did not differ in terms of gender (Frost, Hoyt, Chung, & Adam, 2015). In another study examining the psychological well-being levels of individuals, it was determined that there was no difference in the psychological well-being levels of individuals according to gender (Kermen, Ilcin Tosun, & Dogan, 2016). According to the results obtained in the study, it was thought that the fact that female and male had similar feelings was effective in the absence of any difference in terms of gender variable in the levels of stress, anxiety, depression and psychological well-being of individuals.

In the study, stress, anxiety, depression and psychological well-being levels of individuals who regularly play tennis were examined in terms of the variable of tennis playing duration, and it was observed that there was a significant difference in favor of those who spent 5-6 days a week for tennis ($p<0.05$). According to the results, it was determined that as the duration of playing tennis increased, the stress, anxiety and depression levels of individuals decreased and their psychological well-being levels increased. On the other hand, when the studies in the literature are examined, it is seen that there is no research finding that compares the stress, anxiety, depression and psychological well-being levels of individuals in terms of the variable of tennis playing duration. In this context, it is thought that research findings on stress, anxiety, depression and psychological well-being are needed in terms of tennis playing time.

In the study, the relationship between stress, anxiety, depression and psychological well-being levels of individuals who play tennis regularly was examined, and the predictor of stress on anxiety, depression and psychological well-being was tested. In the examination, it was seen that there was a positive and significant relationship between stress, anxiety and depression; It has been determined that there is a negative significant relationship between stress, anxiety, depression and psychological well-being. In addition, it was concluded that stress is a strong predictor of anxiety, depression and psychological well-being. A similar result was seen in the study examining the stress and anxiety levels of individuals, and it was concluded that there was a positive and significant relationship between stress and anxiety (Poursadeghiyan et al., 2016). Konstantopoulou et al. (2020) stated in their research that there is a positive relationship between stress and anxiety. In another study examining the stress and depression levels of individuals, Killinger et al. (2017) stated that there is a positive and significant relationship between stress and depression. Esigül & Cenkseven Onder (2017) examined the stress and psychological well-being of individuals in their study and concluded that there is a negative significant relationship between stress and psychological well-being.

5. Conclusion

As a result, this research was carried out to examine the stress, anxiety, depression and psychological well-being levels of individuals who regularly play tennis. In the study, it was observed that individuals' stress, anxiety and depression levels were low and their psychological well-being levels were high. From this point of view, it was concluded that playing tennis regularly reduces negative emotional states such as stress, anxiety and depression, and increases psychological well-being. Therefore, it has been seen that playing tennis regularly has an extremely important place in reducing stress, anxiety and depression, and in making individuals feel better psychologically. In the study, it was seen that the stress, anxiety, depression and psychological well-being levels of female and male who regularly play tennis were similar to each other and there was no significant difference between them. It has been determined that female and male have similar emotional states. In another result obtained from the study, it was seen that those who play tennis 5-6 days a week have lower levels of stress, anxiety and depression, and higher levels of psychological well-being than those who play tennis 1-2 to 3-4 days a week. It has been determined that individuals experience less stress, anxiety, depression and feel better psychologically as the number of days they play tennis increases. In the study, it was observed that there was a positive and significant relationship between individuals' stress, anxiety and depression levels; It has been determined that there is a negative significant relationship between stress, anxiety, depression and psychological well-being levels. It was concluded that as stress, anxiety and depression decrease in individuals, psychological well-being increases. In the study, it was also seen that the stress levels of individuals who regularly play tennis are a strong predictor of anxiety, depression and psychological well-being. Stress has been found to have a significant effect on anxiety, depression and psychological well-being.

In this study, the stress, anxiety, depression and psychological well-being levels of individuals who play tennis regularly are clearly stated. Therefore, according to the results obtained from the research, it is suggested that individuals should make playing tennis a lifestyle so that they can continue their lives in a mentally healthier way. In addition, individuals interested in different branches can be included in similar studies to be carried out in the future and how it affects the psychological state of individuals in different branches can be examined.

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Examination of the Effect of Stem Education on Academic Achievement: A Meta-Analysis Study

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Abstract

Countries with well-trained and qualified labor force today make a significant difference with other countries in areas such as economy, education and industry. One of the important reasons for this difference is that these countries have made innovations in the fields of science, technology and education policies as well as economy. STEM, which is composed of the abbreviations of the first letters of the words Science, Technology, Engineering and Mathematics, is an interdisciplinary approach. The aim of this study is to gather the experimental dissertations examining the effect of STEM education on students' academic achievements in order to determine the effect of STEM education on academic success and synthesize the study findings. The research was conducted in a screening model. In the study, as there is heterogeneity among the publications included among the scope of the meta-analysis, the size of the impact was calculated utilizing the random effects model. The dissertations examined within the scope of this study were accessed from the Higher Education Institution (HEI) National Study Search System databases using the keywords STEM, academic achievement and experimental model. In this study, dissertations were examined by taking a certain time criterion. A total of 26 dissertations (19 postgraduates and 7 doctoral) examining the effect of STEM education, which is the post-test scores of the experimental and control groups conducted in 2018-2020, on academic achievement were accessed from the database. It was concluded in the study that STEM education has a positive effect on the academic achievements of students.

Keywords: Academic Achievement, Education, Education Dissertation, Meta-Analysis, STEM

1. Introduction

1.1 Introduce the Problem

Countries seek qualified labor force to advance in industry and economically. Considering that individuals equipped with 21st-century skills will play a role in development, there is additionally a search for different education approaches in the education of individuals. It is this pursuit that has led to the emergence of STEM education (White, 2014). STEM, which is composed of the abbreviations of the first letters of the words Science, Technology, Engineering and Mathematics, is an interdisciplinary approach. The STEM approach allows students to develop critical thinking, creativity, social interaction skills, also leading to a change in their academic

achievements (Roberts, 2012). Academic achievement is identified not based on student performance in class, but on the social skills exhibited by students both during school and out-of-school times (Grund & Grote, 2004). STEM education, which forms the integrity of knowledge with the power it gets from the overlapping of more than one discipline, helps students gain the skills that can meet their everyday needs with the knowledge they attain as a result of the necessary research carried out to reach the information they require (Corlu, 2012; Yıldırım, 2016). Students who receive STEM education grow as problem-solving, innovative, self-confident, analytical, science and technology-literate individuals (Morrison, 2006).

American politicians have identified STEM education since 2001 as a key that will revive the economy, and thus popularizing STEM education became a general policy (Lacey & Wright, 2009). It is stated that students, who gain an innovative perception through STEM education, have a holistic approach that allows them to understand the world as a whole rather than parts (Israel, Maynard & Williamson, 2013; Lantz, 2009). STEM activities around the world are implemented in terms of context and content. STEM activities are planned to support the teaching of a discipline in terms of a context, while in terms of content, activities are planned considering the disciplines that form STEM as a single discipline. (Roehring, Moore, Wang & Park, 2012). STEM education and STEM labor force are increasingly emphasized in many countries around the world that aim to advance in technology and innovation. Countries include STEM in their education systems. STEM started to be implemented in many developed countries from primary schools to secondary schools and universities. Studies show that the STEM education provided at primary and secondary schools reaches the highest level at universities. It can be concluded that STEM education contributes greatly to students' choice of profession (Gonzalez & Kuenzi, 2012).

The STEM education approach, which is seen to be shaped by economic reasons, has been applied to students since the 21st century. In this century, STEM education approach has been deemed necessary for students to acquire the necessary skills and direct them to STEM professional fields (Bybee, 2010; Sanders, 2009). For this reason, it is seen that the STEM education approach is important for the sustainability of economic growth, both for policy makers and students.

The Organization for Economic Cooperation and Development (OECD) compared student achievement in mathematics with the Program for International Student Assessment (PISA), which evaluates the knowledge and skills of 15-year-old students in three-year terms. The leading countries in the ranking of success were determined as China, Singapore, Taiwan, Korea, Finland and Switzerland. In these countries, it has been seen that importance is given to STEM workshops and activities. Health vocational high schools, agriculture, environment and related fields are included in the official scope of STEM in Australia (Marginson, Tytler, Freeman & Roberts, 2013).

China is leading the innovations in the STEM field. Innovation studies in these countries (Africa, Latin America, developing Asian countries, the Middle East) called the Global South are important for global development. It is seen that global information inventions and STEM products are increasing in Asia, and there has been an increase in the number of participation in patent applications in STEM fields, especially in the Global South countries in the last 40 years (Cortes-Sanchez, Carbonell, & Guix, 2020). With the new programs prepared, Russia first focused on eliminating the deficiencies in education by strengthening the education of institutes in universities. Regarding STEM education, they aimed to improve the quality of engineering programs, improve mathematics education, and develop the engineering, medicine and science programs of higher education institutes under the leadership of universities (Smolentseva, 2015). In Turkey, when the expected results could not be achieved in exams such as TIMSS and PISA, the Ministry of National Education included objectives for strengthening STEM in its 2015-2019 Strategic Plan. In order to bring these results to the expected level, STEM education in Turkey has been considered as an important approach that should be given priority (MNE, 2016).

In the plan published in 2014 for STEM education in the Finnish education system, it is aimed to establish working groups to increase the interest and abilities of children and young people in STEM disciplines, and to serve as cultural and educational leaders of these groups. Latvia has a strategic plan for a STEM education aimed at increasing students' competence in mathematics and science. In order to achieve this goal, it is aimed to use digital learning tools that will be developed for use in primary and secondary school education programs. Poland renewed its curricula and focused on mathematics skills in order to improve the quality of education at the secondary school

level in the 2014-2015 academic year. In the USA, STEM education is considered very important for the country's economy, and many STEM Centers have been established in universities and schools throughout the country (Kearney, 2016).

In STEM education applications, students are presented with knowledge-based life problems including real-world problems, and students are asked to develop solutions for these problems in the process (English, 2017; Shaughnessy, 2013). In this process, lessons are generally conducted by using project-based learning, 5E model and engineering design cycle techniques (Capraro, 2013; English & King, 2015). It is possible to say that the applications generally take place within the scope of the science course in the curriculum (English, 2016).

In the study by Suratno, Wahono, Chang, Retnowati, & Yushard (2020), the factors affecting the quality of education from students' problem-solving abilities and academic learning achievements were examined. It has been observed that there is a positive relationship between students' problem-solving skills and academic learning achievements in favor of STEM education. Similar studies on this topic are summarized below:

Ercan (2014) examined the effect of Design-Based Science Education on 7th- grade students' academic achievement levels aimed at the force and motion unit, their decision-making skills, level of knowledge aimed at the Engineering discipline, their skills on applying the Engineering Design Process, and students' views regarding engineering. The study revealed that Design-Based Science Education developed students' academic achievements, their decision-making skills and level of interest in the Engineering discipline, that they improved in terms of determining the most appropriate solution suggestion for the problem situation, and that their competences developed at the prototype making and testing stage. Dedetürk (2018) conducted studies focusing on STEM education, and in his study, he examined whether the shortcomings regarding sound could be fixed, while also examining the change in the levels of achievement. As a result of the research, he determined that STEM education has a positive impact on increasing students' achievement levels. Gazibeyoğlu (2018) examined the effect of STEM practices on 7th-grade students' achievements and attitudes in the force and energy unit. It has been determined that STEM practices influence academic achievement and attitude. Kuru & Akman (2007) examined the scientific process skills of children continuing to study at preschool institutions in terms of various variables. As a result of the study, while they reached the conclusion that there is a significant correlation between the variables of the children's age, the type of school they are continuing to attend, whether they received pre-school education, they also concluded that there is no significant correlation between teachers' period of service in the profession and the duration of the science activities that carry out, as well as children's scientific process skills. Tseng, Chang, Lou & Chen (2013) examined project-based learning activities integrated with STEM Education on 30 students studying in the first grade at the Institute of Technology in Taiwan. It has been observed that students' approaches to engineering have changed significantly. Most students have emphasized the importance of Stem in the disciplines of Science and Engineering. It has been observed that project-based learning activities integrated with STEM are important in terms of influencing student behavior in order to create important learning and career choices in the future. Duygu (2018) examined the effect of simulation-based STEM education in terms of students' scientific process skills and STEM awareness. As a result of the study, it is stated that the simulation program ensures a positive effect in terms of the engineering component in the STEM field, and achieves superiority with respect to experiment and product development. Cakar (2019), on the other hand, examined the impact of the educational activities implemented on digital platforms in terms of the Physics course with the reverse teaching model on students' academic achievements, their course-related performance levels, their problem-solving skills and attitudes towards the physics course. As a result of the study, the academic achievements of students in the experimental group, their physics performance and attitudes towards the course were found to differ significantly compared the control group students, while there was no significant difference between their problem-solving skills.

It has been observed that studies examining the relationship between academic achievement, academic skills and STEM have been made in the literature. However, no studies were found in which the findings of these studies and dissertations were examined together and the results were mentioned.

It has become necessary to study dissertations that reveal the impact of STEM education and its applications on academic achievement and to present the overall impact of its results. In this study, it is aimed to examine the effect of STEM education on students' academic achievements. In accordance with this general purpose, the answers to the following questions were sought:

- 1) Is there heterogeneity among the dissertations on STEM published using the experimental model?
- 2) Which group is in favor of the average effect size value in the dissertations on STEM published using the experimental model?
- 3) Is there publication bias among STEM dissertations published using the experimental model?

This study is important as it provides the opportunity to gather and synthesize studies that present different results regarding STEM education, and compare them with meta-analysis studies conducted in different fields.

2. Method

2.1 Research Design

The research was conducted in a screening model. The main purpose of using the screening model is to examine the existing situation in detail according to the independent variables. A screening model is used in studies aimed at depicting a situation that has happened in the past or still exists in its current state (Karasar, 2014).

Experimental studies examining the effect of STEM education on academic success were accessed within the scope of this study to perform their meta-analysis. Meta-analysis is the ability to combine the results of many independent studies conducted on a particular topic and perform a statistical analysis of the results (Akgöz, Ercan & Kan, 2004). Meta-analysis, a set of statistical techniques for synthesizing the results of multiple studies (Higgins & Green, 2011), is used in a systematic review when the guiding research question focuses on a quantitative summary of study results. Studies in relation to examining publications in a specific field using meta-analysis are beneficial in the processes ranging from the planning of academic studies to their management (Betts & Lansley, 1993).

2.2 Study Group

The dissertations examined within the scope of this study were accessed from the Higher Education Institution (HEI) National Study Search System databases using the keywords STEM, academic achievement and experimental model. In this study, dissertations were examined by taking a certain time criterion. 19 postgraduates and 7 doctoral dissertations, examining the effect of STEM education, which is the post-test scores of the experimental and control groups conducted in 2018-2020, on academic achievement were accessed from the database. While examining the dissertations, attention was paid to the fact that they were made in education faculties. First, dissertations related to STEM and academic achievement are listed. In addition, attention was paid to the study of the difference between the results before and after the test compared to the control group in the dissertations.

Table 1: Published dissertations on STEM and academic achievement

	Universities with dissertations written on STEM and academic success	Publication year	Publication type
1	Erciyes University	2018	Doctorate
2	19 Mayıs University	2018	Doctorate
3	Adnan Menderes University	2018	Postgraduate
4	Karamanoglu Mehmetbey University	2018	Postgraduate
5	Sinop University	2018	Postgraduate
6	19 Mayıs University	2019	Postgraduate
7	Bartın University	2019	Postgraduate
8	Gazi University	2019	Postgraduate

9	Fırat University	2019	Postgraduate
10	Gazi University	2019	Postgraduate
11	Gazi University	2019	Doctorate
12	Manisa University	2019	Doctorate
13	Marmara University	2019	Postgraduate
14	Muğla Sıtkı Koçman University	2019	Doctorate
15	Pamukkale University	2019	Postgraduate
16	Erciyes University	2020	Postgraduate
17	Atatürk University	2019	Postgraduate
18	Cukurova University	2019	Doctorate
19	Akdeniz University	2019	Postgraduate
20	Fırat University	2019	Doctorate
21	Kırşehir Ahi Evran University	2019	Postgraduate
22	Van Yüzüncü Yıl University	2020	Doctorate
23	Yıldız Teknik University	2020	Postgraduate
24	Marmara University	2019	Postgraduate
25	Erciyes University	2019	Postgraduate
26	Istanbul University	2020	Doctorate

In each dissertation, those in the experimental group were examined based on STEM education, while those in the control group were examined according to the application of non-STEM education methods and techniques. In addition, attention was paid to taking final test measurements from the experimental and control groups. Furthermore, when transferring the studies to the (CMA) program, for publications in the experimental and control groups, data was entered under the titles sample size, the standard deviations of arithmetic averages. For the other studies, which were examined for effect over a single group only, data continued to be entered in accordance with the pre-test and final test averages, and the t-test value.

2.3 Data Analysis

A master key has been developed in order to determine the dissertations analyzed. The year the dissertations were conducted and their type, sample size, the arithmetic averages of the study findings and their standard deviations and t-test results were entered into this key. The information obtained according to these criteria was entered into the CMA program. The impact of the dissertations was determined in efforts to reach the size of common impact. Two effect models are used in the body of literature. One of the fixed and random effects models is preferred. The assumption of the fixed effect model is that there is only one real impact size for all dissertations in the meta-analysis. In the random impacts model, studies with small sample size are weighted in accordance with the sample size. As there is heterogeneity among the dissertations examined within the scope of the study, the random effects model was used to examine the effect size. This model focuses on high heterogeneity among dissertations in all studies.

Stages of Application of Meta-analysis

Meta-analysis is a subset of systematic reviews. A systematic review attempts to collate empirical evidence that fits pre-specified eligibility criteria to answer a specific research question. The conduct of a meta-analysis, in general, includes the following stages (Saunders & Trapp, 1994);

- Defining the problem,
- Including individual studies in the meta-analysis determining the criteria,
- Coding and classifying each study according to the characteristics associated with its meta-analysis,
- Combining the findings of individual studies,
- Establishing the relationship of findings combined with the characteristics of meta-analysis,
- Reporting the findings of the meta-analysis.

The framework of this study was created by taking into account the necessary stages for meta-analysis. After the research purpose and sub-objectives were defined, the dissertations to be included in the meta-analysis were determined. In the examination of the dissertations related to the concepts of STEM and academic success between the years 2018-2021, it was seen that the most experimental model was conducted in the years 2018-2020. Thus, the time code of the study has determined as 2018-2020. In the dissertations examined, another meta-analysis code was created according to the pretest-posttest or posttest applied according to the STEM education status in the experimental and control groups. The situation of conducting the analyzes applied in the dissertations in paired and independent groups is also considered as a code. In the dissertations, group averages, standard deviations, variances, effect sizes were also entered as codes.

3. Results

3.1 Statistics and Data Analysis

The data of the independent and paired groups of dissertations conducted using the experimental research pattern were examined one by one. In the meta-analysis, the results have obtained using the random effects model. In this study, it was determined as an important criterion that the dissertations examined in the meta-analysis must have posttest measurements. In the heterogeneity analysis, the arithmetic means, sample sizes, and standard deviation values of the experimental group and control group in each dissertation were included in the analysis. In order to examine the dissertations that reveal the impact of STEM education and its applications on academic success and to present the overall effect of its results, the heterogeneity of dissertations written with experimental model was first examined.

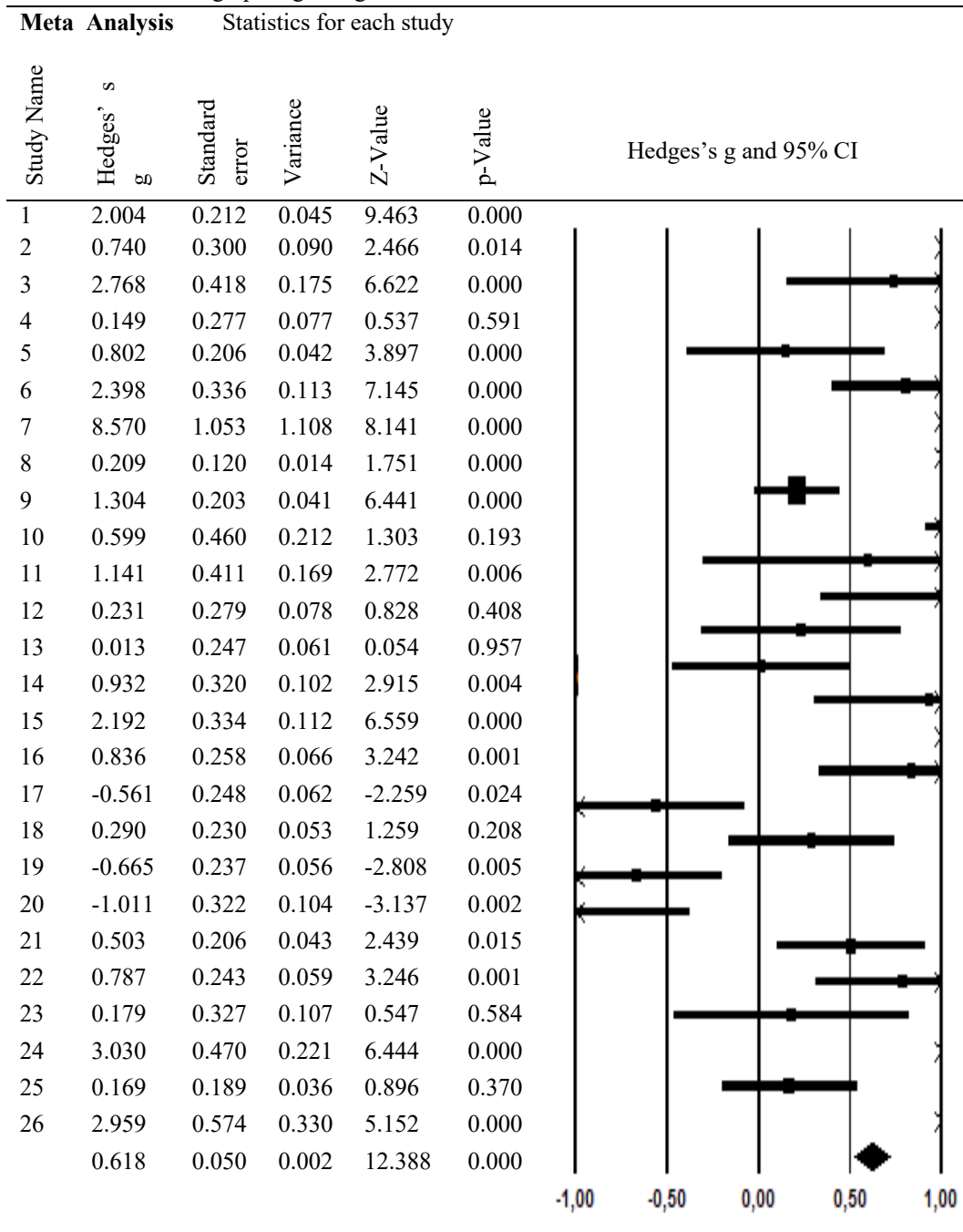
In the research, the average effect size value in dissertations on STEM is examined in separate tables for dependent and independent groups. In the analysis, the dissertations were examined according to the values obtained from the arithmetic mean, degrees of freedom and t values. In the research, publication bias was also examined among the dissertations on STEM published using the experimental model.

1. Is there heterogeneity among the dissertations on STEM published using the experimental model?

One other important statistic used in choosing either the fixed or random effects model is the Q statistic. In the analysis of the Q statistic, the hypothesis is tested in accordance with whether all the studies share the general effect. As a result of the analysis, if the importance value is below the critical value, not all studies share the existing effect (Borenstein, Hedges, Higgins & Rothstein, 2009; Hedges & Olkin, 1985). In this case, there is heterogeneity among the dissertations examined. The concept of heterogeneity is a concept associated with the magnitude and degree of variability between studies. The more variable the estimates between studies are, the higher the heterogeneity. In such a situation, it is necessary to investigate the source of heterogeneity.

I^2 statistics, on the other hand, provides information about the rate of this heterogeneity. The Q statistic calculated in this study has shown there is heterogeneity among the dissertations. The publication bias of the dissertations included within the scope of the study is examined using the funnel plot. In cases where there is no publication bias, the funnel plot is expected to present symmetry. The chart of studies clustering on the internal and end sections shows it contributes highly to the effect size. The magnitude (dot) of the effect value obtained from each dissertation is indicated on a line. The diamond symbol is the average effect size value. The size of the black boxes indicates the weight of the studies. The two ends of the lines are a 95% confidence interval.

Table 2: Forest graph regarding the effect of STEM education on academic achievement



Note. Study Name 1- Erciyes University 2018, 2- 19 Mayıs University 2018, 3- Adnan Menderes University 2018, 4-Karamanoglu Mehmetbey University 2018, 5-Sinop University 2018, 6-19 Mayıs University 2019, 7-Bartın University 2019, 8- Gazi University 2019, 9-Fırat University 2019, 10- Gazi University 2019, 11- Gazi University 2019, 12- Manisa University 2019, 13-Marmara University 2019, 14-Muğla Sıtkı Koçman University 2019, 15-Pamukkale University 2019, 16- Erciyes University 2020, 17- Atatürk University 2020, 18-Cukurova University 2020,19-Akdeniz University 2020, 20-Fırat University 2020, 21- Kırşehir Ahi Evran University 2020, 22-Van Yüzüncü Yıl University 2020, 23- Yıldız Teknik University 2019, 24-Marmara University 2019, 25- Erciyes University 2019, 26- Istanbul University 2019.

According to Cooper, Hedges and Valentine (2009), if the I^2 value is above 75%, it indicates high heterogeneity. This result requires the estimation of the real effect size using the random effects model. The effect size calculated in the study using the random effects model, and the weights of the studies in the meta-analysis are shown in Table 2.

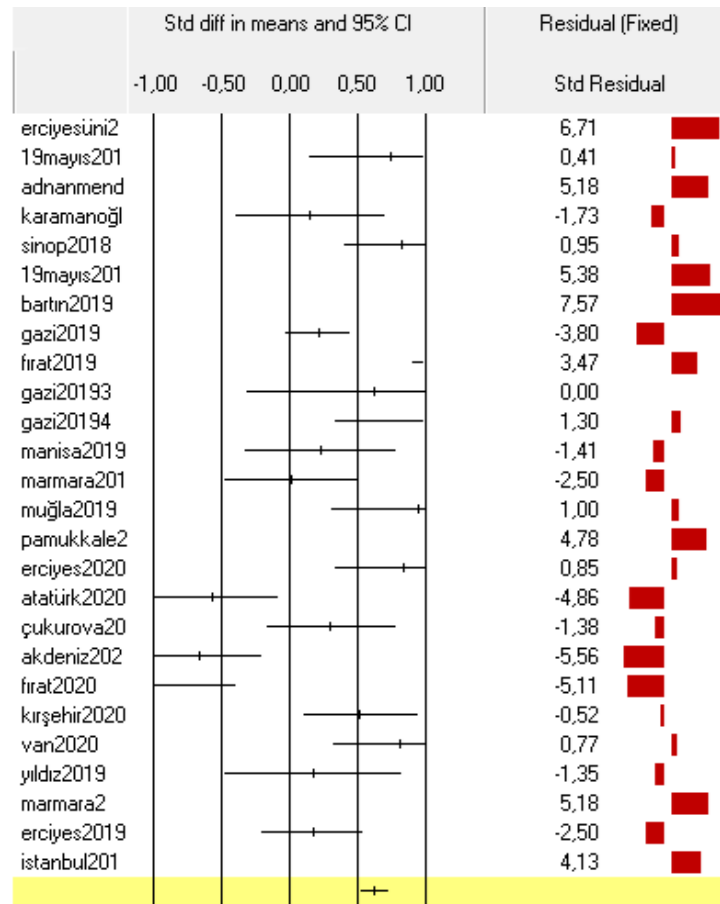


Figure 1: Statistics for each dissertation in forest chart

Forest plots are invaluable in evaluating both meta-analysis results and heterogeneity. In Figure 1, the forest graph of the meta-analysis of 26 dissertations is given. As can be seen, it gives a different point estimate and 95% Confidence interval value for each dissertation. The 26 dissertations examined within the scope of this study were found to be heterogeneous ($Q(25)=345.536$, $p<.05$).

I^2 statistic: It is the percentage value showing that the variance between studies is due to heterogeneity, not chance.

- 0% to 40%: heterogeneity is very low;
- 30% to 60%: moderate heterogeneity;
- 50% to 90%: sufficient heterogeneity;
- 75% to 100%: high level of heterogeneity.

The significant Q statistic result confirms the assumption that studies are different from one another. The heterogeneity level of the studies is determined as 93% ($I^2 = 92.765\%$). This meta-analysis finding has led to the conclusion that dissertations have high level of heterogeneity.

2. Which group is in favor of the average effect size value in the dissertations on STEM published using the experimental model?

When table 2 is examined, it is understood that the singular examination of the effect sizes of the dissertations included in the study revealed that some dissertations present a great and significant effect in favor of the experimental group. In this study, dissertations were analyzed according to the mean and standard deviation values of the experimental and control groups in the independent groups. The Hedges's g value of the dissertations has been examined. "Small effect" if the Hedges's g value is less than 0.5, if it is between 0.5 and 0.8 the "medium

effect" is, if it is greater than 0.8 and 0.8 it is called "large or wide effect". There are 16 dissertations on the effect of activities carried out in independent groups on academic achievement. Dissertations are given in Table 3.

Table 3: Independent group (means, SD's)

Study name	Data format	Experimental		Control			Hedges's σ	
		Group mean	Std-Dev	Sample Size	Group mean	Std-Dev		Sample Size
1	Independent groups (mean,SD's)	18.456	3.715	68	10.892	3.792	65	2.004
2	Independent groups (mean,SD's)	15.340	3.770	23	12.130	4.710	23	0.740
3	Independent groups (mean,SD's)	14.744	0.689	22	12.802	0.689	22	2.768
4	Independent groups (mean,SD's)	12.070	12.070	27	10.700	3.290	24	0.149
9	Independent groups (mean,SD's)	3.970	0.560	58	3.180	0.640	59	1.304
10	Independent groups (mean,SD's)	61.110	3.850	9	58.330	4.920	9	0.599
11	Independent groups (mean,SD's)	0.710	0.150	13	0.550	0.120	13	1.141
12	Independent groups (mean,SD's)	73.400	19.480	25	68.690	20.580	25	0.231
13	Independent groups (mean,SD's)	4.490	0.400	30	4.090	40.380	34	0.013
14	Independent groups (mean,SD's)	12.900	4.230	20	9.550	2.740	22	0.932
16	Independent groups (mean,SD's)	123.340	12.130	32	112.120	14.310	32	0.836
17	Independent groups (mean,SD's)	3.570	1.060	33	4.120	0.870	33	-0.561
19	Independent groups (mean,SD's)	46.820	11.480	39	55.580	15.420	35	-0.665
20	Independent groups (mean,SD's)	8.710	78.000	21	66.420	13.750	21	-1.011
23	Independent groups (mean,SD's)	4.220	0.730	18	4.060	1.000	18	0.179
25	Independent groups (mean,SD's)	154.510	25.150	47	150.290	24.510	68	0.169

The dissertation, which has a large and wide effect value in independent groups, is "Investigation of the Effect of STEM Activities Prepared for 7th Grade Students in Terms of Different Variables"- PhD dissertation, 2018-Adnan Menderes University. The Hedges's g value of this dissertation is 2.768.

In addition, in this study dissertations were analyzed according to the mean and t values of the paired groups. Hedges's g value of the dissertations was examined. There are 10 dissertations on the effect of activities carried out in paired groups on academic achievement. Dissertations are given in Table 4.

Table 4: Paired groups (mean, t)

Study Name	Data format	Pre mean	Post mean	Sample Size	Paired Group t-value	Hedges's g
5	Paired groups (mean,t)	13.500	20.730	30	-4.510	0.802
6	Paired groups (mean,t)	6.320	13.850	34	14.310	2.398
7	Paired groups (mean,t)	37.910	40.140	34	51.140	2.768
8	Paired groups (mean,t)	45.160	48.300	70	-1.770	0.209
15	Paired groups (mean,t)	15.300	25.360	30	-12.330	2.192
18	Paired groups (mean,t)	3.660	3.880	18	-1.288	0.290
21	Paired groups (mean,t)	3.790	4.090	25	2.599	0.503
22	Paired groups (mean,t)	3.770	4.180	21	-3.750	0.787
24	Paired groups (mean,t)	27.680	52.440	25	-15.646	3.030
26	Paired groups (mean,t)	26.310	42.810	16	12.470	2.959

The dissertation, which has a large and wide effect value in paired groups on STEM and academic achievement, was "The effects of digital game-based STEM activities on students' interest in STEM fields and scientific creativity: Minecraft case"- Postgraduate dissertation, 2019- Marmara University. The Hedges's g value of this dissertation is 3.030.

Odds ratios are widely used in experimental studies. There are three reasons for this. Firstly, they provide an estimate (with confidence interval) for the relationship between two binary ("yes or no") variables. Secondly, they enable us to examine the effects of other variables on that relationship, using logistic regression. Thirdly, they have a special and very convenient interpretation in control studies (Bland & Altman, 2000). Odds ratio (OR) can be interpreted according to the value it receives as follows;

- When $OR=1$, it can be said that the curious factor has no effect on increasing or decreasing the probability of the investigated situation.
- When $OR<1$, the curious factor has a decreasing effect on the probability of the investigated condition.
- When $OR>1$, the curious factor has an effect that increases the probability of the investigated condition.

The 95% confidence interval (CI) is used to estimate the precision of the Odds Ratio. A large CI indicates a low level of precision of the odds ratio, whereas a small CI indicates a higher precision of the OR. It is important to note however, that unlike the p value, the 95% CI does not report a measure's statistical significance. In practice, the 95% CI is often used as a proxy for the presence of statistical significance if it does not overlap the null value (Szumilas, 2010).

The odds ratios, z and p values of the dissertations analyzed in the study are given in Table 5. When the Odds ratios in the table are examined, it is seen that 22 out of 26 dissertations have $OR > 1$. The odds ratio found in the meta-analysis of dissertations on STEM and academic achievement revealed that the dissertations analyzed had a great effect together. When Table 5 is examined, it is seen that the odds ratios of the wide majority of dissertations are very high. This may be related to the fact that the meta-analysis codes created before the research were well determined.

Table 5: Odds rate of dissertations

Study Name	Odds ratio	Z-Value	p-Value	Odds ratio and 95% CI
1	38.699	9.463	0.000	
2	3.915	2.466	0.014	
3	166.058	6.622	0.000	
4	1.315	0.537	0.591	
5	4.453	3.897	0.000	
6	85.741	7.145	0.000	
7	810.356	8.141	0.000	
8	1.468	1.751	0.000	
9	10.821	6.441	0.000	
10	3.131	1.303	0.193	
11	8.470	2.772	0.006	
12	1.532	0.828	0.408	
13	1.025	0.054	0.957	
14	5.600	2.915	0.004	
15	59.330	6.559	0.000	
16	4.638	3.242	0.001	
17	0.357	-2.259	0.024	
18	1.734	1.259	0.208	
19	0.296	-2.808	0.005	
20	0.154	-3.137	0.002	
21	2.567	2.439	0.015	
22	4.412	3.246	0.001	
23	1.393	0.547	0.584	
24	291.704	6.444	0.000	
25	1.362	0.896	0.370	
26	285.579	5.152	0.000	
	3.123	12.354	0.000	

It has been seen that the dissertations written according to the experimental model related to STEM and academic achievement examined in the research contribute to the probability of the researched situation.

Table 6: Findings in relation to the Meta-Analysis effect size calculated according to the random effects model

ES	Z	Q	I ²	Serror	ESlower	ESupper
0.618	12.388	345.536	92.765	0.050	0.520	0.716

$p < .05$

According to Table 6, the average effect size value is significant ($Z=12.388$, $p < .05$). The average effect size value, on the other hand, is 0.618, and has been found to be positive. In this case, it can be said that the process effect is in favor of experimental group.

Based on this finding, it can be said that the academic achievements of the students in classes taught using the STEM education method are higher than the achievements of students in classes taught using other methods and techniques.

3. Is there publication bias among STEM dissertations published using the experimental model?

Since it is more preferable in the literature to include published studies in meta-analysis, the possible biases in these studies are also reflected in meta-analysis. This problem is commonly referred to as “publication bias.” Publication bias is not only a problem specific to meta-analysis and systematic review (Card, 2012; Rosenthal & DiMatteo, 2001).

Whether the dissertations included publication bias was examined using the funnel plot. The chart showing the publication bias in this study is presented in Figure 2. The name “funnel plot” comes from the idea that as the sample size of the studies increases, the accuracy of the effect size estimation of the application will also increase. Funnel plots are a simple scatter plot of the estimated effect size in each study versus a measure of the sample size of the studies.

Funnel plots are created with the X-axis showing effect sizes values, while the Y-axis showing sample size, variance, or standard error (Sterne & Harbord, 2004). Sterne and Egger (2001) consider choice of axis in funnel plots of meta-analyses with binary outcomes. Although sample size or functions of sample size have often been used as the vertical axis, this is problematic because the precision of an effect estimate is determined by both the sample size and by the number of events. Thus, studies with very different sample sizes may have the same standard error and precision and vice versa. Therefore, the shape of plots using sample size on the vertical axis is not predictable except that, in the absence of bias, it should be symmetric (Bradburn, Deeks & Altman 1998). Small sample studies cause data irregularities as they have low methodological quality. This situation cause funnel asymmetry. Poor choice of effect measure may also result in funnel-plot asymmetry (Deeks & Altman 2001).

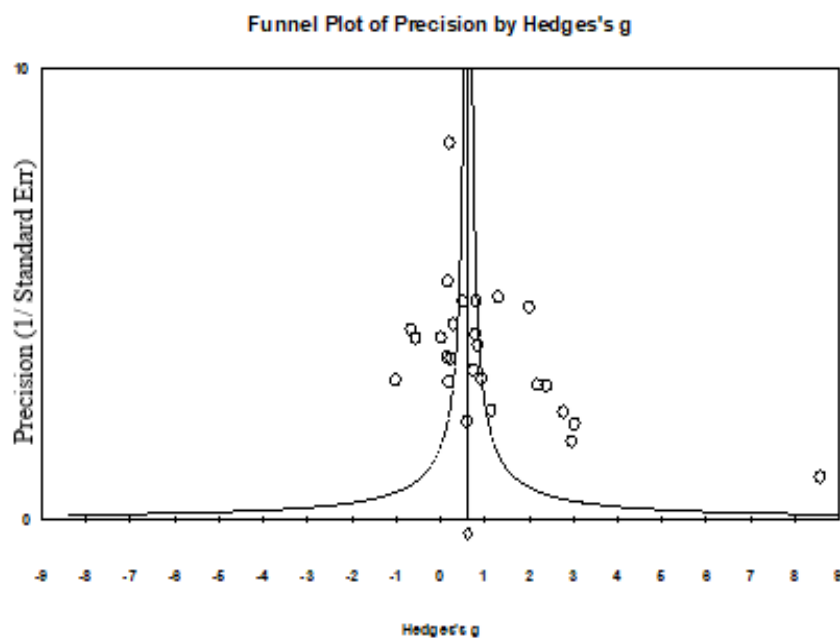


Figure 2: Funnel plot of precision by Hedges g for publication bias

A meta-analysis study provides a mathematically accurate synthesis of the studies included in the research. If a biased presentation of the studies studied on the meta-analysis is made, the average effect size obtained also reflects this bias. Funnel Plot is examined, it is understood that the vast majority of the dissertations examined within the scope of meta-analysis are clustered on the end and inside part of the funnel plot. This indicates that the dissertations analyzed have a high contribution to the meta-analysis. It has been determined that both sides of the funnel plot are not symmetrical. The number of studies on the right side of the figure spoil the symmetry. The unsymmetrical funnel is also an indicator of publication bias. In this graph, each dissertation is represented by a circle. Effect sizes Hedges g values are on the horizontal axis, while standard errors are on the vertical axis.

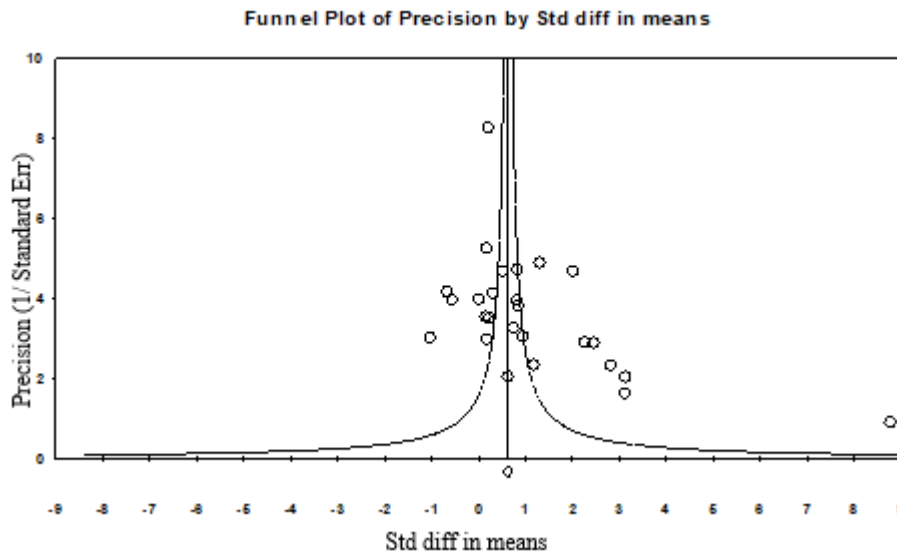


Figure 3: Funnel plot of precision by Std diff in means for publication bias

When the funnel plot is examined for the standardized mean difference, it is seen that the distribution of the publication has a shape similar to that of Hedges's g chart. This situation reveals that the dissertations examined have a high contribution to the meta-analysis. This finding points to the small number of study groups in the dissertations in which the effect of STEM education on academic achievement is examined. Low methodological quality due to the small number of samples in the experimental and control groups causes asymmetric graphics and publication bias.

4. Discussion

The first thing to do in meta-analysis studies is to examine the heterogeneity of the studies that are the subject of the research. The significant Q statistic result confirms the assumption that studies are different from one another. In determining the heterogeneity considered in model selection, other heterogeneity measures should be taken into account besides the Q statistic. When the number of studies is large, even if the heterogeneity is not high, heterogeneity can be found to be statistically significant with the Q statistic.

1) It has been determined that the dissertations examined within the scope of the research have a high level of heterogeneity. Different study patterns, study quality, bias caused by study selection, other bias effects, and the use of different statistical methods may be considered as possible causes of heterogeneity. One of the reasons for the heterogeneity in the dissertations examined may be due to the insufficient number of participants in the study groups. Another reason may be that the experimental and control groups were not determined by random assignment in the majority of dissertations. In addition, it can be said that studies without post-test scores are also the cause of this. It is difficult to find a concrete reason in such studies. Further work may need to be done to find and resolve possible causes.

As a result of this meta-analysis study, in which dissertations made with an experimental model were examined that examined the effect of STEM education on students' academic success, it was found that the academic success of students receiving STEM education was higher than that of students who did not receive this education. Similar results were shared in the studies carried out as well: Yıldırım & Altun (2015) conducted an experimental study with the objective to support the study on STEM education and engineering practices. As a result of the study, it was determined that STEM education and engineering practices are effective in improving students' achievements. The aim of the research conducted by Gokbayrak & Karisan (2017) is to investigate the effects of STEM-based activities carried out in the laboratory course on the science process skills of prospective teachers. It was determined that there was a significant difference in favor of the experimental group between the post-application scores of the experimental group students who participated in STEM-based science laboratory activities and the test achievement scores of the control group students who did not participate in the activities. The scientific process

skills test revealed a significant difference in the analysis results in favor of the experimental group, and that STEM has a positive effect on the development of scientific process skills. Yıldırım & Selvi (2017) focused on determining the effect of STEM practices on high school students' attitude towards STEM, their motivation towards science, as well as their inquisitive learning skills, academic achievement and permanent learning. Upon comparison of the pre-test and final test scores of students' academic achievements, the results show a significant difference in favor of the final test. In relation to students' motivation towards science, the practices established a difference between the pre-test and final test results of the experimental group and the pre-test and final test results of the control group.

2) As seen in the literature, studies emphasizing the effects of STEM activities on school success have been encountered. It has been seen that these trainings, which are very popular in science, mathematics and technology, contribute to the motivation of the students as well as the success of the students. When the dissertations made in Turkey on this subject are examined, it is seen that there is a similar situation to the research results. When the dissertations published in this study were examined one by one, it was seen that they presented significant findings about STEM and academic success. When the common effects of the studies presented together on this subject were analyzed with meta-analysis, it was concluded that the effect sizes were large. In study the average effect size value is significant. The average effect size value has been found to be positive. In this case, it can be said that the process effect is in favor of experimental group.

The total effect size value was found to be positive and significant in dissertations conducted on STEM education between 2018 and 2020. The effect size in this meta-analysis study is within the powerful effect size range according to the Cohen, Manion and Morrison (2007) classification. It is seen that the effect sizes of dissertations examining the effect of STEM education on academic achievement are positive and large. Based this finding, studies examining the effect of STEM education on students' academic achievements, their motivation, attitudes, perceptions and creativity together can be analyzed with the results interpreted using the meta-analysis method.

A major goal of developing effect size measures is to provide a standard metric that meta-analysts and others can interpret across studies that vary in their dependent variables as well as types of designs. Researchers should keep in mind that observed effect sizes in a study can differ from the effect size in the population, and there are reasons to believe overestimations are common given current publication practices where journals mainly accept studies that observe statistically significant effects. Early publications of a given finding tend to overestimate the effect size due to regression to the mean (Fiedler, Kutzner & Krueger, 2012).

For these reasons, it is inadvisable to focus solely on an a-priori power analysis when the sample size for a future study is determined (unless a very accurate effect size estimate is available), and researchers should pay attention to alternative approaches to plan sample sizes (Maxwell & Delaney, 2004). Current dissertations are limited to effect sizes for standardized mean differences. Such comparisons are quite common in experimental studies, but they almost never cover all possible research designs. Future dissertations about effect size calculations should provide software or spreadsheets to make it as easy as possible for researchers to implement these calculations into their workflow. It should be known that the easiest way to facilitate cumulative science is to share the data of the reported studies. Especially for mixed designs or analyses with covariates, where calculating I^2 becomes quite complex, sharing the data will always enable researchers who want to perform a meta-analysis to calculate the effect sizes they need.

3) Numerous findings show that studies with a large effect size are published more often than those with a small effect size. The asymmetry in the funnel plot indicates publication bias. Although there is no way to prevent this situation, it can be recommended that researchers only include large-sample studies in meta-analysis. The vast majority of the dissertations examined within the scope of the study are observed to cluster on the end and inside of the funnel plot, with high contribution to the common effect. Additionally, the studies are not distributed symmetrically on both sides of the funnel plot. In experimental dissertations having a sample of 16-18 people have low effect size, while the effect size in studies with 70 people was very high. This indicates that the effect size value is highly influenced by the sample. As the sample size increases, sampling bias goes down, and therefore high-powered studies provide better effect size estimates for meta-analyses than studies with low power. The

choice of an effect size calculation depends on the research question and the experimental design. It is important to explicitly state which effect size is calculated, and to make a motivated choice about which effect sizes to report. STEM education practices can be commenced as of the preschool period, with students gaining knowledge of science, mathematics, engineering and technology education subjects through inquisition by providing them the suitable learning atmosphere. Besides dissertations, the effect of STEM in meta-analysis studies with large samples can be examined in publications such as papers and reports as well. In order to prevent bias in studies, it is advised that the sample in experimental studies be no less than 20 people. The use of STEM in class programs can be emphasized to observe its impact on academic success. Revisions can be performed based on the program. Classes including the STEM approach and practices can be added to the bachelor's program.

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Psychological Issues on Family Caregivers of Stroke Patients in Brunei Darussalam: In the Era of Pandemic Covid-19

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Abstract

Family caregivers play an important role in providing main support for family members with a disability in order for them to function normally in their everyday life. The main goal of this research study is to promote psychological health awareness of stroke family caregivers in Brunei Darussalam, especially during the pandemic of Covid-19. This study concentrated particularly on long-term family caregivers who provide care to stroke family members who were severely affected by the disease that caused them to heavily depended on their family caretakers. This qualitative research involves interviewing 8 locals participants using snowballing sampling and a thematic analysis approach that investigate thoroughly the challenges and identifies the needs required by family caregivers in Brunei. The findings of the study discovered that all family caregivers experience psychological issues such as 'Depression' and 'Stress' and are in need of family support and self-care to reduce challenges they experience such as emotional exhaustion, physical problem, sleep deprivation, financial issues, and accessibility to basic needs in caregiving.

Keywords: Caretaker, Stroke Patients, Psychological Issues

1. Introduction

This research study focuses on the mental health wellbeing of family caregivers of Stroke patients in Brunei Darussalam. A stroke is a form of chronic disease that is caused by a lack of oxygen due to the blockage of blood flow to the brain (American Psychological Association, 2010). According to the World Health Organization, stroke is one of the main causes of death worldwide aside from heart disease, cancer, and Diabetes. There are more than 300 people experience a stroke in Brunei Darussalam and the majority of these individuals are aged 65 years old and above (Anuar Rambli, 2017). Two-thirds of these individuals with stroke claimed to be non-recoverable, meaning they will lose their self-ability to function normally in their everyday lives, hence, the need for ongoing support from their family members who are expected to take the role of a caregiver. Family caregivers also referred as informal carers (Payne, Smith, & Dean, 1999) act as a backbone for stroke patients, as they are expected to be the main source of support for an individual that lost their ability to carry out their normal or everyday routine. Having said that, Bakas and Commiskey (2021) asserted that family

caregivers are often found to lack essential skills in terms of caregiving such as lack of knowledge and training, and access to required services and resources which makes caregiving not easy for many.

By definition, caregiving is often observed as a process of activities and responsibilities to be carried out to meet the physical needs of patients whilst providing them with emotional, social, and financial support (Gorgulu, Polat, Kahraman, Ozen, & Arslan, 2016). The act of caregiving almost seems to be part of one's job as it usually entails long time commitment and multiple responsibilities particularly for patients who needs long-term care (Tsai, Yip, Tai, Lou, 2015). The transition to long-term care happens when the caregivers' care needs are found to exceed the family caregiver's capacities (Anderson, Parmar, Dobbs, & Tian, 2021). Usually stroke survivors require long-term caring due to the pervasive physical immobility which leads to high dependency on caregivers.

There has been a substantial amount of research studies conducted to examine the effects or impacts of long-term caregiving with caregivers of stroke patients over the decades. Previous studies have examined impacts on the well-being of the longtime caregivers of stroke patients in terms of physical and mental health (Saban, Serwood, DeVon ad Hynes, 2010; Salter, Zettler, Foley, & Teasell, 2010), emotional and psychological stability (Han & Haley, 1999; Menon, Salini, Habeeba, Conjeevaram, & Munisusmitha, 2017), self-confidence and efficacy and how they perceived their role as caregivers (Sheth, Lorig, Stewart, Parodi, & Ritter, 2021). It has been reported that inevitable long depression, poor quality of social life, as well as persistent health problems are adverse effects experienced by caregivers of long-time stroke patients.

The recent event which witnessed the Covid-19 pandemic has certainly led to changes in people's lives. For caregivers of long-term patients, the changes may mean intensifying the hardship of caregiving on their existing conditions of their wellbeing. An inevitable surge of studies cropped up in the literature amidst the pandemic examining the kinds of problems and challenges faced by the caregivers of patients with life-long conditions (for example, dementia – Harris & Titler, 2021; Rainero, Bruni, Marra, Cagnin, Bonanni, Cupidi et al., 2021; cancer – Zeng, Cao, Zhao, Li, & Hou, 2021). Anderson and colleagues (2021) conducted a study with 604 family caregivers in the province of Alberta, Canada reported that the pandemic had affected the participants' emotional stability and mental health. The findings found that the caregivers were either feeling overwhelmed in taking care of their sick family members at home or felt anxious or worried when they were restricted from caring for their sick family members in health or care centers.

1.1. Studies on the impacts of family caregiving on stroke patients during the pandemic

Despite the limited studies reporting on caregivers of stroke patients found in the literature, there has been only quite a handful reporting on the impacts of covid-19 on the caregiving of stroke patients and certainly, not many that examine the psychological impacts (for example; Lee, Tsang, Yang, Kwok, Lou & Lau, 2021; Sutter-Leve, Passint, Ness, & Rindflesch, 2021), and on the kinds of provisions for psychological support interventions for caregivers (see Bertuzzi, Semonella, Bruno, Manna, Edbrook, et al., 2021 for review).

A study conducted by Lee et al. (2021) with 25 stroke patients' family caregivers in Hong Kong reported that the caregivers who had taken care of the patients for more than a month during the pandemic, experienced an additional workload in caring for the patients since the patients would have to spend more time at home instead of at care-centers which were closed during the pandemic. The additional workload and 24-hour care at home are observed as major determinants of stressful life that affect the relationship of the family caregiver with the patients leading to an increase of inevitable physical harm and verbal abuse. The study also revealed that the caregivers experienced 'worsened physical and psychological wellbeing because of increases in care burden with simultaneously reduced formal and informal support' (p. 1407). In terms of psychological wellbeing, the study reported that the caregivers expressed their frustration and anger when performing care tasks resulting in unwarranted stress and burnout. Apart from the stress from taking care of the patients, the caregivers indicated that they were also worried about getting infected by the diseases which might deter them from playing their roles as caregivers to the patients who are often their immediate family members. The study also pointed out the

need for effective measures to address psychological distress such as providing support such as ‘cognitive behavioral therapy, psychoeducation, and counseling’ (p. 1412).

Sutter et al. (2021) conducted a study with 11 caregivers of newly acquired stroke patients in the USA. The qualitative study examined the stress level of the family caregivers and how Covid-19 impacted the experience of the family caregivers of patients with newly-acquired stroke who were confined in an inpatient rehabilitation setting. The findings revealed that the increase in the stress level of the family caregivers was resulted from not being able to know about their ill family member who was not under their care, fear of recurrent stroke and safety following discharge home, not being able to receive frequent updates from the rehab centers as well as not being able to communicate with their ill family member who suffered from speech or cognitive impairment due to stroke. The study also underscored alternatives measures to ensure the direct involvement of the caregivers in the caring of the stroke patients.

From the studies mentioned here, psychological issues during the pandemic can be identified under the circumstances of direct involvement of the family caregivers in caring for the stroke patients at home and the failure to find time for themselves. On the other hand, the absence of direct contact or involvement in caregiving is shown to lead to emotional problems.

The consequences of stroke do not only affect individuals that suffered from it, studies have also shown that they put significant impacts and changes on the lives of the family caregivers even during the era of pandemic Covid-19 where the pressure faced by the patients as well as by the family caregivers would heighten. Although some individuals may experience positive outcome in handling stroke patients, scholars such as Muller-Kluits et al. (2018), Adelman et al. (2014) and Kurtz et al. (2004) argue otherwise, these scholars found that the illness increase burdensome and intensified the levels of stress towards family caregivers. With long hours of caregiving and overwhelming effort dedicated to managing and support stroke patients, it is undoubtedly that caregivers are more likely to be at risk for psychological distress. This qualitative research study will explore thoroughly on the challenges faced, strategies used and requirements needed to improve the lives of family caregivers of stroke patients.

The main aim of this research study is to promote the psychological health awareness of stroke family caregivers. To achieve the main goal of this study below are the listed objectives:

- To identify the issues faced by stroke family caregivers by conducting a semi-structure interviews.
- To recognize the experiences and coping mechanisms used by family caregivers when dealing with psychological issues for example, stress, anxiety and depression.
- To explore what are the needs and recommendations suggested by family caretakers with the purpose of providing helpful information for readers, especially family caregivers whom are dealing with psychological problems.

2. Method

The research methods that were used to conduct this research study a qualitative-based design with descriptive phenomenology approach using semi-structure interviews. Descriptive phenomenology methods are commonly used to collect data in social science studies mainly in medical and health research areas (Davidsen, 2013).

2.1 Participants and Research Sampling

There are a total of six participants, three males and three females who were recruited using snowballing sampling. This research study requires family caregivers that have been giving care to stroke patients for more than 3 years, this is due to the long-term caregiving experience of the family caregivers. On the other hand, professional caregivers such as nurses, doctors, therapists, teachers, and specially trained volunteers will not be included in this study, mainly because the study focuses on non-paid and non-health professional family caregivers who provide daily care to stroke patients at their own residence.

2.2 Pilot Study

A pilot study was carried out in this research study to ensure all the interview questions were valid and reliable for the actual study. The pilot study consisted of two participants, a male, and a female, which were recruited using snowballing sampling.

3. Results

3.1 The Psychological Issues Experienced

Many of the participants emphasize 'depressed' as the main form of psychological challenges they experience while giving care:

"Oh! Many times to be honest! I often feel depressed and stressing out over everything and before I experience suicidal thoughts, mostly because I couldn't accept where I am now..." (Informant 1)

"...I don't know like I feel depressed at some point...seeing my mother like this, how I am judged by my other family members, how I spend most of my time for my mother even though I am married..." (Informant 2)

"Ehh always and only god knows, I feel stress, headache, feeling uneasy, depressed after years of giving care...." (Informant 3)

3.2 Other challenges faced by caregivers

a) Lack of other family support

Researcher discovers majority of the participants required their other family members to help and support them doing their daily caregiving routine. However, in some cases researcher also learned that some of the participants have no one to rely on when providing care to their stroke family members:

"...because now both my children are married it's hard for them to take care of their mother so it's just me..." (Informant 3)

Three of the participants shares that they suffered from muscle pain and backache from giving care to their family members:

"...I do experience back ache and muscle sore from carrying my dad to his bed or to his wheelchair, imagine having to do this daily..." (Informant 1)

"...sometimes I feel like I can't stand it because my back hurts carrying her to the bed to the chair and to the dining table...." (Informant 3)

"... her body is getting stiff too lately so it's difficult to carry her around my body ache too..." (Informant 2)

b) Financial needs

Another rising issue stated by family caregivers in the actual study was the financial challenges that they experienced. Daughters from the interview session express their concerns on financial support:

"...perhaps an allowance if possible, travel allowance to be specific for gas, kitchen groceries, I believe it is not just me, but most caregivers in Brunei we are unemployed and rely on pension money or financial support from other family members..." (Informant 1)

"...financial issues sometimes, I mean there's a lot to be spent on, like diapers, milk, medication from private clinic and his necessity like sleeping pad, shampoo..." (Informant 4)

c) Transportation problems

Another issue that was raised was transportation problem, one daughter expressed her worries on not having any transportation to bring her grandfather for his hospital appointment:

“...I believe they think that we are lazy to go, but we don’t have any transport, my mom is working, we only have one car, I couldn’t afford to booked rental cars too....” (Informant 4)

d) Sleep deprivation

In the findings, researcher also found two participants having trouble to sleep after many hours of giving constant care to their stroke family members:

“...I can’t sleep well at night I kept having muscle pain and back ache, but I am thankful to have my mom here with me for emotional support...” (Informant 1)

“I’m having difficulty to sleep at night, even during the day, I think too much, I’m always worried, but most of the time it was just about taking care of my father and thinking about what my future holds...” (Informant 5)

e) Emotional issues

Similar to the main psychological issues, 4 out of 6 participants in the actual study express their feelings deeply during interview while describing the issues that they experience:

“...like seeing my sibling they are working, having children, when will it be my time? I am the eldest I want to be happy too, I am 36 years old now and I feel like I’m still figuring out what to do with life” (Aminah)

“...the most challenging part is usually my in laws or my other families, they tend judge me...like I don’t have any children because I am stress taking care of my mother, that I am not working and always depend on my husband’s money and all sometimes that actually drains me, uh.... Drains my energy” (Mariam)

f) Effect relationships with family

Similar to the findings in the pilot study another main issue is how caregiving affect family caregivers of stroke patients to have issues with their other family members:

“.... I don’t know like I feel depressed at some point especially when I fought with my husband if he doesn’t understand that I have to do something for my mom...” (Informant 2)

3.3 Coping Mechanism Practiced by Family Caregiver in Reducing Psychological Issues

In the findings from the actual study interviews, participants mentioned they mostly rely on religious support, problem-solving skills, outdoor activities, medication, socialize with others, and having self-time:

“I pray, recite prayers and make myself busy doing chores, I think it is important not to leave our prayers too because that is the only time you can express all your feelings of burden to Allah” (Informant 1)

“I usually cook when I’m stressed, I watch Netflix with my mom... talk to my sister... video call with my siblings...” (Informant 2)

3.4 The needs for Family caregivers to improve their well-being as a Caretaker

- Family support

“Alright for me... family, if there’s no family support it will make the caregiving experience more challenging.” (Informant 2)

“...I think that it is important to have family around, even if they have their own lives, be more considerate to your elderly parents, be more understanding.” (Informant 3)

- Self-time

“I think what we need as a caregiver is time for ourselves, I don’t know but ever since I give care to my dad I barely have time for myself, he became my priority” (Informant 1)

“For me... making an effort is important, not just for the person you taking care of but make an effort to focus on your own health too, eat healthily, do exercise...” (Informant 3)

- Awareness

‘...as a caregiver I think it is important for other people to understand that it is not easy doing what we do daily, and I think your study is unique because you are making an effort to share our voices that are often ignore by many...’ (Informant 2)

- Intervention programme and counselling services

“I think it would be a miracle if Brunei were to have a form of community services especially for us caregivers, I believe we can learned from each other to ease off our burden...” (Informant 2)

“ I think what I really need is counselling, I really want to figure out ways on how to better myself, not to get overstress on little things...” (Informant 4)

4. Discussion

From the results of the findings, it is clear that psychological issues (stress and depression) experienced by family caregivers of stroke survivors do influence their caregiving behaviour. According to Dr. Teri Kennedy, who specialized in the health risks for family caregivers at Arizona State University, the feeling of depression and stress are common among caregivers especially among younger adults or adults themselves as they are more prone to low self-esteem, lack of social support and personal time (Kennedy, 2016).

There are many other challenges experienced by family caregivers apart from psychological distress, this includes the seven recorded findings such as lack of other family support, physical pain, financial needs, transportation problems, sleep deprivation, emotional issues, and effect relationship with other family members. Similar to Bevans and Sternberg’s research study on caregiving burden and health effects of family caregivers of chronic patients, the challenges that are highly agreed on were sleep deprivation, financial issues, lack of strong support system and intense caring and over-dependency (Bevans & Sternberg, 2012).

Family caregivers, especially the long-term family caretakers who dedicated their time and energy to providing care to chronic patients at home are no exception to receiving full support from different groups of people, especially from medical practitioners and society. It is also important that family caregivers are able to find coping strategies that could help them in their daily caregiving routine. For instance, as mentioned in the result findings above, acceptance, spiritual support, problem-solving skills, medication, making an effort for the family caregiver’s own health, and self-time became some of the strategies that family caretakers believe would help them to survive in the long run. In a country such as the United States of America, scholars such as William et al. (2014) found that not only do family caregivers in Toronto need their family support in caregiving but formal supports were also imperative for family caregivers such as planning ahead, joining intervention programme and promote awareness.

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The Effect of Self-Efficacy Beliefs of School Administrators on Sustainable Leadership Characteristics

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Abstract

In today's world, where material and spiritual resources are consumed much faster, different leadership roles of school administrators come to the fore in the success and effectiveness of schools. One of these leadership roles is sustainable leadership characteristics. In this research, the effect of school administrators' self-efficacy beliefs on sustainable leadership characteristics was examined. 615 school administrators (238, 38.7% principal, 377 61.3% vice principal) and 883 teachers who work in state primary, secondary and high schools in Turkey participated in the research voluntarily. In the research, a self-efficacy scale was applied to school administrators so that it could be possible to determine the self-efficacy beliefs of school administrators. The sustainable leadership characteristics of the school administrators were tried to be determined by asking the teachers working in the same school about the sustainable leadership characteristics of the school administrators. According to the research findings, it was determined that there is a statistically significant relationship between school administrators' self-efficacy beliefs and sustainable leadership characteristics. This significant relationship has led to the conclusion that the self-efficacy belief of school administrators can be considered as a predictive variable (20%) of sustainable leadership characteristics. Suggestions were made to strengthen the sustainable leadership characteristics of school administrators and to work with different variables.

Keywords: School Administrator, Self-Efficacy, Sustainable Leadership, Teacher

1. Introduction

The leadership roles and characteristics of school administrators, who have a key role in schools, have an important place regardless of the circumstances. The efforts of school administrators are effective on issues such as the success of schools, teachers' job satisfaction and motivation, student learning (Uygun, 2021), students' attendance and motivation, and parent satisfaction. Behind the success of school administrators, their self-confidence and belief in what they can do can also be effective. Self-efficacy is an issue that is one of the concepts defining this self-confidence and belief, and as recently been the subject of many studies in the field of education (Brinkmann et al., 2021; Chang et al., 2022; Choong et al., 2020; Debes, 2021; Greco et al., 2022; Habayib & Cinamon, 2022; Hesbol, 2019; Liu & Hallinger, 2018; Papaioannou, 2022). Self-efficacy of school

administrators is a concept that has an impact on their leadership behaviors (Djourova et al., 2020; Gulmez & Negis Isik, 2020; Hallinger et al., 2018; Schrik & Wasonga, 2019; Skaalvik, 2020).

School administrators' self-efficacy continues to be examined (Goddard et al., 2021; Hamilton, 2020; Vasquez, 2021). Because the nature of the profession is changing and thus the concept of professional competence is changing (Fisher, 2020). School administrators' self-efficacy beliefs can predict teacher efficacy and student success (Goddard et al., 2021). Democratic school principals do not act alone to achieve success in education. They form teams at their school. One of these teams is the teams consisting of teachers. Teachers' motivation, excitement, job satisfaction and wishes are affected by the school principal's leadership behaviors. Shuti (2021), who conducted research at this point, examined the leadership practices of primary school principals in promoting sustainability by motivating teachers. At this point, the concepts of sustainability and leadership become important. Sustainability at the basic level, is about balancing the destructive relationships between human culture and the living world (Hawken, 2007, p. 135). In this context, growing population, increasing urbanization, increasing global economy and increasing use of natural resources have affected the sustainability demand over time (Cohen et al., 2016, p. 231). Sustainability also refers to the moral and spiritual understanding of living within the boundaries of natural systems and our relationships with the world and our relationship with each other (Burns, 2013, p. 166). On the other hand, it can be seen that sustainability, which attracts more and more attention in the literature, can also be defined as organizational approaches that provide a balance between short-term corporate goals and long-term corporate and social responsibility (Pearce et al., 2013, p. 248).

Like all organizations, sustainability is an important concept for schools. Educational institutions are seen as a tool for the sustainability problem of societies due to their role in producing and transmitting information (United Nations, 2012). Sustainability is on the agenda of administrators in schools because it requires school administrators to consider long-term survival. Only leaders and managers with sustainable leadership can effectively manage sustainability. The most effective way to transform an organization or institution into a sustainable one is the leadership ability of the person in charge of the institution (Covey, 1999; Drucker, 1999; Gerard et al., 2017, p. 116; Wong & Avery, 2009, p. 2). Therefore, the importance of sustainable leader and sustainable leadership is increasing day by day (Kalshoven et al., 2011, p. 53). Sustainable leaders are people who inspire actions towards a better world and are forced to make a difference by supporting these inspirations and increasing their awareness of the world around them (Visser & Courtice, 2011, p. 3). Sustainable leadership is a key force that affects change or continuity in the long run and it is the ability to realize that the organization must be intertwined with human values in order to encourage sustainable development and change in a way that meets the working standards of an organization and it is a moral behavior (Bendell et al., 2017, p. 434; Grooms & Reid-Martinez, 2011; Hargreaves & Fink, 2006, p. 2). Countries in many parts of the world have accepted that schools need effective leaders and principals in order to provide the best possible education to their students (Bush, 2008, p. 1). Thus, the leadership practices of school principals become important in ensuring sustainability in school. Singh et al. (2019) stated that organizations' sustainability practices have a moderating role in the relationship between self-efficacy and workplace well-being.

In order to achieve school success, teacher motivation and student learning, the leadership characteristics of school administrators (sustainability leadership characteristics, discussed in this research) and the self-efficacy beliefs that are thought to affect these leadership behaviors are needed. In this research, this need, which is considered important for schools, has been examined.

1.1. Self-efficacy Beliefs of School Administrators

Competence is the readiness of a person in terms of knowledge, skills and abilities to perform a job or the ability to effectively maintain an unscheduled sequence of actions (Ajzen, 2002). While abilities express experiences that can be proven because they come from the past, self-efficacy expresses thoughts, effort and belief about the ability to coordinate and perform actions and behaviors that can help a person improve individual, organizational and social performance (Ajzen, 2002; Judge et al., 2004; Bandura, 1977; Gysbers, 2001; Rich, 2015; Zimmerman, 2000). People with a high perception of self-efficacy are not intimidated by the obstacles or failures

they face and gain their self-confidence more quickly (Pajares & Schunk, 2001; Scott & Davis, 2015). Bandura (1994) evaluated perceived self-efficacy as people's beliefs about their ability to produce.

The self-efficacy belief of school administrators, and in particular school principals, is to be aware of skills such as supporting employees, guiding, and increasing the number and variety of activities in order for the school to show higher performance (Baltaci, 2017; Rich, 2015; Gysbers, 2001). Tschannen-Moran & Gareis (2004) examined school principals' self-efficacy in three dimensions: *managerial*, *instructional*, and *ethical/moral self-efficacy*. *Managerial self-efficacy* is the belief of school principals that they can do the ongoing or routine work of the school. *Instructional self-efficacy* is the belief of school principals that they can do different kinds of jobs and skills such as educational activities within the school, guiding teachers and motivating students. *Ethical/moral self-efficacy* is the belief of school principals that they can bring ethical behaviors such as reducing conflicts within the school, developing positive personality traits in teachers and students, providing a positive school culture and student discipline (Bandura, 1993-2009). Bandura (1994) mentioned that people with a high sense of efficacy see difficult tasks as challenges to be overcome rather than threats to be avoided. When this point of view is considered in terms of school principals, school principals may see the threatening situations they encounter as a challenge they can control.

High self-efficacy beliefs of school administrators and, indeed, school principals are very important for the success of students, teachers and the school (Chacon, 2005; Ghati & Yaghi, 1997; Henson, 2001). The satisfaction of students and teachers from school also depends on the attitudes and self-efficacy of school principals (Caprara et al., 2006; Caprara & Steca, 2005; Vecchio et al., 2007; Telef & Ergun, 2013). When principals with high self-efficacy make more efforts for the development of their institutions, other employees and students who see this as behavioral and academic success, they will also try to improve the achievements of both the school and themselves (Dembo, 2004; Tschannen-Moran & Gareis, 2004; Tschannen-Moran & Woolfolk-Hoy, 2002).

1.2. Sustainable Leadership of School Administrators

Regardless of the period, sustainable leadership is always the type of leadership sought in educational institutions. Education is a long-term process and its output is obtained in the long term. For this reason, the need for certain types of leadership, especially in educational institutions, is becoming more obvious. Sustainable leadership is seen at the center of the renewal of schools (Ketikidou & Saiti, 2022). Inadequate leadership practices can pose risks for both leaders and followers (Škerlavaj, 2022). 'Providing inclusive and equitable quality education and promoting lifelong learning opportunities for all' are among the 17 goals set by the United Nations in the 2030 Agenda for Sustainable Development (United Nations, 2015). To achieve this goal, schools and school administrators have important roles and duties in sustainable leadership dimensions (administrative, economic, cultural and social). Sustainability leadership roles of school administrators, especially in the social and economic dimension, come to the fore in creating egalitarian educational and lifelong learning opportunities. Hargreaves & Fink (2006) emphasized the principles of sustainable leadership in schools by expressing the principles of inclusiveness (inclusion of everyone in the learning journey), diversity and fairness. While examining the sustainable leadership of school administrators, especially the sustainable leadership roles, behaviors and characteristics of school principals were studied more frequently. In this sense, there are different studies examining this role, behavior and characteristics of educational administrators (Ishak & Hussin, 2022; Jenkins, 2021; Leal Filho et al., 2020; Miller et al., 2019; Yaakob et al., 2020). When the developed measurement tools are evaluated, the dimensions of *ethical-social responsibility*, *change*, *innovation-profitability*, *culture-human resources* (Mirali Yangil & Dil Sahin, 2019) and *strategic distribution*, *deep learning*, *environmental-social responsibility* and dimensions such as *development of human resources* (Dagdeviren-Ertas & Ozdemir, 2021) were also encountered in the sustainable leadership dimensions of school principals. In this research, the sustainable leadership characteristics of school administrators in the *administrative*, *economic*, *cultural* and *social* dimensions were examined.

1.3. The Aim of Research

The aim of this research is to determine the effect of school administrators' self-efficacy beliefs on sustainability leadership characteristics. Self-efficacy beliefs of school administrators were examined by their self-evaluation, and sustainability leadership characteristics were examined by teachers' evaluations of school administrators.

2. Research Method

Since the research aims to determine the effect of school administrators' self-efficacy beliefs on sustainability leadership characteristics, the correlational research design conducted with a quantitative approach was preferred. The correlational design examines the degree of correlation between two or more quantitative variables using a correlation coefficient (Fraenkel et al., 2012, p.331). Fraenkel et al., (2012) stated that the main purpose of correlational research is to clarify the understanding of various phenomena by defining the relationships between variables. In this research, first of all, the relationship between self-efficacy belief and sustainable leadership characteristics was defined and it was tried to examine what these two variables mean for each other. Then, the effect of self-efficacy belief on sustainability leadership was examined.

2.1. Universe and Sample

The universe of the research consists of 872 school administrators and 8290 teachers working in public schools in the provinces and districts of Osmaniye, Turkey. The sample of the research was determined in 2 stages. In the first stage, the number of all schools (primary school, secondary school and high school) in Osmaniye province was determined. Each school was accepted as a cluster, and a distribution of participants was created in such a way that sufficient number of participants were taken from each school by cluster sampling method. In the second stage, the sample size of school administrators and teachers from each school was determined by Cochran (1977)'s sample size determination formula (Barlett et al., 2001). According to the table developed by Barlett et al., (2001, p. 48), there is a need for 382 school administrators and about 613-623 teachers with a minimum return rate of .05 margin of error. Based on this information, 615 school administrators and 883 teachers were reached from each school on a voluntary basis. Thus, the research consists of data from 615 school administrators and 883 teachers from 238 schools.

Table 1: Demographic data of school administrators participating in the research

Variables		Province			District			Total
		Primary school	Secondary school	High school	Primary school	Secondary school	High school	
Gender	Female	13	11	20	19	21	23	107
	Male	82	44	71	130	108	73	508
School administrator	Principal	37	24	25	68	51	33	238
	V. Principal	58	31	66	81	78	63	377

It can be determined by examining Table 1 that 107 (17.4%) of the school administrators participating in the research were female and 508 (82.6%) were male, 238 (38.7%) of the school administrators were principals and 377 (61.3%) were vice principals.

Table 2: Demographic data of the teachers participating in the research

Variables		Province			District			Total
		Primary	Secondary	High	Primary	Secondary	High	
Gender	Female	95	61	67	85	58	57	423
	Male	93	79	85	80	69	63	460

Teacher	Total	188	131	152	165	127	120	883
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If Table 2 is examined, it is obvious that 423 (47.9%) of the teachers participating in the research are female, 460 (52.1%) are male, 188 (21.3%) of the teachers work in primary schools in the city center, 131 (14.8%) are in secondary schools in the city center, 152 (17.2%) of them work in high schools in the city center, 165 (18.7%) of the teachers participating in the research work in primary schools in the district center, 127 (14.4%) work in secondary schools in the district center and 120 (13.6%) of them work in high schools in the district center.

2.2. Data Collection Tools

In the research, all previous studies on the sustainable leadership of school administrators were examined, the scales developed on the subject were scanned, and the Sustainable Leadership Scale developed by Cayak & Cetin (2018), which was thought to be developed in accordance with the purpose of the research, was used as the second data collection tool in the research. In addition, in order to determine school administrators' self-efficacy beliefs in the research, Principals' Sense of Efficacy Scale, which was developed by Tschannen-Moran & Gareis (2004) and translated into Turkish by Baltaci, (2020) was used as the first data collection tool in the research since it was thought to be suitable for the purpose of the research. In order for the scales to be used as a data collection tool in the research, the necessary permissions were obtained by e-mail from the researchers who developed the scales.

2.3. Self-Efficacy Beliefs Scale of School Administrators

The Principals' Sense of Efficacy Scale, which was developed by Tschannen-Moran & Gareis (2004) and translated into Turkish by Baltaci, (2020), was used as a data collection tool in the research in order to examine the self-efficacy beliefs of school administrators. In terms of the scale as a whole, Cronbach's Alpha (α) value was determined to be 0.88 and the composite reliability coefficient was determined to be 0.92. The items of the scale, which consists of 18 items, are in the 5-point Likert type as (1) Fairly Insufficient, (2) Insufficient, (3) Normal, (4) Sufficient, and (5) Fairly Sufficient. After the analysis, it was decided that the school administrators' self-efficacy beliefs scale could be used as a valid and reliable scale consisting of 3 factors (managerial, instructional and ethical/moral).

2.4. Sustainable Leadership Scale

The Sustainable Leadership Scale developed by Cayak and Cetin (2018) had 4 sub-dimensions and the sub-dimensions were named (administrative sustainability, economic sustainability, cultural sustainability and social sustainability). As a result, the Sustainable Leadership Scale, consisting of 4 sub-dimensions and 36 items, explaining 66.77% of the total variance was formed. The scale is 5-point Likert type and is graded as (1) Strongly disagree (2) Disagree (3) Undecided (4) Agree (5) Totally agree. A minimum of 36 points and a maximum of 180 points can be obtained from the 36-item scale. The high score of the participant from the scale indicates that the school administrators perceive the sustainable leadership behavior as high.

2.5. Data Analysis

In the analysis of the data, first of all, descriptive analysis of the scale, which is one of the qualitative data analysis types, was made and it was evaluated whether the sub-dimensions of Local Sustainability, Economic Sustainability, Cultural Sustainability and Social Sustainability were suitable for comparison. Then, the sustainable leadership levels of school administrators related to each dimension were evaluated. Finally, the general sustainable leadership status of school administrators was evaluated.

By entering the data into the SPSS 20 analysis program, it was determined that the data were continuous and showed a normal distribution by evaluating the distribution of the variables for analysis. Then, before calculating

the correlation coefficient, it was determined that the relations between the sub-dimensions of the scales were linear by looking at the scatter plots, and it was decided to make the relations between the sub-dimensions of the scales using Pearson Correlation analysis. In the research, the relationships between school administrators' self-efficacy beliefs and sustainable leadership characteristics were examined by correlation analysis in order to determine the relationship, if any, between the overall scales and its sub-dimensions, and the direction and degree of the relationship. Scales' validity and reliability analyzes were made and stated in the relevant section (data collection tools).

3. Results

The results of the research were determined for the purpose of the research. First of all, school administrators' self-efficacy beliefs were tried to be determined in terms of managerial, instructional and ethical/moral sub-dimensions of the scale. For this, the scores given to the school administrators' self-efficacy perception scale were analyzed. Secondly, in order to determine the opinions of teachers about their own school administrators, the sustainable leadership scale was analyzed and finally the scores given to the two scales were compared. It was determined that the data were continuous and showed a normal distribution.

3.1. Sustainable Leadership Characteristics of School Administrators (Correlation Between Sub-Dimensions)

The relationships between the sustainable leadership sub-dimensions of school administrators are given in Table 3.

Table 3: Correlation between the sub-dimensions of school administrators' sustainable leadership characteristics

	Economic		Cultural		Social		Total Sustainability	
	r	p	r	p	r	p	r	p
Administrative	0.08	0.01*	0.07	0.00*	0.23	0.00*	-0.14	0.67
Economic	-	-	0.10	0.00*	0.18	0.00*	0.00	0.82
Cultural	-	-	-	-	-0.10	0.00*	0.00	0.83
Social	-	-	-	-	-	-	0.04	0.16

*p<0.05

According to Table 3, positive and low level of correlations were found between administrative and economic ($r=0.08$, $p=0.01$), between administrative and cultural ($r=0.07$, $p=0.00$), between administrative and social ($r=0.23$, $p=0.00$).

3.2. Self-efficacy Beliefs of School Administrators (Correlation Between Sub-Dimensions)

Pearson Correlation Coefficient values were calculated to determine whether there is a relationship between the total score of self-efficacy belief and its sub-dimensions.

Table 4: Correlation between the total score and sub-dimensions of self-efficacy belief

	Instructional		Ethics - Moral		Total Self-efficacy	
	r	p	r	p	r	p
Managerial	0.06	0.10	0.00	0.91	0.09	0.01*
Instructional	-	-	0.29	0.00*	0.05	0.20
Ethics – Moral	-	-	-	-	0.10	0.00*

*p<0.05

According to table 4, there are positive and low correlations between managerial self-efficacy and total self-efficacy ($r=0.23$, $p=0.00$), instructional and ethical-moral, ethical-moral and total self-efficacy.

3.3. Correlation Between School Administrators' Self-Efficacy Beliefs And Sustainable Leadership Characteristics

The Pearson Correlation Coefficient between both variables was calculated to determine whether there was a significant relationship between the participants' total self-efficacy scores and their total sustainability levels. Table 5 shows this relationship.

Table 5: Correlation between total self-efficacy scores and self-efficacy sub-dimensions and total sustainability levels and sub-dimensions

	Managerial		Instructional		Ethics-Moral		Total Self-efficacy	
	r	p	r	p	r	p	r	p
Administrative	-0.04	0.91	0.38	0.00*	0.54	0.00*	0.07	0.06
Economic	0.01	0.73	0.10	0.01*	0.05	0.14	-0.04	0.25
Cultural	0.01	0.63	0.55	0.00*	0.18	0.00*	0.09	0.01*
Social	0.05	0.21	-0.05	0.14	-0.03	0.34	-0.01	0.74
Total Sustainability	0.45	0.00*	-0.00	0.97	-0.01	0.68	0.13	0.00*

*p<0.05

According to the analysis results in Table 5, there are significant positive correlations between the administrative, economic and cultural sub-dimensions of sustainable leadership and the instructional sub-dimension of self-efficacy belief.

Table 6: Correlation between school administrators' self-efficacy beliefs and sustainable leadership characteristics

	Sustainable Leadership	
	r	p
Self-Efficacy	0.13	0.00*

*p<0.05

According to the result of the correlation analysis shown in Table 6, a low and positive relationship was found between total self-efficacy and total sustainable leadership.

3.4. The Effect of School Administrators' Self-Efficacy Beliefs on Sustainable Leadership Characteristics

According to the results of the correlation analysis, it was thought that self-efficacy was effective in sustainable leadership and that self-efficacy could be a predictor variable in terms of sustainable leadership. Therefore, multiple linear regression analysis was performed between these variables, with the total score of sustainable leadership and its sub-dimensions as dependent variables, and self-efficacy and sub-dimensions as independent variables.

Table 7: Multiple regression analysis showing the effect of total self-efficacy and its sub-dimensions on total sustainability

Variable	B	Standard Error	β	t	p
Constant	86.53	7.89	-	10.96	0.00*
Managerial	1.78	0.14	0.44	12.28	0.00*
Instructional	0.15	0.17	0.03	0.91	0.36
Ethics - Moral	-0.17	0.17	-0.03	-1.02	0.30

Total Self-efficacy	0.18	0.07	0.09	2.59	0.01*
Total Sustainable leadership	0.21	0.06	0.17	3.42	0.00*

R=0.46, R² (Adj.)= 0.20
F= 41.46, p=0.00*

*p<0.05

From the analysis results in Table 7, when the total self-efficacy and sub-dimensions are considered as a whole, it is understood that the model is significant ($p<0.05$). In addition, it was understood that total self-efficacy and managerial sub-dimension were significantly predictive variables of total sustainable leadership. Accordingly, it can be said that 20% of the change in total sustainable leadership is due to self-efficacy. This finding shows that school administrators' self-efficacy beliefs have a predictive effect on sustainable leadership characteristics.

Table 8: Multiple regression analysis showing the effects of total self-efficacy and its sub-dimensions on the Administrative sub-dimension of sustainability

Variable	B	Standard Error	β	t	p
Constant	18.15	4.40	-	4.12	0.00*
Managerial	0.02	0.08	0.00	0.25	0.79
Instructional	0.67	0.09	0.24	7.11	0.00*
Ethics-Moral	1.31	0.09	0.46	13.60	0.00*
Total Self-efficacy	0.01	0.03	0.01	0.35	0.72

Administrative
R= 0.59, R² (Adj.)= 0.34
F= 81.63, p=0.00*

*p<0.05

From the analysis results in Table 8, one can understand that self-efficacy and its sub-dimensions were effective in the Administrative sub-dimension of sustainable leadership and the model was significant ($p<0.05$). Instructional and Ethics-Moral sub-dimensions of Self-Efficacy are the predictive variables for the Administrative leadership sub-dimension. It can be said that 34% of the change in the administrative leadership sub-dimension stems from the Instructional and Ethics/Moral leadership sub-dimensions.

Table 9: Multiple regression analysis showing the effects of total self-efficacy and its sub-dimensions on the Economic sub-dimension of sustainable leadership

Variable	B	Standard Error	β	t	p
Constant	37.49	3.48	-	10.77	0.00*
Managerial	0.04	0.06	0.02	0.63	0.52
Instructional	0.16	0.07	0.09	2.24	0.02*
Ethics - Moral	0.06	0.07	0.03	0.86	0.38
Total Self-efficacy	-0.04	0.03	-0.05	-1.41	0.15

Economic
R= 0.12, R² (Adj.)= 0.00
F= 2.28, p=0.05

*p<0.05

From the analysis results in Table 9, it is possible to understand that self-efficacy and its sub-dimensions did not have a significant effect on the Economic sub-dimension of sustainable leadership (R_2 (Adj.)= 0.00, $p=0.05$).

Although the Instructional sub-dimension of self-efficacy is the predictor variable for the economic leadership sub-dimension, the model is not significant when considered as a whole.

Table 10: Multiple regression analysis showing the effects of total self-efficacy and its sub-dimensions on the Cultural sub-dimension of sustainable leadership

Variable	B	Standard Error	β	t	p
Constant	-4.80	2.33	-	-2.05	0.04*
Managerial	0.06	0.04	0.04	1.44	0.14
Instructional	0.78	0.05	0.55	15.62	0.00*
Ethics - Moral	0.02	0.05	0.01	0.47	0.63
Total Self-efficacy	0.03	0.02	0.06	1.78	0.07

Cultural
 $R = 0.56$, R^2 (Adj.) = 0.31
 $F = 70.17$, $p = 0.00^*$
 $*p < 0.05$

From the analysis results in Table 10, one can see that self-efficacy and its sub-dimensions were effective in the Cultural sub-dimension of sustainable leadership and the model was significant ($p < 0.05$). It can be said that the instructional belief sub-dimension of self-efficacy is a predictive variable for the cultural leadership sub-dimension. According to the model, it can be said that 31% of the change in the cultural leadership sub-dimension is due to the Instructional belief sub-dimension.

Table 11: Multiple regression analysis showing the effects of total self-efficacy and its sub-dimensions on the Social sub-dimension of sustainable leadership

Variable	B	Standard Error	β	t	p
Constant	17.6	2.22	-	7.96	0.00*
Managerial	0.04	0.04	0.04	1.18	0.23
Instructional	-0.05	0.04	-0.04	-1.13	0.25
Ethics - Moral	-0.02	0.04	-0.02	-0.52	0.59
Total Self-efficacy	-0.00	0.02	-0.01	-0.32	0.74

Social
 $R = 0.07$, R^2 (Adj.) = 0.00
 $F = 0.96$, $p = 0.42$
 $*p < 0.05$

From the analysis results in Table 11, it can be figured out that self-efficacy and its sub-dimensions did not have a significant effect on the Social sub-dimension of sustainable leadership (R^2 (Adj.) = 0.00, $p = 0.42$).

4. Discussion, Conclusion and Recommendations

In this research, the effect of school administrators' self-efficacy beliefs about their profession on sustainable leadership characteristics was examined. In accordance with this purpose, two main results emerged. First, *a statistically significant relationship was found between school administrators' self-efficacy beliefs and sustainable leadership characteristics*. Second, *school administrators' self-efficacy beliefs have a predictive feature on sustainable leadership characteristics. This predictiveness stems from the instructional and ethical/moral beliefs of school administrators*. The specific result of the research is that *the instructional and ethical/moral beliefs of school administrators emerge as predictive variables on administrative leadership characteristics, and instructional beliefs alone on cultural leadership characteristics*. When the relationships

between the sub-dimensions of the scales were examined, no significant relationship emerged between some dimensions (such as managerial belief-economic, cultural and social leadership).

When the relationships were evaluated in terms of the sub-dimensions of the scales, a positive, moderate and significant relationship was found between the instructional self-efficacy beliefs of school administrators and their cultural leadership characteristics. Many studies reveal that people's self-efficacy beliefs affect their professional performance in terms of their knowledge, skills, attitudes and value judgments while performing their profession (Kotil, 2010). School administrators, who have responsibilities such as achieving the pre-planned instructional goals, supervising the instructional activities of teachers, guiding and directing the employees in the education process, should also have leadership characteristics. Instructional self-efficacy of school administrators can affect their performance and effort in school. In some studies, it has been determined that school principals with strong self-efficacy beliefs feel more confident in planning the teaching process, providing in-school instructional organization, maximizing the benefit of instructional activities, and creating sustainable learning environments for students and teachers, especially lifelong learning (Milner & Woolfolk Hoy, 2002). It has been determined that principals with a high sense of self-efficacy create a more instructional, encouraging and fairer environment in their schools (Allinder, 1995). In some studies, it has been concluded that there are mostly significant relationships between the instructional self-efficacy behaviors of school principals and the learning outcomes at school (Artino, 2012, p. 9; Holzberger, Philipp & Kunter, 2013; Tschannen-Moran & McMaster, 2009). In addition, it has been determined that students' academic success is higher in schools where principals are perceived as strong instructional leaders (Polat, 1997).

In the research, it has been determined that *there is a low, positive and statistically significant relationship between the ethics/moral beliefs of school administrators and their general self-efficacy beliefs*. Educational institutions undertake the most important responsibility in terms of the development of moral values and shaping the society according to ethical principles (Minaz, 2018). The moral values of school principals, whose main purpose is to positively affect the educational activities of the employees, make it easier for the school to reach its moral goals by reflecting it on the behavior of all employees and students (Helvaci, 2010). The ethical and moral attitudes of school principals will determine the boundaries of the concepts of justice and equality in various decisions and practices at school (Msila, 2012). Because the ethical behaviors of school principals affect the employees' sense of justice, sense of belonging, performance and their contribution to the realization of the school's goals (Akatay et al., 2016). School principals who have high ethical self-efficacy beliefs encourage each employee to develop themselves without discrimination in order to create equal conditions for employees and to achieve a certain level of success at school (Cheers-Young, 2014). On the other hand, school principals who exhibit high ethical behaviors in addition to institutional impact and efficiency also improve and change the social image of the school (Kim & Kim, 2013). In a study by McCann and Sweet (2014) with principals, it was determined that principals with high moral personality acted according to universal ethical principles and their self-efficacy beliefs were also quite high.

In the research, it has been determined that *there is a positive, moderate and significant relationship between the managerial beliefs of school principals and their total sustainable leadership characteristics*. A sustainable leader is a person who interacts effectively with the employees who influence her/him and contributes to the mutual enrichment of effective ideas and successful practices for better quality education and sustainable improvement (Hargreaves & Fink, 2004). Jim Collins (2001) who is an influential writer on leadership states in his book *Good to Great*, based on his research on leadership, that managerial leadership capacities of principals develop in five sub-dimensions. These include senior managerial knowledge, a guiding team member, a competent principal, and an effective executive and manager (Collins, 2001; Davies, 2007). It is necessary for school principals to have these five sub-dimensions in order to perform well in management and to contribute to the achievement of the school's goals. In fact, the sustainable leadership strategy is administratively largely based on the school's ability to become a better, faster, more flexible and more adaptable organization (Dervitsiotis, 2005). As a result, school principals accept creating cooperation, influencing employees, achieving results, predicting and evaluating long-term educational processes as the basis of a sustainable leadership transformation (Tideman, Arts & Zandee, 2013).

In the research, it has been determined that *there is a low, positive and significant relationship between the instructional beliefs of school administrators and their economic leadership characteristics. However, it has also been found that school administrators' self-efficacy beliefs do not have a significant effect on their economic and social leadership characteristics.* It is obvious that the quality of education has an impact on the quality of societies' political, economic, social, and cultural development (Cakmak, 2008). The modern economic climate, increasing global integration, requires an interconnected, complex, holistic and organic leadership strategy (Crews, 2010). In the new world order, where the business world, economy, education, environment and society are integrated and interconnected, school principals should harmonize the management of education processes with economic expectations by joining up the dots (Kantabutra & Avery, 2011; Tideman et al., 2013). It is recommended by experts that school principals adopt a range of management skills to achieve an appropriate balance between educational, social, economic and environmental phenomena (Avery & Bergsteiner, 2010). In this respect, it is expected from school principals to have knowledge about sustainable leadership and management practices in order to ensure institutional sustainability in economic terms. In this regard, thanks to the principals, the educational efficiency and performance of the school will increase and the guidance methods that can lead to higher and long-term social and economic advantages can be applied in the school.

Principals of schools should have a style of how their subordinates perceive them, affect their subordinates' behaviors and attitudes towards the school, and also what kind of leadership style they adopt in their social relations (Canbolat, 2016). Individuals' social perceptions and socialization levels increase with participation in activities in social life, and many individuals can be involved in social life at the rate of their social perception level (Atalay et al., 2013). Leadership is traditionally seen as an openly interpersonal phenomenon demonstrated in the interaction between leaders and subordinates, and effective leadership behavior depends on the leader's ability to solve complex social problems that arise in organizations (Mumford et al., 2000). Hence, in addition to managing their own behaviors in terms of social relations, the school administrator should also direct the behaviors and social skills of other employees in the school in a positive way in terms of increasing institutional productivity.

According to today's education mentality, school administrators and especially school principals should be open to change and have many traits such as being creative, inspiring, investigative, guiding, tolerant, motivating and directing (Gul & Sahin, 2011). School administrators with strong self-efficacy beliefs will contribute to creating strong schools with their sustainability leadership skills. Finding a statistically significant relationship between school administrators' self-efficacy beliefs and sustainable leadership characteristics in our research may create a route for researchers who want to study on this subject to conduct a structural modeling research. By examining other variables (mediator variables) that may affect school administrators' self-efficacy beliefs, researchers can offer a perspective on strengthening their sustainable leadership characteristics.

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School Administrators' Behaviors in the Professional Belonging of Teachers

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Abstract

In this study, it is aimed to examine the behavior of school administrators in the context of teachers' professional belonging. The research was designed in the phenomenology pattern in the qualitative research method. In the study, 25 teachers working in the province of Eskişehir formed the study group. A semi-structured interview form was used to examine the behavior of school administrators in the context of teachers' professional belonging. In the collection of data, face-to-face interviews were conducted with the participants, and the analysis of the data was carried out in accordance with the content analysis method. According to the findings, teachers' views on the behaviors of school administrators, which increase teachers' professional belonging, are gathered under four themes: administrative behaviors, effective communication, behaviors based on personality traits and behaviors towards meeting social needs. The behaviors of school administrators, which reduce the professional belonging of teachers, are grouped under three themes: managerial behaviors, negative communication and behaviors based on personality traits. When the research findings are evaluated in general; It is seen that the behaviors of school administrators have an important place in the professional belonging of teachers. The fact that the teaching profession is a profession that requires great dedication reveals the importance of the concept of professional belonging, which is one of the important factors affecting the organizational behavior of the individual.

Keywords: Professional Belonging, Teacher, School Administrator, School Principal, Belonging

1. Introduction

The success of education systems is measured by the effectiveness of the school. Effective schools have a strategic role in the formation of a strong education system (Akan, 2007). An effective school can be defined as a school where students' cognitive, affective, psychomotor, social and aesthetic developments are supported in the most appropriate way and an optimum learning environment is created (Özdemir, 2000).

One of the important factors affecting student success is the quality of the teacher. There are many studies on the effect of teacher quality on student achievement (Akbaba Altun, 2009; Bedi & Marshall, 1999; Darling-Hammond, 2000; Rivkin, Hanushek, & Kain, 2005). One of the resources that educational organizations most

need is qualified workforce. However, it is also important for employees to identify themselves with their profession and institutions, and to strive for the success of the institution, in addition to having certain qualifications. This situation necessitates the high level of professional belonging for the employees (Keskin and Pakdemirli, 2016, p.2585).

Occupational belonging refers to “the combination of all attitudes nurtured by various aspects of an individual's profession” (Erdoğan, 1996). The concept of professional belonging was first defined by Greenhaus in 1971. While Greenhaus (1971) defines professional belonging as “the gaining importance of the profession in the life of the individual”; Aranya, Pollock & Amernic (1981) defined it as “the relative power that an individual identifies with his occupation”.

Professional belonging is the main factor that increases and sustains the motivation and performance of employees in business life. From this point of view, it has gained importance in recent years for both the employee and the employer (Keskin and Pakdemirli, 2016, p.2585). One of the reasons that prompt the individual to work is the formation of a sense of belonging and identity in the individual (Aslan, 2001). The more an individual adopts the values and goals of the business organization and institution, or the more he or she feels belonging to the business organization and institution, the more willing he is to work for the benefit of that organization and institution (Ören et al., 2005, p.5; Sevinç & Şahin). , 2012, p.266).

Professional belonging is directly related to the professional life and quality of life of individuals and directly affects professional satisfaction (Özdevecioğlu & Aktaş, 2007). Belonging to the profession directly affects job performance (Lee et al., 2004). Professional belonging is extremely important in motivating an employee. The productivity of the employee can improve if he is motivated to work (Tella et al., 2007). Employees with high professional belonging are defined as those who have a strong belief in their profession, accept the aims of the profession, make an effort on behalf of their profession, and are willing to exist in the profession (Lord & DeZoort, 2001, p.6).

From the point of view of the teaching profession, it is very difficult for teachers to fully fulfill their duties and responsibilities without a high sense of belonging to their profession, considering the reasons such as the fact that teaching is a profession that requires great dedication, its responsibility is high, and it is in a very critical position in the rise of society. It is thought that a strong sense of belonging in the performance of the teaching profession will allow for an increase in performance as well as directly affect teachers' job satisfaction and professional satisfaction (Şenel, 2021).

School administrators' revealing their vision and goals within the scope of the school's mission with a sharing understanding and special behaviors with teachers and other employees is very effective in the formation and reinforcement of a sense of belonging in their subordinates and employees (Balci, 1993). The school principal needs to understand the thoughts, concerns, problems and expectations of the students and staff, who have many different characteristics such as cultural, ethnic origin, economic situation, and religion, and develop skills for the management of these differences (Balyer, 2012). It is difficult to say that the management behaviors that a school administrator will take without considering the characteristics of the teachers will increase the success of the school. The emotions experienced by the teachers as a result of the behaviors exhibited by the school administrators directly affect both his work performance in school life and his performance in daily life, and affect schools in an individual and organizational sense, positively or negatively (Argon, 2015).

School administrators have important duties to ensure that teachers are satisfied with the environment in which they work and to develop a sense of belonging. The most important of these is to try to integrate institutional and individual goals. The teacher's belief that he can achieve his individual goals improves his sense of belonging, enables him to identify with the institution and increases his efficiency (Karaköse, 2005). Behaviors of the school administrator can affect the teachers' performance in the educational process by having a positive or negative effect on the teachers and determine the degree of achievement of the school's goals. In a sense, this reflects the success level of the school (Yalçın, 2017).

In the literature, there are various studies on the professional belonging of teachers. Şenel (2021), who examined the perceptions of professional belonging of teachers in excess of norm in his study, concluded that the sense of professional belonging decreases as the year in which teachers are more than normative increases. Güler, Çıkrıkçı & Akçay (2020) found in their research that as teachers' perceptions of effective school increase, their perceptions of professional belonging also increase. Habegger (2007), on the other hand, concluded in his research that successful school principals increase the professional belonging of teachers through various activities. Aydınol & Üredi's (2020) study revealed that there is a significant difference between classroom teachers' sense of professional belonging and their professional satisfaction levels. When the studies on the subject are evaluated, it is possible to say that there are studies on the professional belonging of teachers. However, in the literature review, no research was found to determine the behaviors of school administrators, which are effective in the professional belonging of teachers. From this point of view, it is important to learn the behaviors of school administrators, which are effective in the professional belonging of teachers, in terms of the effectiveness of teachers.

Identifying the behaviors of school administrators, which are effective in teachers' professional belonging, and offering suggestions on this subject can contribute to increasing the effectiveness of teachers, thus improving student learning. In addition, it is thought that the results of the research are important in terms of determining the steps to be taken to increase teacher performance in reaching an effective school. With this research, it is expected to contribute to increasing the professional belonging of teachers by determining the behaviors of school administrators, which are effective in the professional belonging of teachers. In this direction, it is aimed to examine the behavior of school administrators in the context of teachers' professional belonging. In this direction, answers to the following questions were sought:

What are the views of school administrators who increase teachers' professional belonging?

What are the opinions of school administrators who reduce the professional belonging of teachers?

2. Method

The Method section describes in detail how the study was conducted, including conceptual and operational In this study, it is aimed to examine the behavior of school administrators in the context of teachers' professional belonging. The study was carried out according to the phenomenology pattern of the qualitative research method. In order to understand social reality, phenomenology focuses on the human experiences that this reality creates. In this context, experiences related to the phenomenon are questioned (Ersoy, 2016). In this context, the phenomenon of the study is the behavior of school administrators that increase and decrease the professional belonging of teachers. Considering that the participants of the study had experiences and observations about the behaviors of school administrators in the professional belonging of teachers, the study was carried out according to the phenomenology pattern.

2.1 Study Group

In the study, 25 teachers working in the province of Eskişehir formed the study group. While determining the participants, the maximum diversity sampling technique, which is a purposive sampling method, was used. Maximum diversity sampling; It is defined as the determination of similar and different situations related to the problem examined in the universe and conducting the study on these situations (Büyüköztürk, 2014). In the use of this technique, it is aimed to reach richer and more detailed data by providing the diversity of the participants. Personal variables such as seniority, gender and age were taken into account while determining the teacher in the study. In addition, care was taken to ensure that the schools where teachers work are at different levels (primary school, secondary school, high school), in different neighborhoods and in different socio-economic environments (lower-middle-upper). In this way, it is aimed to achieve diversity in terms of schools and therefore the problems experienced. Information about the study group is shown in Table 1:

Table 1: Information About Participants

Code	Gender	Type of school served	Branch	Seniority	Education level
T1	Female	Secondary School	Mathematics	11	Bachelor's Degree
T 2	Female	High School	Chemistry	15	MA Graduate
T 3	Male	Secondary School	Turkish	16	Bachelor's Degree
T 4	Female	Primary School	Primary school teacher	22	Bachelor's Degree
T 5	Female	Secondary School	English	16	Bachelor's Degree
T 6	Male	High School	Physics	25	Bachelor's Degree
T 7	Female	High School	Physical Education	17	Bachelor's Degree
T8	Female	Primary School	Primary school teacher	32	Bachelor's Degree
T9	Male	Secondary School	Social Studies	17	Bachelor's Degree
T10	Male	Secondary School	Physical Education	18	MA Graduate
T11	Male	Primary School	Primary school teacher	14	MA Graduate
T12	Female	High School	History	27	Bachelor's Degree
T13	Male	Primary School	Primary school teacher	24	Bachelor's Degree
T14	Female	Primary School	Primary school teacher	24	Bachelor's Degree
T15	Male	High School	Biology	21	Bachelor's Degree
T16	Male	Secondary School	Social Studies	12	Bachelor's Degree
T17	Female	High School	Geography	19	Bachelor's Degree
T18	Female	Primary School	English	14	MA Graduate
T19	Male	Secondary School	Turkish	17	Bachelor's Degree
T20	Female	Primary School	Primary school teacher	23	Bachelor's Degree
T21	Male	High School	Literature	24	Bachelor's Degree
T22	Male	High School	Mathematics	18	Bachelor's Degree
T23	Male	Primary School	Primary school teacher	19	MA Graduate
T24	Female	Secondary School	Science and Technology	17	Bachelor's Degree
T25	Female	Primary School	Primary school teacher	23	MA Graduate

2.2 Data collection tool

In the research, interviews were conducted with teachers in order to examine the behavior of school administrators in the context of teachers' professional belonging. In this direction, a semi-structured interview form was used in the research.

During the development of the data collection tool, a literature review was conducted, a conceptual framework was created on the subject, and opinions were received from two experts in the field of educational sciences. In line with the opinions of the experts, the number of questions in the form was reduced from three to two in order not to deviate from the purpose of the research. In order to make a preliminary test of the draft form, a pre-application was made with two teachers other than the participants of the study. After these applications, the form was given its final form. In the semi-structured interview form, there are eight questions in total, six for determining the demographic characteristics of teachers and two for the purpose of the research. The following questions were asked to the study group in order to examine the behavior of school administrators in the context of teachers' professional belonging.

What are your views on the behavior of school administrators that increase your belonging to the teaching profession?

What are your views on the behavior of school administrators that reduce your belonging to the teaching profession?

2.3 Data Collection

Interviews with the study group of the research were carried out by the researcher between February and March 2022. Interviews, in line with appointments from teachers. In order to enable teachers to express their feelings clearly and comfortably, it was held at the designated times in their own schools or wherever they wanted. Before starting the interviews, the participants were first informed about the purpose of the research with a consent form. Before starting the interviews, it was explained to the participants that the interview would take place in accordance with confidentiality and ethical principles, that the name of the person and institution would not be specified, and that the data obtained would be known only by the researcher, and approval of recording with a voice recorder was requested. However, three teachers did not allow audio recording, and the interviews with these teachers were recorded by taking notes by the researcher. The duration of the interviews with each participant was between 20-30 minutes. In the interviews, the participants were asked about the "opinions of the school administrators who increase the professional belonging of the teachers" and "the opinions of the school administrators who decrease the professional belonging of the teachers" and their demographic characteristics within the scope of the purpose of the study.

2.4 Analysis of Data

The data obtained as a result of the interviews were analyzed with the content analysis technique. In content analysis, the obtained data are analyzed in depth and concepts (codes) that can explain the data are revealed and these concepts are organized and interpreted under appropriate categories (themes) (Yıldırım & Şimşek, 2018). Legislation and literature were used while creating themes. In the research, a total of 12 hours of interviews were conducted with 25 teachers. The audio recordings taken were deciphered and transcribed. In order to check the accuracy of the transcription process, the data obtained from the audio recordings and the data obtained from the interview form were compared. 87 pages of data were obtained from the interviews. The common points in the answers given by the participants to each question were determined and coded. The codes created by the researcher were presented to the opinion of two experts in educational sciences and qualitative research. The reliability of the research was determined by comparing the codes made by the experts with the codes made by the researcher. In this process, the formula of $\text{Reliability} = \left[\frac{\text{Agreement}}{\text{Agreement} + \text{Disagreement}} \right] \times 100$ (Miles & Huberman, 1994) was used. As a result of the comparison, the inter-coder reliability level was calculated as 89% and it was found to be consistent. In addition, direct quotations were made to reflect the views of the participants. In addition, in order to ensure participant confidentiality, the teachers participating in the research were abbreviated as Teacher 1 (T1), and the participants were given numbers.

2.5 Validity and Reliability Measures

Measures of validity and reliability in the study were taken into the framework of Lincoln & Guba's (1985) internal validity (credibility), external validity (transferability), internal reliability (consistency) and external reliability (confirmability) in qualitative studies. For this purpose, the following was done to ensure the validity and reliability of the research:

While preparing the interview questions to ensure internal validity, the literature was reviewed, and two experts from the field of educational sciences were consulted on whether the interview questions to be used would collect the necessary data. A pilot application was made to three teachers, other than the participants of the research, in order to make a preliminary trial of the prepared draft form. First of all, sufficient interaction was established with the participants for credibility. Before the interviews, it was explained that the interviews would be kept confidential and the purpose of the study was explained so that the teachers would feel comfortable. Permission was requested for the audio recording, and the interviews with the two teachers who did not give permission were recorded by taking notes. After the data obtained from the interviews were deciphered, they were sent to the participants (mail, whatsapp) and shared. The participants' confirmation was obtained by comparing the decipherers made by the researcher with what the participants wanted to express.

In order to ensure the external validity (transferability) of the research, each stage of the research was presented to the reader in detail and all processes were mentioned as clearly as possible. In addition, in order to increase external validity in the study, maximum diversity was tried to be provided in the study group. Particular attention was paid to including schools that accept students from different socio-economic environments, located in different districts and at different levels (primary and secondary school) into the study group.

In order to ensure the internal reliability (consistency) of the research, the consensus strategy between coders was used (Cresswell, 2013). The codes created by the researcher were presented to the opinion of two experts in educational sciences and qualitative research. The reliability of the research was determined by comparing the codes made by the experts with the codes made by the researcher. In addition, direct quotations were included to reflect the original views and thoughts of the participants.

Confirmation review method was used to ensure the external reliability (confirmability) of the research. The raw data obtained in the research and the results and comments made in line with these data were presented to the field expert for confirmation and the confirmation of the field expert was obtained. In addition, the notes taken during the research process, audio recordings, raw data collected, code structures used in the analysis phase were digitally archived by the researcher so that they can be accessed again when needed.

3. Findings

In this section, teachers' views on the behavior of school administrators in their professional belonging are given. The findings obtained from the interviews with the teachers are given below.

3.1 Behaviors of School Administrators Increasing Teachers' Professional Belonging

Teachers' views on the behavior of school administrators, which increase teachers' professional belonging, are presented in Table 2.

Table 2: Behaviors of school administrators increasing teachers' professional belonging

Theme	Codes	
Managerial behavior	Fair and impartial behavior	Sharing authority
	Valuing and caring for the employee	Accountability and transparency
	Involvement in decisions	Problem solver
	Appreciating	Be consistent
	Stand by the employee	Democrat
	Trust the teacher	Being open to collaboration
	Improving physical conditions	Accommodating
	Reducing bureaucracy	Taking initiative
	Making things easy	Set an example
Effective communication	Empowering the teacher	Being informative and guiding
	Active listening	Inclusive speaking
	Persuasion	Using humor
Behaviors based on personality traits	Providing feedback	Giving morale
	Being honest and trustworthy	Showing understanding
	Show respect	Polite and courteous
	Empathy	Respecting differing opinions and views
	Being friendly	Control your anger
Meeting social needs	Being tolerant and optimistic	Being open to criticism
	Organizing social activities	Ensuring togetherness
	Meeting the need for rest	

According to Table 2, teachers' views on the behaviors of school administrators, which increase teachers' professional belonging, are gathered under four themes: administrative behaviors, effective communication, behaviors based on personality traits, and behaviors towards meeting social needs. School administrator behaviors that increase teachers' professional belonging under the theme of administrative behaviors; behaving fairly and impartially, valuing and caring for the employee, contributing to the decisions, appreciating being with the employee, trusting the teacher, improving the physical conditions, reducing bureaucracy, facilitating the work, empowering the teacher, sharing authority, accountability and transparency, problem solving, acting consistently, democrat It was expressed by the participating teachers as being open to cooperation, accommodating, taking initiative, setting an example, informative and guiding. School administrator behaviors that increase teachers' professional belonging under the theme of effective communication; Active listening, persuading, providing feedback, inclusive speaking, using humor and giving morale were expressed by the participating teachers. School administrator behaviors that increase teachers' professional belonging under the theme of behaviors originating from personality traits; being honest and reliable, showing respect, empathizing, being sincere, being tolerant and optimistic, showing understanding, being kind and gentle, respecting different thoughts and opinions, controlling anger and being open to criticism. School administrator behaviors that increase teachers' professional belonging under the theme of meeting social needs; It was expressed by the participating teachers as organizing social activities, meeting the need for rest and providing togetherness. Some of the opinions of the participating teachers on the subject are given below:

First of all, the school principal should manage his school fairly as an administrator. It should not discriminate among its employees and should treat them equally. Teachers should not always be task-oriented, and should be intertwined with teachers in normal times. It should be able to offer solutions to the problems faced by teachers. In this way, the teacher will not feel alone in his profession and will do his best. (T5).

I realized that our principal at the school I was first assigned to was loved by the teachers working in his school. As time passed, I got to know him better. Indeed, our principal was an administrator who was very sincere with the teachers, was interested in the problems of the teachers, and decided together with the teachers to work on the work to be done at the school. As teachers, we were working hard on the studies and activities to be done at the school. (T12).

First of all, the school administrator should see the school as a family and be integrative. He needs to establish an environment where everyone can help each other, as in the warmth of the family, and he should set an example in this. We teachers, who work in such an environment, do our duty properly. (T17).

The fact that our school administrators value teachers' opinions positively affects our commitment to our work. We feel valued and important. The feeling of doing more and being productive for my school increases. (T9).

I think it is very important for the school administrator to take care of himself when a teacher is sick or has a problem. Because it is a great source of morale and motivation for the teacher to receive attention and support from the manager in a difficult moment. As a result, the teacher will not feel alone at school, and a close bond will be formed between him and his profession. (T21).

From time to time, we are subjected to injustices while doing our duty. There are times when we have problems with parents. We are exposed to unfair accusations. In these moments, the attitude of our school principal is very important for us teachers. By standing next to his teacher, protecting the teacher against injustice and embracing his teacher also finds a response in the teacher. An emotional bond develops towards our school and our profession... (T23).

Teaching has become a difficult and stressful profession today. The problems of the students and the attitudes of the parents are quite abrasive when they are on duty. Most of the time, we get overwhelmed with things at school, and there are times when we feel overwhelmed. Social and sportive activities such as going out to dinner with fellow teachers and the school administration and organizing trips increase our belonging to our school and profession. (T 4).

Our school principal makes an extraordinary effort in the process of ensuring that the equipment we will use in the lessons is complete and the physical infrastructure of the school is ready for education. Most of the time he is trying to find sponsors to meet our needs. When we see these, we try to do our duty in the best way and try to support our manager.(T12).

3.2 Behaviors of School Administrators Reducing Professional Belonging of Teachers

Teachers' views on the behaviors of school administrators, which reduce the professional belonging of teachers, are presented in Table 3.

Table 3: Behaviors of school administrators reducing professional belonging of teachers

Theme	Codes	
Administrative behaviors	Authoritarian and oppressive	Use of authority as a threat
	Overly prescriptive	Making decisions alone
	Discrimination	Not being a role model
	Biased	Not taking partial initiative
	Inability to come up with solutions	Ignore effort
	Referring	Affairs to someone else
Negative communication	Commanding	upbraiding
	Giving advice	Judgmental
	Blaming	"I" language
	Constantly criticizing	Shouting
Behaviors based on negative personality traits	Distrust	Avoidance of responsibility
	Insensitivity	Do not justify yourself
	Excessive skepticism	Interest-oriented
	Feeling superior	Not being open to criticism
	Inconsistency	

According to Table 3, teachers' views on the behaviors of school administrators, which reduce the professional belonging of teachers, are grouped under three themes: administrative behaviors, negative communication and behaviors arising from personality traits. School administrator behaviors that decrease the professional belonging of teachers under the theme of administrative behaviors; It is expressed by the participating teachers as authoritarian and oppressive, excessively normative, discrimination, biased, inability to produce solutions, inquiring, using authority as a threat, taking decisions alone, not being a role model, not taking initiative, ignoring the effort and transferring the work to someone else. School administrator behaviors that reduce teachers' professional belonging under the theme of negative communication; commanding, giving advice, accusing, constantly criticizing, scolding, judgmental, "I" language and shouting by the participant teachers. Under the theme of behaviors originating from negative personality traits, school administrator behaviors that reduce teachers' professional belonging; distrust, insensitivity, extreme skepticism, self-esteem, inconsistency, avoidance of responsibility, self-righteousness, interest-oriented and not open to criticism. Some of the opinions of the participating teachers on the subject are given below:

School administrators try to run schools like their own home. They are trying to get things done by giving orders to the teachers in an imperious way. Our opinions are not asked. When this happens, there is no desire to work, and we want to leave that school if we get the opportunity. (T 3).

Sometimes, optional tasks are forced by the manager as if they were compulsory. Teachers do not oppose to avoid conflict, but everyone does it blindly. Nobody wants to make an effort. (T 9).

The school principal's disregard for teachers' ideas and opinions causes teachers to feel worthless. A teacher who feels worthless may think that he is left alone in his school, and cannot be productive because his morale and motivation are low. He may want the lesson to end as soon as possible.(T13).

While managing the school, I worked with the school principal, who constantly reminded him of the laws and regulations and avoided taking the initiative. No one was happy at school, everyone had a state of uneasiness and fear. Even though they knew that they would not be appointed during the appointment period, almost all the teachers applied. (T16).

The fact that the school principal makes the teachers feel his authority as a punishment tool, both in meetings and in one-on-one conversations, and always blames the teachers in negative situations and sees them responsible, causes anger and weariness in the teachers. As such, teachers cannot take ownership of their jobs and inefficiency increases. (T20)

I was exposed to many injustices in arranging the curriculum, determining the days of the shift, and the distribution of students. My psyche is broken. I wanted to leave this school as soon as possible. I felt worthless because our school principal never asked us and did not take our opinions when making these adjustments. There were times when I could not devote myself to my work. (T 23).

Most of the time, the work we do at school is not seen by the administrators. There are always times when we are criticized. We do not see appreciation and thanks. This situation breaks our determination to work. We come to school with our feet back. (T 11).

4. Discussion

In this study, the behavior of school administrators was examined in the context of teachers' professional belonging. In the context of the first category of the research, the views of the participating teachers about the behaviors of school administrators that increase the professional belonging of teachers were examined. Teachers' views were gathered under four themes: managerial behaviors, effective communication, behaviors based on personality traits, and behaviors towards meeting social needs.

Under the theme of managerial behavior, participant teachers show that school administrators behave fairly and impartially, value and care about employees, include teachers in decisions, appreciate them, stand by the employee, trust the teacher, improve physical conditions, reduce bureaucracy, make things easier, empower the teacher, share authority, and accountability. They stated that being transparent, solving problems, behaving consistently, being democratic, open to cooperation, being conciliatory, taking initiative, being an example, being informative and guiding increase their professional belonging.

One of the main findings of the study is that the fair and impartial behavior of school administrators increases teachers' professional belonging. According to Van Knippenberg, et al. (2007), managers are accepted as the source of fair and unfair practices in the organization. According to İnce & Gül (2005), organizational justice; It is about whether the distribution of duties, wages and rewards, decision-making and informing processes, and social relations within the organization are perceived as fair by the employees. Çelik, (1999), on the other hand, draws attention to the fact that the school administrator should be impartial and fair in order to have a strong influence on teachers. Similarly, Eisenberger et al., (2002) managers who have a positive impact on employees are those who maintain a fair balance among employees. Perceptions about who/why the rewards and punishments are given at school, the distribution of lessons and extracurricular workload, the sharing of responsibilities, how the practices are carried out and how all these processes work are among the situations that determine the level of organizational justice in the school (Kalman & Gedikoğlu, 2014). According to Hoy and Tarter (2004), the level of organizational justice in the school also focuses on the behavior of the school administrator.

Participating teachers under the theme of administrative behaviors emphasizes that school administrators value and care about them. Beldağ & Yaylacı (2015) underline that school administrators who value their employees should give importance to the opinions and thoughts of teachers. Çelik (2010) states that the most important behavior types that increase the motivation of the employees are that the managers value and care about the opinions of the people they work with.

Within the scope of the current study, teachers stated that improving the physical conditions of school administrators increases their professional belonging. According to Fullan (2001), the principal is the person who helps teachers in reaching services in terms of equipment, physical and technical issues. It is known that teachers who have the necessary course materials and materials they need in their classrooms and who can use departments such as laboratories, libraries and gymnasiums at school will be more professionally willing. The role of school administrators is important in the preparation of the appropriate physical infrastructure necessary

for effective education in the school. According to Gürbüz, et al. (2013), it is important for school principals to provide appropriate physical conditions for their success.

In the study, teachers stated that school administrators' self-confidence increases their professional belonging. A trusted teacher will make an effort to do her best in a subject related to her profession. The phenomenon of trust has an important place in educational organizations. In this respect, it is of great importance that the relations between the stakeholders in schools are based on mutual trust. Studies have shown that trust functions as a motivator in coping with difficulties at school and is a key element in the development of productive group relationships (Hoy, Tarter & Witkoskie, 1992).

According to the research findings, the school administrators' behavior towards facilitating the work is another factor that is effective in the professional belonging of the teachers. Studies conducted in the literature on the roles expected to be performed by modern school principals define the most basic roles of principals as facilitators (Foley, 2001; O'Hair & Reitzug, 1997; Hall, 2005). Dönmez (2000) states that the roles of facilitating, teaching, expert consultancy, coordinating resources, communicative and supportive are the roles required by effective school leadership in the 21st century. According to Töremen, & Karakuş (2008), school administrators; They have to help the functioning of the school on the basis of human relations and within the framework of its unique characteristics, to produce high morale and to facilitate the work by eliminating the difficulties in this regard. Morrison (2007), on the other hand, emphasizes the importance of the school principal's displaying behaviors that make things easier at school.

In the study, teachers drew attention to the behaviors of school administrators to share authority. In the study conducted by Gürbüz, Erdem & Yıldırım (2013), the participants; They stated that the school principal should create an environment in which his employees will participate and contribute voluntarily for the success of the school, and that he should share these powers with his employees instead of using all his powers completely legally.

Another finding expressed by the teachers under the theme of administrative behaviors is that the school administrator's accountable and transparent behaviors increase teachers' belonging to their profession. Although accountability is about everyone involved in the education system, it basically focuses on the behavior of school administrators (Cooley and Shen 2003). Another structure that helps build trust in organizations is transparency, which is a part of accountability (Norman, Avolio & Luthans 2010). Providing timely and accurate information to stakeholders on issues concerning the organization also lays the groundwork for the establishment of an environment of trust in the organization (Kalman & Gedikoğlu, 2014). According to Eren (2001), organizational managers should be open in their decisions.

In the study, the teachers stated that the behaviors of the administrators that produce solutions to their problems affect their professional belonging positively. Çelikten (2004), in his research in primary schools, concluded that one of the characteristics that school principals should have is problem solver. According to Morrison (2007), the school principal should take an active role in solving the problems faced by the staff at school and be able to produce solutions to the problem.

Another important behavior of school administrators that increases teachers' professional belonging is being open to cooperation. Bakioğlu (2013) emphasizes in his study that school administrators should provide opportunities and opportunities to improve the cooperation of teachers. In another study on this subject, it is emphasized that administrators should encourage teachers to cooperate by supporting them (Gökçe, 2000).

Participating teachers drew attention to the importance of school principals' behavior towards taking initiative. The concept of initiative is a concept that focuses on increasing the effectiveness of their own individual performance and organizations by taking responsibilities beyond the role requirements, with the goals they create themselves. In this sense, initiative in school management can be considered as the extra contributions of school administrators that are compatible with the Basic Objectives of National Education, but not among the defined role requirements (Akın, 2012). Sevil & Bülbül (2019) state that school administrators should be

individuals with high self-esteem and take personal initiative in the creation of effective schools. However, there are studies that concluded that taking the initiative causes an increase in the desire to be involved in the work (Crant, 2000) and an increase in the level of emotional commitment to work (Hartog & Belschak, 2007).

Under the theme of effective communication, the participating teachers stated that school administrators' active listening, persuasion, providing feedback, inclusive speech, using humor, and engaging in moralizing behaviors increase their professional belonging. According to Gürbüz, Erdem, & Yıldırım (2013), effective communication has an important role in the success of school principals. In another study, it was concluded that effective principals have a role in establishing an effective communication in the school environment (Hallinger & Murphy (1986).

In the study, teachers expressed the importance of school administrators' active listening. Listening is an important part of successful interpersonal communication and relationships (Bodie, 2011). Listening skill is one of the important skills of organizational communication and leadership (Southart & Wolvin, 2009) Researches show that there are positive relationships between managers' attitudes towards listening and employees' attitudes towards the organization (Ellis, 2003; Young, 2009).

Teachers drew attention to the persuasive behavior of school administrators. According to Dawis (1984), if a successful manager can effectively persuade his employees to achieve common goals, it can be said to affect employees. Durukan (2006) states that good school administrators identify the potential of the personnel and convince them that they can do much better work than they do.

Another important finding under the theme of effective communication is that school administrators can use humor. Gürbüz, Erdem & Yıldırım, (2013) concluded that the skills of using humor are effective in the success of school principals, and Receptoğlu, (2008) concluded that teachers in the school of administrators who use humor in the workplace have higher job satisfaction.

Under the theme of behaviors originating from personality traits, participant teachers believe that school administrators should be honest and reliable, show self-respect, empathize, be sincere, be tolerant and optimistic, show understanding, be kind and gentle, show respect for different thoughts and opinions, control their anger, and respond to criticism. They stated that being open increases their professional belonging. The data of studies conducted in the fields of personality and organizational behavior reveal that personality is the most important factor directing the behavior of the individual, and in this context, it is related to both organizational performance (Barrick, Day & Lord, 1991) and the attitudes of employees. Organizational managers with different personality traits create different effects on employees (Atwater & Yammarino, 1993).

One of the main findings of the study is that the honest and reliable school administrators increase the professional belonging of the teachers. Reliability is knowing that the other person will support them whenever they need it. This sense of commitment is formed over time as a result of past experiences and becomes predictions for the future (Yılmaz, 2015). According to Taşçı & Eroğlu (2013), a manager is someone that all other personnel in the organization trust and respect. Eren (2001) states that managers should be honest.

Participating teachers draw attention to the importance of school administrators being tolerant and optimistic. Karaköse (2008) states in his study that the school principal should be tolerant and friendly towards the employees. In the study, the importance of school administrators' understanding of teachers was expressed. The most important factor that leads the institutions to success is that the superior-subordinate relations are based on understanding. (Kocabaş, & Karaköse, 2005).

Finally, in the research, managerial behaviors that increase teachers' professional belonging were expressed under the theme of meeting social needs. School administrator behaviors under this theme; It was expressed by the participating teachers as organizing social activities, meeting the need for rest and providing togetherness. Akıncı (2002) states that managers also have social aspects of employees, and they should consider different

socio-psychological expectations and needs besides their economic expectations. Supportive managers are people who take into account the needs of their employees (Eisenberger et al., 2002).

In the study, the behaviors of school administrators, which reduce the professional belonging of teachers, were also determined. The opinions of the teachers were gathered under three themes: managerial behaviors, negative communication and behaviors originating from personality traits.

Participating teachers under the theme of managerial behaviors; School administrators' being authoritarian and oppressive, excessively normative, discriminatory, biased, incapable of producing solutions, questioning, using authority as a threat, taking decisions alone, not being a role model, not taking initiative, ignoring the effort and transferring the work to someone else, reveal their professional belongings. has been reported to decrease. It is known that the influence of the management styles of the managers is important in directing the attitudes and behaviors of the employees, and in the high morale and productivity. Because the manager has the power to determine what the employees should do (Koçel, 2014).

One of the main findings of the study, which reduces the professional belonging of teachers, is that school administrators behave authoritatively and oppressively. While authoritarian managers are oppressive and threatening to their subordinates, they are also extremely obedient and flattering towards their superiors. They expect similar behaviors from their subordinates (Özgür, 2011). Authoritarian rulers use rewards, punishments, and laws as sources of power. This type of leader is task oriented. However, productivity is low because the organizational climate is not suitable (Razi, 2003). Those who work in an authoritarian and oppressive management style are often unhappy, and this is reflected in their motivation, performance and productivity. These teachers are also highly likely to have negative feelings and attitudes towards their administrators and schools. Teachers do not feel that they belong to their school, they will do the tasks that need to be done because they have to do it, and when they find the opportunity, they will go on the path of changing institutions. A teacher who does not feel that he belongs to his school will not have a low commitment to the school and will not own his school, and will not show the necessary positive behaviors if he represents his school outside (Argon, & Dilekçi, 2014).

In the study, the teachers drew attention to the excessive prescriptive behavior of the administrators. According to Frese, et al. (1996), bureaucracy and excessive adherence to rules cause the school administrator to be insufficient in meeting the expectations and needs of today's schools and make him passive, only obliged to fulfill what is said.

Another important finding that reduces the professional belonging of teachers under the theme of administrative behaviors is the discrimination behaviors of school administrators. It is the exposure of the employee to different treatments in matters unrelated to his job (Özkan & Özkan, 2010). Wood, Breakey & Niven, (2013) concluded in their research that some negative organizational outcomes such as stress, dissatisfaction and low motivation occur in employees who are exposed to workplace discrimination. Demirel (2011) states that the deepening of discrimination among employees will negatively affect intra-organizational communication.

Another remarkable finding that emerged in the research is that the use of the powers of the administrators as a threat against the employees reduces the professional belonging of the teachers. According to Hale & Moorman (2003), "order-command" type of administrative practices no longer make sense in existing school systems; it succeeds. Gurbuz et al. (2013) states that it is important for school principals to use their authorities correctly in order to be successful.

Participating teachers stated that ignoring their efforts by school administrators reduced their professional belonging. In other studies on the subject, it has been concluded that school administrators' ignoring and not appreciating the work of teachers causes a loss of motivation in teachers (Büyükses, 2010; Demir, 2007). Ada et al., (2014) express the importance of administrators seeing and approving teachers' positive work.

School administrator behaviors that reduce teachers' professional belonging under the theme of negative communication; commanding, giving advice, accusing, constantly criticizing, scolding, judgmental, "I" language and shouting by the participant teachers. The lack of healthy mutual interaction and communication can lead to disconnection and conflicts between the administration and the teachers. In this respect, it can be said that interpersonal relations and communication play an important role in educational organizations (Bursalıoğlu, 2003). According to Ada, et al. (2015), school administrators must have effective communication skills in order to create a positive atmosphere in the institutions they manage.

Finally, in the study, under the theme of behaviors originating from negative personality traits, school administrator behaviors that reduce teachers' professional belonging; distrust, insensitivity, extreme skepticism, self-esteem, inconsistency, avoidance of responsibility, self-righteousness, interest-oriented and not open to criticism. Koçel (2014) states that with the concentration of all powers in the manager, overconfidence, self-admiration, not listening to and distrusting others, making quick decisions without analysis and with exaggerated self-confidence, can turn into a personality structure that is surrounded by enemies and wants everything to flow under its own control. is doing. The types of behavior that individuals with different personality traits in managerial positions show towards their employees will also be different. As a result of not matching individuals with these different personality traits with appropriate management levels, the health of the organization will deteriorate and employees will be adversely affected (Korkmaz, 2006).

5. Conclusion

When the research findings are evaluated in general; It is seen that the behaviors of school administrators have an important place in the professional belonging of teachers. The fact that the teaching profession is a profession that requires great dedication reveals the importance of the concept of professional belonging, which is one of the most important factors affecting the organizational behavior of the individual. For this reason, in the research, the behavior of school administrators in the professional belonging of teachers was tried to be examined in depth. As a result; It is seen that the behaviors of school administrators are one of the determining factors in the professional belonging of teachers. It is thought that the effectiveness of teachers with high professional belonging will also be high. Therefore, it is considered that the effective execution of the teaching profession will create an effective education-teaching process at school, and thus contribute to the achievement of student learning at the desired level.

5.1. Suggestions

In this study, the participants emphasized the behaviors of school administrators in the professional belonging of teachers. Based on the results of the research, it should be ensured that school administrators are aware of the importance of the behaviors of teachers in their professional belonging, and awareness trainings should be organized for this. In the research, the participants drew attention to the managerial behaviors exhibited by the school administrators in the professional belonging of the teachers. For this reason, it may be necessary to receive applied and theoretical training at the graduate level, which includes administrative behaviors, in appointment to school administrators. Another finding revealed the importance of school administrators' effective communication with teachers. Therefore, the communication skills that school administrators should have should be determined and given to the administrator candidates before the task of administration. Another remarkable finding obtained from the research is that the behaviors of school administrators based on their personality traits are effective on teachers' professional belonging. Regarding this situation, the personality factor should be taken into consideration before the manager appointments made by the Ministry of National Education. In the study, the participants talked about the importance of meeting social needs in the professional belonging of teachers. Accordingly, joint activities should be organized in which administrators and teachers will get to know each other better, and the social needs of teachers should be taken into account in these activities. Finally, based on this research, it is suggested that researchers investigate other factors that affect teachers' professional belonging.

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A Translation Semiotics Analysis on the *Thumb Fight*

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Abstract

The world is familiar with Chinese wine but neglects its attractive partner, Thumb Fight (拇战). The Thumb Fight is a precious traditional Chinese drinking game. However, its rare research still focuses on its history, not the translation process during its dynamic playing logic. The semiotic is access to logic from Peircean. The translation process during Thumb Fight can be developed under the guidance of translation semiotics. This article analyzes the Thumb Fight playing process's signs translating process based on the translation semiotics with Peirce's triadic sign relations. All sign interaction is translating from translation semiotics in the broadest sense. The significant signs involved in translating are thought signs, finger signs, and oral signs. The article starts from a single player's side to divide its translation sign system into three stages: opening ceremony, fighting progress, and winning result. Furthermore, to better understand its dynamic competition process, the article constructs a translation conceptual framework to analyze its signs translation, with the signs-- objects-- interpretant triadic relations. In the following standard case study, the theoretical analysis framework of translation semiotics can effectively show the process and behavior of signs translation.

Keywords: Thumb Fight, Translation Semiotics, Translating Process

1. The Chinese wine

Thumb Fight is a representative of traditional Chinese popular drinking games. As for the history and development of traditional Chinese drinking games, we may start from its growing soil Chinese wine chronologically with essential landmarks.

The story of the Chinese wine may be counted back to the first tale---the primary drunken ape-men making wine (醉猿酿酒). That earliest Chinese ancestors made the fermented fruits drinkings, 50,000 years ago, by their accidental ignorance of the hidden collected wild fruits, which may produce saccharomycetes, the natural microorganism for fermentation in a small town Jiangsu Province, under the hot and humid forests. After that chance, it is not until the creation of *Qu*(曲) that proclaims the emergence of the original true Chinese wine in Shang Dynasty (c.1600BC-1046BC). *Qu* could cultivate microorganisms to make wine with raw materials, such as grains and beans. It was the Chinese unique wine technique at that time and the sole *Qu* skill was introduced to Japan, India, and Southeastern Asia later. It was not until the end of the 19th century that Europeans learned how to make *Qu* and brew wine, more than 2,000 years later than that in China (Xu 1989, p.2). For a long time, *Qu* has been the only wine-brewing technique worldwide. Based on that extraordinary technique advance, the

Chinese wine has popularized among the Chinese ancestors. Besides the government-franchised wine-brewing factories in the Tang and Song Dynasties (c. 618 AD - 1234 AD), the private wine-brewing climate in the Yuan, Ming, and Qing Dynasties (c. 1271 AD - 1840 AD), more and more private brewing wine came into being. Thousands of years have witnessed the Chinese ancestors' efforts to make a real Chinese wine, and it also witnessed the development of Chinese wine's attractive partner, the traditional Chinese drinking games.

2. The Chinese drinking games

When there is a drink, there is a drinker. The drinkers would first enjoy the pure flavor of the Chinese wine. However, the only Chinese wine would not satisfy the drinker's heart. Then, they agree tacitly that Chinese wine needs an attractive partner. None would expect that the dull soldiers created the first partner in their wild camp in the late Western Zhou Dynasty to the Spring and Autumn Period (c. 770 BC - 476 BC). Those soldiers first played wrestle and selected one referee. That can be very rudiment of the original drinking game. Then, they shot with an arrow to play. After that, they threw an arrow into one strict-sized vessel at an appointed position. Throwing the arrow was the rudiment of the subsequent Chinese drinking games. We call it *Pitch-pot* (投壺), which can be seen occasionally in some entertaining activities nowadays. With the acceptance of pitch-pot among ordinary folks, the then literate created the recitation to play over drinking. People agree to call the recitation type *Elegant Games* (雅令) and the pitch-pot type *Popular Games* (通令). The traditional Chinese drinking game got a unique Chinese name, *Jiuling* (酒令), by Jia Kui (贾逵), a litterateur from the Latter Han Dynasty (c. 25 AD - 195 AD) (Xu1989, p.13). Because the Emperor Wu of the Former Han (汉武帝)(c.141BC - 87 BC) liked to guess the objects hidden under a cover during drinking, there was a new playing way--- *Shifu* (射覆). She meant to guess the items; fu meant the items covered under covers. Since then, the guessing element has dominated the traditional Chinese drinking games and replaced the recitation and power competition. In the Southern Dynasty (c. 420 AD - 589 AD) and the Northern Dynasty (c. 386 AD - 581 AD), players introduced music, dance, acrobatics, versification, and riddle into the drinking games to color its simple guessing element. Traditional Chinese drinking games waited for their prime age in the Tang Dynasty (c. 618 AD - 907 AD). It began to adopt classical tools, bamboo-made *chip-counters* (筹)(Xu1989, p.22), for scoring and enriched the Popular Games with three typical ones: *Lyling* (律令), *Toupan* (骰盘), *Paoda* (抛打)(Geng & Jin 1991, p.13). The third one was mainly consisted *Thumb Fight* (拇战), *Palm Fight* (抵掌), and *Gesture Fight* (手势), which the literate and Chinese geisha invented at that time (Geng & Jin 1991, p.16). *Thumb* meant fingers, and *Fight* meant to beat opponents by guessing the correct number of both players' fingers in advance. Playing *Thumb Fight* was competing to guess the finger numbers extended by the two players in advance. Players' mouths spoke out the guessing number. When players played *Thumb Fight*, they would extend fingers while speaking out the guessing numbers. It involves finger gestures and oral words, both in numbers. Since its emergence, the *Thumb Fight* has gained millions of Chinese fans nationwide. It has been played and loved by many drinkers until now, after the May Fourth Movement or New Culture Movement Revolution in 1919, which has advocated the use of colloquial language. Due to that movement, most classical-prose-oriented and ancient Chinese-used literary games have vanished. Only the *Thumb Fight* lives up to now. It remains its primary playing regulations and rules except for some changes in the colloquial expressions. We may safely conclude that the *Thumb Fight* can be a lucky traditional Chinese drinking game compared with the other disappeared games.

3. Three significant signs of Thumb Fight

Thumb Fight requires two apparent elements from its rule: oral number and finger number. The oral number is the guessing number of both players' finger numbers in advance, while the finger number is the total number of each player's extending finger. By its winning rule, the winner should speak out the correct total finger number of both players, including his opponent. It is the oral number that decides the winning results. To be a good *Thumb Fight* player means to have a high guessing rate of both players' following extending finger numbers in advance. The guessing rate is closely related to the player's observation and prediction of the finger number of his opponent. The winner should monitor his opponent's finger changes and some relevant subtle expressions, everything that may help him make a precise judgment. The precise judgment may consist of precalculation after a keen observation. The precise judgment and precalculation may result in a correct oral number which is just the

correct total number of both players. Unlike the perceived oral number and finger number, the precise judgment and precalculation cannot be perceived by the others, except for the players themselves. The latter two are processed in players' thoughts. They are the guessing link through the operation of Thumb Fight. Therefore, we may call it the third element: thought. The Thumb Fight has three elements: oral number, finger number, and thought. It seems that the playing of Thumb Fight is the guessing of a correct number. The playing can be taken as a logical guessing competition.

“The term *semiotic* was first used in modern times by John Locke, who mentioned it near the end of his masterwork, *An Essay Concerning Human Understanding*. Locke only suggested a division of science in which semiotic would form the third of three sections, and would be identified with logic. It was first used as a term denoting a specific and detailed theory by Peirce, who spent the greater portion of his life working out his semiotic, which for him was a normative theory of logic” (Rochberg-Halton & McMurtrey 1983, p.129). From Peirce, Semiotics can be a way to access the human's logic operation, which can be the best analyzing tool for in-depth analysis of the Thumb Fight's process among those three elements. Eco defines that “Semiotics is concerned with everything that can be taken as a sign” (Eco 1979, p.9). According to Peirce, everything can be a sign, and a sign is “something which stands to somebody for something in some respects or capacity” (CP2.228). The oral number, finger number, and thought can be signs from Peircean's view because the oral number stands for the player's guessing of the total finger numbers, the finger number stands for the number of the fingers actually extended out by each player, and the thought stands for results of the hidden guessing within the player's minds. They stand for something in some respects of the Thumb Fight playing. Peirce elaborates that every element has its counterpart in words in man's consciousness. “It is that the word or sign which man uses is the man himself. For, as the fact that every thought is a sign, taken in conjunction with the fact that life is a train of thought, proves that man is a sign, [...] thus my language is the sum total of myself; for the man is the thought” (CP 5.314). From Peirce, the thought is a sign. No substantial distinction exists between a man and a word. Both men and words are signs. Then, the guessing thought can be a sign.

Moreover, both numbers are the results of the corresponding thought. They are the train of thought, and they can be regarded as the train of signs. A language is a social system of signs mediating the responses of members of a community to one another and to their environment (Morris 1971, p.48). The oral number is spoken out in the Chinese spoken language. The finger number uses its habitual expression method to remind people of the number. For example, players can read finger numbers as --- one when they perform a thumb-up. The finger number stands for the numerical number. Oral number and finger number can be signs, and the train signs of thought signs if we call the thought a thought sign.

Besides the representing capability of signs, the crucial sign---object---interpretant triadic relations exist within a qualified sign. Through the Thumb Fight, there are three possible signs: oral number, finger number, and thought. The thought generates the oral number and finger number from its operation process. From Peirce, “Every thought is a sign”(CP1.538). The thought first is a sign, its object is the observation image of the finger sign in the player's mind, and its calculation within the player's mind is the interpretant of that finger sign. The thought sign is qualified and valid from Peircean's triadic relation. We may safely call it the thought sign now. The oral number first is a sign from the Chinese language sign system, its object is the Chinese numeral number within the player's mind, and its interpretant is the winning results of the Thumb Fight since the correct oral number decides the winner. The oral number is a qualified sign with the crucial triadic relation. For memory's benefit, we may safely call it the oral sign. The finger number first extends a different finger form to stand for a number as a sign, its object is the actual numeral number it stands for, and its interpretant is the observation and precalculation of the changing laws of those finger forms. The finger number is a qualified sign with the crucial triadic relation. For memory's benefit, we may safely call it the finger sign.

From Peircean's sign definition, we may have the thought sign, oral sign, and finger sign through the Thumb Fight playing progress. We may know that the thought signs would translate into the oral signs and finger signs during its playing process from its operating laws. That translation would not stop until the winner came out of every playing round. As for its translation mechanism, we may refer to the translation semiotics for help.

4. A translation semiotics interpretation of Thumb Fight

Victoria Welby (1837-1912) has used “translative thinking” to describe man’s capacity for signification, and an automatic process “in which everything suggests or reminds us of something else” (Welby 1983 [1903], p. 34). For Welby the term “significance” indicates the maximum expression value of a sign as it is enhanced through ongoing translative-interpretative processes (Susan 1992, p.254). Translation is a method of investigation and discovery (Welby 1983, p. 150). Translation Semiotics, a newly emerging branch of semiotics, aims to explain all the possible signs of translations and related issues based on Peircean’s semiotics. Charles Sanders Peirce (1839-1914) has mentioned the nature of language signs with the mixture of translation and signs. From the Peircean aspect, the meaning of any language sign is to translate into a sign that can be further replaced, especially a more developed sign (CP 5. 594). As for the meaning of translation, it may be a different term used in other research. It refers to the translated works or translating process in translatology study; it means a process of moving in technical expression; it means the process by which a sequence of nucleotide triplets in a messenger RNA molecule gives rise to a specific sequence of amino acids during synthesis of a polypeptide or protein in biology. However, it means that a sign is transformed from one form into another form in semiotics (Jia 2019, p.14). It may safely say that translation semiotics studies the transformation of all signs in a Broadway. In a broad sense, as long as it has a referential meaning, everything can be a sign, which implies the mutual transformation between linguistic signs and non-linguistic signs, tangible signs and intangible signs, natural signs and artificial signs. It also happens to be the broad sense of translation (Jia 2019, p.14).

From the perspective of broad translation, the interactive use of signs has constituted translation behavior (Jia 2016, p.94). Thumb Fight needs to translate thought signs into oral and finger signs simultaneously. Its translating means translating the hidden imperceptible thought signs into visible finger signs and audible oral signs. Therefore, playing Thumb Fight is a sign translation process from intangible thought signs to tangible finger and oral signs. Thumb Fight has the properties of supra material form and cross-sign carrier. Translation semiotics is defined as a branch of semiotics (Jia 2016, p.95). It uses semiotic methods to explore the sign transformation and related issues during translating. The research objects of translation semiotics include converting tangible and intangible signs and related issues (Jia 2016, p.96).

Given that, this paper intends to use the theory of translation semiotics to explain (1) the translation process, (2) the translation semiotics theoretical analysis framework of Thumb Fight, and (3) use this framework to analyze the winning process of Thumb Fight.

The Thumb Fight has perceivable finger signs, oral signs, and imperceptible thought signs. The playing of Thumb Fight is just translating the thought signs into the finger signs and oral signs. With the help of translation semiotics, its mysterious operating process can be explained in a compelling translating way. For Peirce, “Interpretation is merely another word for translation” (EP 2: 388). As long as there are signs, there must be translation; there must be translation as long as there are interactive usages of signs. Because the condition for a sign to become a sign is translation, only through translation can a sign signify, and only if it can signify can it be called a sign (Jia 2019, p.15).

For Peirce, “I define a Sign as anything which on the one hand is so determined by an Object and on the other hand so determines an idea in a person’s mind, that this latter determination, which I term the Interpretant of the sign, is thereby mediatedly determined by that Object.” (CP 8. 343). Translation semiotics involves the triadic relation between signs, objects, and interpretants when interpreting the transformation of signs in translation, that is, when analyzing the translation process. The triadic relationship of signs, “A sign, therefore, has a triadic relation to its Object and to its Interpretant” (CP8. 343). “In brief, a sign has two objects and three interpretants. Objects are divided into Immediate Objects and Dynamical Objects. The Immediate Object is the object as the sign represent it, and the Dynamical Object is the efficient but not immediate object. Interpretants are divided into Immediate Interpretant, Dynamical Interpretant and Normal Interpretant. The Immediate Interpretant is the Interpretant represented or signified in the Sign, the Dynamical Interpretant is the effect produced on the mind by the Sign, and the Normal Interpretant is the effect produced on the mind by the Sign after sufficient development of thought” (CP8. 343).

The Thumb Fight is a one-on-one game performed by chanting numbers and extending fingers. In the audience's eyes, Thumb Fight is a number guessing game. For the convenience of reading, both numbers are represented by cardinal numbers. However, Players often avoid calling out only monotonous numbers since the game is usually played at a wedding banquet or on a wine table during festivals. Instead, they use auspicious words after numbers with good wishes and shout in a varied accented tone. The oral number is usually formed like numerals + interesting words. In the following words, we would adopt the Chongqing Thumb Fight as an example to elaborate on that. For example **Six** : *Liuliushun*(^{liù liù shùn}六六顺) The pronunciation of Liu here is close to Chinese Mandarin ^{liù}六 (Six). Liuliu means the cardinal number six in English. Shun here symbolizes all the best. Liuliushun symbolizes all the best. **Nine** : *Jiubiliangshigui*(^{jiǔ bǐ liáng shí guì}酒比粮食贵) is a Chongqing native saying. The pronunciation of Jiu here is close to Chinese Mandarin ^{jiǔ}九 (Nine). The first 酒, in the beginning, is a homophony of 九. Jiu means wine in English, bi means to contrast, liangshi means grain, and gui means more expensive. Its whole meaning is that the wine is more expensive than grain. It is a Chongqing native saying without special meaning. It is just for fun.

Two players chant a number while extending their fingers. Both players can use one hand to finish the extending fingers' requirement. Since one hand can extend from zero fingers to five fingers, the finger numbers can be varied from zero to five. Moreover, the chanting numbers should cover the total sum of the extended fingers from both sides. The chanted numbers are usually valid from zero to ten. Therefore, the chanting number can range from zero to ten based on the rules of Thumb Fight. The finger number also has typical Chongqing characteristics. **Zero**: the player punches a fist; **One**: the player extends his thumb. **Two**: the player had better extend his thumb and middle finger altogether. **Three**: the player extends his thumb, index finger, and middle finger altogether. **Four**: the player extends his thumb, middle finger, ring finger, and little finger altogether. **Five**: the player extends all his five fingers like an open palm.

According to Peirce, "The sign is almost (is representative of) that thing" (CP 5. 309). There come the oral signs and finger signs. From Eco, "As will be seen, a sign can stand for something else to somebody only because this 'standing-for' relation is mediated by an interpretant"(Eco 1979, p.15). Both signs come from the player's mind after guessing the thought. It means that the thought is the interpretant of both signs. The thought sign plays the most significant role in playing Thumb Fight subconsciously. Peirce believes, "Every thought, or cognitive representation, is of the nature of a sign" (CP 8. 191). Therefore, the thought sign is essential and valid. The Thumb Fight has three significant signs of translating: oral signs, finger signs, and thought signs. For the reading convenience, the *finger sign* is in bold and italic form hereafter, and the **oral sign** is in bold form hereafter.

4.1 The translation process in the Thumb Fight from one side

The Chongqing Thumb Fight usually has two primary lead-in phrases as chanting expressions to start its opening ceremony: one is *Good Brothers*(哥两好), the other is *Disorderly Chopping Firewood*(乱劈柴). More and more Chongqing players are inclined to play the latter to avoid embarrassment since the former embarrassed the players between sons and fathers. The two lead-in phrases would usually repeat twice for the players' preparation for the competition from the third chanting. When the players are playing lead-in phrases, they would thumb up, squeeze the other four fingers into a fist, and tap the thumb and the back of the hand lightly to show the friendship first, competition later. The first two oral chanting and thumb finger touching are just a playing ritual and have no practical effect on the competition result. From Peirce, all symbols are relative to understanding. (CP 1.559). Since the first two chanting and thumb finger touching symbolize the opening of the Thumb Fight competition, we may define them as symbol signs here. It shows the starting of translating process in Thumb Fight playing.

To focus on the core playing the part of the Thumb Fight for translating interpretation, and for a better understanding of its whole translating process, the whole playing process of Thumb Fight from the third chanting can be generalized into (Figure 1): (1) opening ceremony: the hidden intangible thought signs; (2) fighting

progress: the simultaneous appearance of the finger signs and oral signs; (3) winning result: the coincident consistency of the oral signs with the finger signs end each round of Thumb Fight.

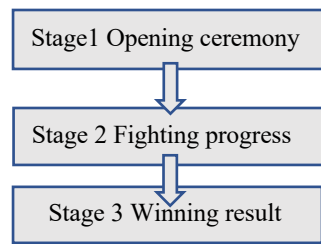


Figure 1

From Peirce's ideas, "All thought being performed by means of signs, logic may be regarded as the science of the general laws of signs" (CP 1.191). Stage (1) is the subconscious or intangible thought of the player's plan of his finger signs and oral signs before extending. Peirce points that the connected signs must have a Quasi-mind (CP 4.551). Strictly speaking, stage (1) equals a quasi-mind a sign system. Because every thought can be a sign, including the logic translation in mind, the connected oral signs, finger signs, and thought signs must have a quasi-mind. After stage (1), stage (2) is the simultaneous appearance of finger and oral signs. That is to say, stage (2) is a showing stage, which is a translating link. During the stage, players would translate their unperceived thought signs into perceived signs, one visible finger sign, and the other invisible oral sign. The stage (2) system should be the most complicated and exciting system of Thumb Fight. It would be the core part of the working process of Thumb Fight. Stage (3) is the last.

Moreover, stage (3) is not an independent sign system in general. On the contrary, it is a dependent sign system that is decided by stage (2). Although it seems not so influential on the Thumb Fight, especially in a one-shot playing, the following signs of players in the multi-shot playing process matters. During the multi-shot playing process, stage (3) would be a precondition of the player's next new round of stage (1). In other words, the players would changeably translate their signs in stage (1) and may show different varied signs in stage (2) to achieve their envisaged goals in stage (3). This translating flow would be circulating round after round. The number of rounds is decided by the particular rules of the Thumb Fight in terms of its time and place. Before each playing, all the involved players would agree on the number of rounds and other details.

We have a clear outline of the single player's system. It has three essential stages: stages (1), (2), and (3). It is worth mentioning that the three stages are dissected from a single player's angle. More precisely, the three main stages are equal for every player, more like a programmatic structure for every player. That means every involved player of Thumb Fight would think in stage (1), showing in stage (2) and have their corresponding results in stage (3) It is a dynamic translating flow for every player.

However, it only seems separated from its showing way and written introduction. In fact, among its whole translating process, the three stages may interact invisible or unperceived by some players because only one player cannot launch the Thumb Fight. It needs at least two out of the number of players required when it is playing. Furthermore, only the two players are playing the same round. Players play the drinking game. During its playing, the two players both have corresponding sign systems simultaneously. As a result, the playing process of Thumb Fight has brought about two playing sign systems from two separate players' angles. For the convenience of understanding the translation logic, we may introduce the player's thinking and playing sign system beginning with its oral sign and finger sign in three stages.

4.2 The translation process in Thumb Fight on both sides

Peirce states that thought is the whole world of triadic relations and it might be included in consciousness (CP 8. 283), and it is the chief mode of representation (CP 2. 274). A sign has a triadic relation to its Object and to its Interpretant (CP 8. 343). In Thumb Fight, the triadic relations should be thought signs, oral signs, and finger signs. Reviewing the strict chanting and extending rule of the Thumb Fight: both players should be chanting

and extending simultaneously. The proceeding of the Thumb Fight is the translating from thought signs into oral signs and finger signs simultaneously. Peirce mentions, “The whole purpose of a sign is that it shall be interpreted in another sign; and its whole purport lies in the special character which it imparts to that interpretation” (CP 8. 191).

Furthermore, “This is the whole world of triadic relations, thought. We are aware of it, and thus it might be included in consciousness” (CP 8. 283). In the Thumb Fight, the thought signs translate into two signs: oral signs and finger signs. The triadic relations from a single player’s angle between the three signs can be pictured (Figure 2) as follows:

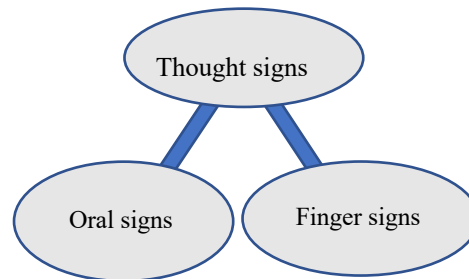


Figure 2

From the perspective of translation semiotics, the translation process is infinitely recursive. The translator must constantly examine whether the interpretants can reasonably explain the relations between the signs and their corresponding objects. In the beginning, players translate the hidden thought signs from quasi-mind into oral signs and finger signs. Both layers would translate the opponent’s finger signs and oral signs from Peircean triadic relations of signs. Peirce believes that the sign has an object and interpretant and is in the Quasi-mind (CP 4. 536). The Thumb Fight starts from the thought signs, and its finger signs and oral signs are its objects after translating. In Peircean’s statement, the two objects are Immediate object and Dynamical object, and the latter by some means determines the signs of its representation while the former just a sign represents itself (CP 4. 536). In practice, when the player chants out a numerically correct oral sign, the whole round would end immediately. There would be no more mind translation and further new signs and objects translating when the playing process ends. Therefore, from this aspect, the oral sign would be the dynamical sign of its quasi-mind sign.

The player would extend his finger sign under his quasi-mind’s order from the third time. The extending finger sign can be the immediate object of the player’s quasi-mind sign. It is just the represented sign from its quasi-mind sign system for every player. After seeing the opponent’s third finger sign, the player would take the finger sign into his mind again to interpret. During his interpretation of the opponent’s finger signs, he would judge and predict the opponent’s next finger sign, the correct finger number. Based on the correct finger sign, the player can show a correct oral sign, a correct oral number, to act as the dynamical object of its quasi-mind sign to end the round. The crucial judgment and prediction part is a translation of the already clear message of the opponent’s finger sign, the immediate object. We may have a Figure 3.

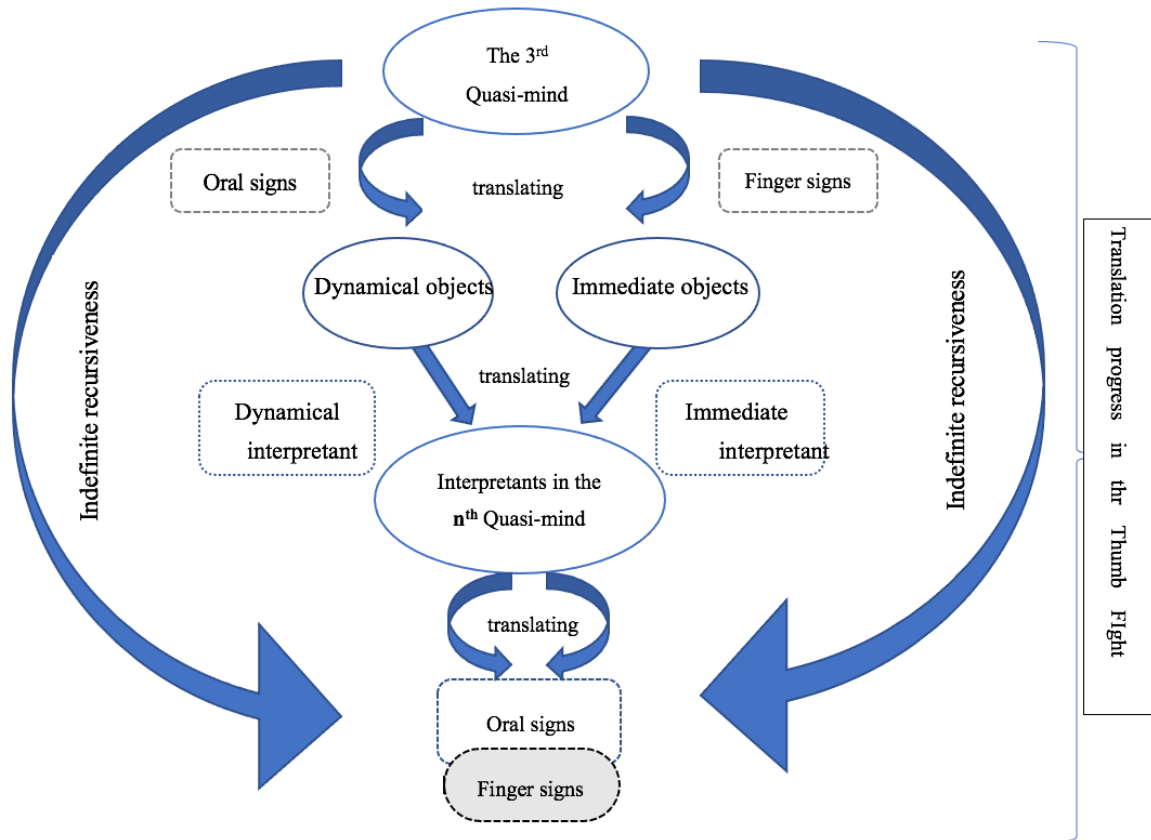


Figure 3

“[...]In regard to the Interpretant we have equally to distinguish, in the first place, the Immediate Interpretant, which is the interpretant as it is revealed in the right understanding of the Sign itself, and is ordinarily called the meaning of the sign; while in the second place, we have to take note of the Dynamical Interpretant which is the actual effect which the Sign, as a Sign, really determines...” (CP 4. 536)

The translation is sure to be carried in the player’s mind. This time is the second time of the translation of the mind. We may not call it a quasi-mind. It is more like a repeated mind interpreting state referring to its proper working procedure. Here the repeated refers to its systematic, repeated state, not the repetition of the content.

The repeated mind translating consists of two interpretants: the immediate interpretant, and the dynamical interpretant. The former means the received finger sign, and it is also the immediate object of quasi-mind sign. More precisely, it is the already known opponent’s extending finger number because it reveals the proper understanding of the finger sign itself. In other words, when the finger number is two, the immediate interpretant should be figure two, not three or other figures. As a result, the former is the immediate interpretant—the latter works after the former. The latter are guesses made by the player based on known numbers and observations made in the previous round. Its goal is to guess the correct finger number of the opponent in the coming round. Moreover, the guesses would directly cause the player’s next potential right guessing oral number, the oral sign. Therefore, the latter interpretant is the dynamical interpretant because it affects the following signs, both finger signs and oral signs. Why?

Considering its winning rules, the player would speak out the correct oral sign. Here the correct oral sign means the correct total number of the finger sign of two parties, the player himself and his opponent. The player needs to guess the opponent’s finger sign and extend the right finger sign by himself to win over his opponent. Such guessing progress reveals the mind translating process. Two interpretants would generate new signs, including oral signs and finger signs.

The working sign system is repeated until one player speaks out the right oral sign to end the round. We may have a complete clue of the sign translation systems from both players' aspects until now. First is the quasi-mind, then comes the oral signs and finger signs, and then the interpretants of both signs. More accurately, the mind is a sign. The mind has ordered the player to translate corresponding oral signs and finger signs. The oral signs and finger signs are just the respective dynamical and immediate objects of the mind sign based on its actual working effect. The two objects would have two critical interpretants to repeat in mind again with the translating flow. However, the second mind translation should be new growth of signs, and such mind translating system would keep running until the Oral object of mind sign ends that round of Thumb Fight. Until now, we have a clear introduction of the round of sign--- object---interpretant of the Thumb Fight translating system during its playing from both sides.

“The concept of the sign as a three-place relation also throws light on another aspect of signification, namely the fact that a sign never exists alone, that is, without connection to other signs. For every sign must, as a matter of definition, be interpretable. This, however, presupposes the existence of at least one other sign” (Oehler 1987, p.7). From Oehler's words, we may know that the legal existence of one interpretant is the precondition of its corresponding sign and object from Peirce's triad. Whenever there is an interpretant, there would be its corresponding element. Such dynamic signs growth can explain the indefinite translation progress from Peirce's triad.

In stage (3), when the player's mind sign has its correct Oral object, the player may end one round of the semiosis of the sign system of Thumb Fight. The essential tip for a correct oral object lies in the precise understanding of its dynamical interpretant. The winning tip for the Thumb Fight is to find a proper oral object with the help of a dynamical interpretant by mind sign. That is the core triadic sign relations of the translation sign system of Thumb Fight.

4.3 A standard case study in Thumb Fight

Due to its complicated sign systems, it is necessary to show a case study in this part to help readers understand its complete translation process under the guidance of translation semiotics. For understanding consideration, we may use a simple case to illustrate. The simple means that the Thumb Fight ends after the third quasi-mind. The presentation method of this case analysis will follow the three main stages introduced above, the three main signs, and the written form of oral signs and finger signs. The players in the case are player A and player B.

Player A and player B first chant the lead-in phrase twice --- Disorderly Chopping Firewood(乱劈柴), and both would thumb up, squeeze the other four fingers into a fist, and tap the thumb and the back of the hand lightly to show the friendship. After the first two symbol signs performance, both players would chant different oral signs with varied finger signs from the third time.

From the third time, player A chants out: “Liuliushun(六六顺)”, and player B chants out: “Jiubiliangshigui(酒比粮食贵)”. From the above introduction, player A chants oral sign **Six** while player B chants **Nine**. Meanwhile, player A extends his thumb while player B extends his thumb, middle finger, ring finger, and little finger. From the regulations of finger sign, during the third extending, player A shows sign number **One**, and player B **four**. The oral sign **Six** is the dynamical object of player A's thought signs or the 3rd quasi-mind, and the finger sign **One** is the immediate object. The oral sign **Nine** is the dynamical object of player B's 3rd quasi-mind, and the finger sign **four** is the immediate object. The third time, the sum of both players extending finger signs should be **5** in an Arabic form. The player's oral signs do not equal the numerical value of **5**, and the third time does not have the winner, which means the Thumb Fight should keep running into the fourth time. Before the fourth time, both players would make a respective translating based on the third performance. Player A would translate player B's immediate object, the finger sign **four**, as an immediate interpretant of his fourth quasi-mind translation. Based on the immediate interpretant, player A would launch a precise calculation and prediction of player B's fourth extending, and then player A translates his comprehensive

guessing into the fourth quasi-mind, the hidden thought signs, and decides his fourth chanting and extending, which would be the new oral signs and finger signs in a new translation time. The same translation progress also happens in player B's quasi-mind.

In the fourth quasi-mind, player A's translation helps him chant out "Jiubiliangshigui(酒^{jiù}比^{bǐ}粮^{liáng}食^{shí}贵^{guì})" while extending all his five fingers like an open palm. The fourth thought-signs translate into oral sign **Nine** and finger sign **five**. Player B's translation helps him chant out "Liuliuishun(六^{liù}六^{liù}顺^{shùn})" while extending his thumb, middle finger, ring finger, and little finger altogether. The fourth thought signs translate into oral sign **Six** and finger sign **four**. The fourth time, the sum of both players extending finger signs should be **9** in an Arabic form. According to its rule, the oral sign should be the dynamical object, which determines the winning result of the Thumb Fight. In the translating process, player A oral signs equal the numerical value of **9**, and player A wins over player B. therefore, the playing ends.

The above case is the primary simple case sharing to help readers understand the translating process of signs playing the Thumb Fight. Judging from the validity of the analysis, it is logical and explanatory. It also confirms the rationality and persuasiveness of the argument of this article.

5. Conclusion

Based on a brief introduction to its sign essence and characteristics of the Thumb Fight, this article builds a systematic analysis framework of translation semiotics. It applies the theoretical framework of translation semiotics to the whole playing process of Thumb Fight. The example analysis concludes that this article's translation semiotics analysis framework of Thumb Fight is feasible. It provides a new perspective for the operation of Thumb Fight and effectively explains the types of signs in the operation of Thumb Fight, which conforms to the logical translation process.

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Teacher Enthusiasm and Collaborative School Climate

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Abstract

The main aim of efforts to improve teaching is to create conditions that are more supportive of student learning and social development. The most tangible output of teaching activities occurs during the teaching activities conducted in the classroom environment. It is therefore reasonable to focus on what happens in the classroom to improve teaching. The quality of interactions between students and teachers is affected by the emotional states of both parties. Positive emotions arising from teachers are an important factor in high-quality teaching experiences for both parties. Due to the enriching and affirming effects of teacher enthusiasm in classroom interactions, it is important to investigate the underlying processes. For that reason, this research was designed to investigate the effects of supportive and collaborative processes on teacher enthusiasm. As a result of this research, it was concluded that organizational values and practices that facilitate and encourage information exchange increase teacher enthusiasm. In this respect, investigating organizational processes that facilitate cooperation and positively affect the achievement of school goals may be beneficial in terms of increasing the effectiveness of schools.

Keywords: Teacher Enthusiasm, Collaborative School Climate, Teacher Collaboration, School Principal Collaboration

1. Introduction

There are many factors that hinder or facilitate effective teaching. These include students' socioeconomic backgrounds, school management, government policies, the structure of the national education system, the curriculum, and teachers' knowledge and skills, among others. However, beyond the factors listed here, the most important factor for effective teaching lies in a teacher's deep commitment to student learning. This commitment represents the enthusiasm of a teachers for students' learning under all circumstances while seeking the best learning opportunities (Day, 2004). A teacher's motivation to teach, his or her style of interaction with students, and his or her professional development tendencies affect the teacher's performance positively and manifest themselves as teacher enthusiasm (Reeve & Su, 2014). Teacher enthusiasm is closely related to effective teaching and effective teachers (Woolfolk Hoy & Hoy, 2013).

Enthusiasm, according to the Oxford English Dictionary, is “a strong feeling of excitement and interest in something and a desire to become involved in it.” The concept of enthusiasm as a strong emotion reflects the quality of an experience that is taking place. Enthusiasm improves the quality of social interactions. In this sense, it provides an important point of reference for evaluating the feelings of teachers and students, which are reflected in their educational relations (Scheer, 2020). According to Kunter et al. (2008), teacher enthusiasm “reflects the degree of enjoyment, excitement and pleasure that teachers typically experience in their professional activities.” The teaching process that occurs between teacher and student is a kind of social relationship. The teacher is not only the person who informs or guides in this relationship; the teacher also energizes the relationship. Teachers who deny the power of their relationships with students foster the emergence of unhealthy attitudes, creating negative consequences for both teachers and students (Metcalf & Game, 2006). The thought and behavior repertoires of individuals who experience positive emotions in work environments are constantly expanding. Enthusiasm encourages them to increase their social, cultural, and intellectual potential to develop their knowledge, creativity, experience, and expertise (Buric & Moe, 2020). In the research conducted by Kunter et al. (2011), two dimensions related to the conceptualization of teacher enthusiasm emerged. Accordingly, teacher enthusiasm consists of the dimensions of subject enthusiasm, which is specific to a particular field or discipline, and teaching enthusiasm, which arises from teaching-learning practices.

The positive emotions that teachers reflect in the classroom are related to teacher enthusiasm and help students realize the importance of the lesson while developing their own positive emotions (Kim & Schallert, 2014). According to Oprea (2013), the tasks of teachers are not limited to students’ efforts to discover, understand, and analyze science and life. They must also help students work toward those goals with enthusiasm. The teacher’s enthusiasm is key to good teaching as it captures students’ attention and motivates them to learn. Many positive outcomes of teacher enthusiasm can be mentioned. Teacher enthusiasm plays a role in reducing students’ boredom in the classroom (Cui, Yao, & Zhang, 2017) and increasing their interest, motivation, and performance during lessons (Frommelt, Schiefele, & Lazarides, 2021; Frenzel, Taxer, Schwab, & Kuhbandner, 2019; Lazarides, Gaspard & Dicke, 2019; Natof & Romanczyk, 2009). In addition, teacher enthusiasm positively affects participation in learning, both socially and behaviorally (Patrick, Hisley, & Kempler, 2000; Dewaele & Li, 2021; Lazarides, Gaspard & Dicke, 2019; Orosz et al., 2015; Taehee & Schallert, 2014; Zhang, 2013). According to Kunter et al. (2011), enthusiasm catalyzes excitement, engagement, and effectiveness in teaching relationships. In this sense, positive experiences that spread to both emotional and behavioral realms have healing and enriching potential for teaching in the classroom.

In order to increase the academic success of students, the quality of education should be improved and enriched. Teachers play a decisive role in the quality of teaching. In particular, the passion of the teacher for teaching leads students to perceive the teaching in school as being of higher quality (Lazarides, Fauth, Gaspard, & Gollner, 2021). Enthusiasm is contagious by nature. In this sense, teacher enthusiasm is not limited to being an emotional state experienced only by the teacher. The behavioral expression of enthusiasm creates wider excitement and enthusiasm that begin with the individual and spreads throughout the entire school community. In this way, an energy that motivates all social interactions, including professional development, teaching, and guidance, is projected into the school (Wenström & Kuoritti, 2021). Enthusiasm increases teachers’ abilities to overcome problems and find solutions. Enthusiastic teachers rely on their knowledge, expertise, and experience. Additionally, when they receive support from the school community, they become very good problem-solvers (Zembylas & Barker, 2007). This is because the support provided by colleagues or professional groups constitutes an energizing resource for individuals and improves their moods. Social support also enriches human functioning (Rana & Hariharan, 2016).

According to Galikhanov and Julia (2019), teachers should create educational environments in which participants are satisfied. In other words, teachers are active not only in the fields of knowledge and intelligence, but also in the emotional field. Burnout is one of the main problems challenging the activities of teachers in the emotional field. Negative situations must be overcome in order to create healthy educational environments for students. One of the ways to ensure that teachers reflect positive attitudes to the class is to foster teacher enthusiasm. Teacher enthusiasm has consequences for both teachers and students, enriching the teaching

relationship. Developing the strengths of teachers and the school community is an important source of teacher enthusiasm.

Although emotion is a biological process, the causes of emotions have a social dimension (Ritzer & Stepnisky, 2018). Teachers' perceptions of teacher-teacher and teacher-school principal relations as being collaborative create results that are reflected in the teachers' practices in the classroom (Gregory, Henry, & Schoeny, 2007). In this context, teacher enthusiasm is also affected by factors such as school organization, atmosphere, and the sense of community that occurs among teachers (Cheung, 2015; Bakker & Demerouti, 2014; Keller et al., 2016; Kunter & Holzberger, 2014; Macey & Schneider, 2008). In their research, Wenström, Uusiautti, and Määttä (2018) concluded that professional atmospheres with positive relationships are among the sources of teacher enthusiasm. Facilitating the ways in which employees perform their duties, supporting them with knowledge, creating opportunities for them to encounter new ideas, enabling them to communicate with others and become socially enriched, and helping them to develop their expertise all increase their professional enthusiasm (Russel, 2008). The excitement and new perspectives created by positive interactions can play a role in increasing enthusiasm for teaching. The mutual and positive human relations that develop between collaborators can be an initiator of teacher enthusiasm reflected in the classroom together with the emergence of new methods and information (Wenström, Uusiautti, & Määttä, 2019). Organizational mechanisms that develop and support knowledge, experience, and expertise can create effects that increase teachers' enthusiasm for their subjects and for teaching in general.

Teachers are embedded in an organizational context that surrounds their teaching activities. Contextual conditions such as the administrative processes of the school and interactions between teachers affect teacher enthusiasm. Although many studies in the literature have dealt with teacher enthusiasm in the context of the classroom, studies that deal with this concept within the framework of organizational context are quite limited. Therefore, it is still necessary to reveal the organizational mechanisms that facilitate or prevent teacher enthusiasm (Keller, Woolfolk Hoy, Goetz, & Frenzel, 2016). Antecedents and contexts must be known if teacher enthusiasm is to be developed (Keller et al., 2014). In this context, the aim of this study is to examine the relationship between teacher enthusiasm and collaborative school climate. The findings are expected to allow important inferences to be made about the cooperation processes that will increase teachers' enthusiasm for teaching in general and for their specific subjects. In line with that goal, answers to the following questions are sought in this work:

1. What is the level of teacher enthusiasm among the participants?
2. What are the participants' perceptions of collaborative school climates?
3. Is there a relationship between collaborative organizational climate and teacher enthusiasm?
4. Does the collaborative organizational climate predict teacher enthusiasm?

2. Method

2.1 Research Design

This research aims to investigate the effect of collaborative organizational climate on teacher enthusiasm. Quantitative research that examines the relationships between dependent and independent variables is called correlational research (Johnson, Christensen, 2020). Correlational research design was preferred from the quantitative research approach because it was suitable for the purpose of the research.

2.2 Sample and Data Collection

The research population consisted of primary, secondary and high school teachers from the İstanbul province in the 2021-2022 academic year. The sample of this research consists of 526 teachers working in public schools. Random sampling method, in which each element has an equal and independent chance of being selected (Özen & Gül, 2007), was used to determine the study group. Demographics of the participants are presented in Table 1.

Table 1: Demographic characteristics of the participants

Gender	<i>f</i>	%
Female	282	53.6
Male	244	46.4
Total	526	100
Type of School	<i>f</i>	%
Primary School	147	27.9
Secondary School	214	40.7
High School	165	31.2
Total	526	100

Of all the participants 53,6% (n=282) were female, and 46.4% (n=244) were male. Besides, 31.2% (n= 165) of the participants work in high schools, %40.7 (n=214) of the participants work in secondary schools and 27.9% (n= 147) of the participants work in primary schools.

2.3 Data Collection Tools

The data of the research was used on two scales. The first of these scales is the Teacher Enthusiasm Scale developed by Kunter, Frenzel, Nagy, Baumert and Pekrun (2011). The scale was adapted into Turkish by Kasalak and Dağyar in 2020. The Teacher Enthusiasm Scale, which is a 5-point likert-type scale, consists of two sub-dimensions, subject enthusiasm (5 items) and teaching enthusiasm (5 items), and a total of 10 items. The Cronbach-alpha coefficient is .963 for the whole scale, .969 for the teaching enthusiasm sub-dimension, and .978 for the subject enthusiasm sub-dimension.

The second scale is the Collaborative School Climate Scale developed by Sveiby and Simons (2002). The scale was adapted into Turkish by Limon and Durnalı in 2017. The Collaborative School Climate Scale, which is a 5-point Likert type scale, consists of four sub-dimensions: collaborative school culture (5 items), collaborative school principal (5 items), collaborative teacher (5 items) and intra-coterie collaboration (2 items), and a total of 17 items. The Cronbach-alpha coefficient is .940 for the whole scale; .904 for the collaborative school culture sub-dimension, .937 for the collaborative school principal sub-dimension, .882 for the collaborative teacher sub-dimension, and .905 for intra-coterie collaboration sub-dimension.

2.4 Data Analysis

The data obtained as a result of the research were analyzed using the Statistical Package for Social Sciences Windows 25.0. Percentages, averages and standard deviations of the variables were tested with descriptive statistics.

Table 2: Kurtosis and skewness values

Sub-scales	Kurtosis	Skewness
Teacher Enthusiasm	-.826	-.327
Teaching Enthusiasm	-.741	-.883
Subject Enthusiasm	-.646	-.902
Collaborative Climate	-.413	-.863
Collaborative School Culture	-1,208	.139
Collaborative School Principal	-1.193	-.282
Collaborative Teacher	-.821	-.221
Intra-Coterie Collaboration	-.941	-.493

Kurtosis and Skewness values were examined to determine whether the study variables were normally distributed. Kurtosis and Skewness values between +1.5 and -1.5 (Tabachnick & Fidell, 2013) are considered normal distribution. As the sampling is adequate according to the law of large numbers and the central limit

theorem (N=526), the analyses were continued with the assumption that the distribution was normal (Harwiki, 2013; İnal & Günay, 1993; Johnson & Wichern, 2002).

3. Results

The teacher enthusiasm and collaborative school climate levels in accordance with the thoughts of participants were determined with descriptive statistics. The results are presented in Table 3.

Table 3: Correlation analysis results

Variable	M	Sd	1	2	3	4	5
1. Teaching Enthusiasm	3.811	.1,281					
2. Subject Enthusiasm	3,838	1,266	.665**				
3. Collaborative School Culture	3,106	1.109	.523**	.536**			
4. Collaborative Principal	3,250	1.148	.510**	.625**	.700**		
5. Collaborative Teacher	3,208	1.035	.533**	.614**	.590**	.708**	
6. Intra-Coterie Collaboration	3.418	1,216	.559**	.589**	.523**	.569**	.648**

As shown in the Table 3, all variables identified in the study yielded high and significant means. In addition, there are positive and significant correlations between the teaching enthusiasm and subject enthusiasm, which are the dependent variables of the study, and all independent variables. Table 4 shows the results of the regression analyses of all independent variables.

Table 4: Regression analysis results

	Independent Variables	B	t	p	F	Model	R ²
Teaching Enthusiasm	Collaborative School Culture	.257	4,560	.000	88.317	0.000	.399
	Collaborative Principal	.083	1.335	.182			
	Collaborative Teacher	.192	2.926	.004			
	Intra-Coterie Collaboration	.316	6.527	.000			
Subject Enthusiasm	Collaborative Culture	.106	2.074	.039	126.983	0.000	0.494
	Collaborative Principal	.300	5.309	.000			
	Collaborative Teacher	.246	4.112	.000			
	Intra-Coterie Collaboration	.266	6.042	.000			

The findings provide insight into the importance of sub-dimensions of the collaborative school climate in teaching enthusiasm and subject enthusiasm. Table 4 shows that teaching enthusiasm was significantly predicted by collaborative school culture ($\beta=.257$), by collaborative teacher ($\beta=.192$), and by intra-coterie collaboration ($\beta=.316$), which together accounted for 39,9% of the variance ($R^2=0.399$, $F=88.317$, $p<0.00$). According to the findings of the research, collaborative principal does not affect teaching enthusiasm ($p=.182>.000$). According to the findings, as collaborative school culture, collaborative teacher attitude and intra-coterie collaboration, teaching enthusiasm also increases.

Another sub-dimension of teacher enthusiasm is subject enthusiasm. According to the data of this research subject enthusiasm was significantly predicted by collaborative school culture ($\beta=.106$), by collaborative school principal ($\beta=.300$), by collaborative teacher ($\beta=.264$), and by intra-coterie collaboration ($\beta=.266$), which together accounted for 49.4% of the variance ($R^2=0.494$, $F=126.983$, $p<0.00$). As collaborative school culture,

collaborative school principal attitude, collaborative teacher attitude, and intra-coterie collaboration increase, subject enthusiasm increases.

3.1 Discussion

At the heart of efforts to improve education systems are variables that can improve and enrich the quality of teaching. Teacher performance is one of the most important of these variables (Hanushek & Rivkin, 2006). A teacher's motivation within his or her field of expertise and general teaching practices is the primary determinant of successful and high-quality teaching. Moreover, teachers' motivational orientations are important predictors of successful teaching practices (Mahler, Großschedl, & Harms, 2018). The ways in which the emotional experiences of teachers regarding their subjects and practices of teaching are reflected in teachers' behaviors are conceptualized as teacher enthusiasm (Keller et al., 2014). One of the most important reasons for the interest in teacher enthusiasm is related to the nature of emotions and behaviors. People can influence the emotions and behaviors of others through their own emotions and behaviors. That is, teachers can cause students to have positive experiences in the classroom environment with their enthusiasm for their subjects or teaching in general, or both (Mitchell, 2013). Positive emotional experiences such as happiness and satisfaction experienced by enthusiastic teachers cause those who experience learning in those classrooms to have positive emotions as well (Punia & Bala, 2021). Therefore, revealing the mechanisms that increase teacher enthusiasm is important for both teachers' satisfaction and students' academic success and social development. In this study, it was aimed to investigate the organizational factors underlying teacher enthusiasm because the support provided by the school administration and other teachers as a characteristic of the collaborative organizational climate can improve the quality of teaching by enabling teachers to maintain positive orientations toward teaching and their specific areas of expertise.

The first of the subdimensions of collaborative climates is the collaborative school culture. As a result of this research, it was concluded that collaborative cultures increased teachers' enthusiasm for both their subjects and teaching in general. Collaboration is closely related to duty, commitment, organizational goals, and collectivity. When considered in the context of organizational culture, collaborative cultures reflect organizational values, norms, and beliefs related to those concepts. Organizational goals, duties, student achievement, and norms of solidarity improve cooperation by guiding teachers' behaviors (Tłuściak-Deliowska, 2018). Collaborative school cultures can be used to shape work environments that ensure the professional development of teachers and the academic development of students through the sharing of knowledge, experience, and expertise (Jong, Meirink, & Admiraal, 2019; Leithwood, Sun, & Pollock, 2017). A collaborative culture provides a climate where members benefit from each other. The processes of working together, helping each other cope with problems, and providing support facilitate professional development. The development of a teacher's potential triggers positive emotions such as self-confidence and satisfaction (Poom-Valickis, Eisenschmidt, & Leppiman, 2021). School environments where teachers have positive feelings about the teaching profession increase teacher enthusiasm (Aldridge & Fraser, 2016), and supportive social climates help teachers experience positive feelings toward their work (Skaalvik & Skaalvik, 2016). According to Russell (2008), who studied the factors affecting enthusiasm in work environments, the idea of designing the work to meet human needs is very important. Working life is a path of growth where one's knowledge and expertise develop. In this process, the formation of a supportive environment based on social and intellectual cooperation contributes to increasing enthusiasm for work. This line of reasoning supports the findings of the present research. It is likely that the sharing and solidarity encouraged by collaborative school cultures will increase teachers' enthusiasm for their specific subjects and for teaching in general.

Collaborative school climate scale includes two sub-dimensions emphasizing especially the cooperation practices among teachers. The first of these is teacher collaboration sub-dimension, which expresses the collaboration between the teachers in the school, and the other is the intra-coterie collaboration sub-dimensions, which express the collaboration within the groups formed by the teachers in the same branch. According to the findings, these two variables increase both teaching enthusiasm and subject enthusiasm. Learning opportunities outside the classroom increase teachers' motivation to teach. When teachers are interested in their own learning processes apart from teaching in the classroom, their passion for teaching is affected positively. Teachers'

concentration on acquiring new knowledge and skills also increases their enthusiasm for teaching by developing their sense of mastery and autonomy (Kunter & Holzberger, 2017). Professional support helps teachers maintain their enthusiasm and excitement in their daily teaching practices. In this sense, working environments in which support is offered by colleagues make it easier to maintain teacher enthusiasm (Wenström, Uusiautti, & Määttä, 2019). The school communities that develop and support teachers' self-efficacy are among the important organizational mechanisms underlying teacher enthusiasm (Buric & Moe, 2020). Similarly, Sheppard, Hurley, and Dibbon (2010) concluded that the collaboration of teachers with their colleagues increased their performance and enthusiasm. According to Hoy and Miskel (2013), in a healthy school climate, the school directs all its energy toward its purpose of existence and, in this sense, task-oriented relationships develop. Teachers are highly committed to teaching and learning; they are willing to participate in processes that will help them improve themselves and teacher enthusiasm is high (Hoy & Miskel, 2013). According to Bailes (2015), interactions among teachers improve their professionalism and professional respect and increase their enthusiasm for students.

According to the findings of this study, while the cooperative school principal attitude does not affect teaching enthusiasm, it increases subject enthusiasm. Enthusiasm for a teacher's subject arises from the relationship between that teacher and the subject he or she teaches, independently of other variables related to the classroom (Kunter et al., 2011). The indirect influence of school principals on teaching activities in the classroom, with a lack of direct classroom experience, may have caused the participants of this study to associate principals' supportive activities with subject enthusiasm rather than teaching enthusiasm. In order for teacher collaboration to take place in real terms, facilitators who support collaboration are needed, and school principals can create conditions that facilitate cooperation by organizing meetings to exchange information between teachers and transfer innovations to the organization (Tran et al., 2020; Vangrieken, Dochy, Raes, & Kyndt, 2015). School administrators can support individuals by enriching the job content through the circulation of information that they facilitate in the organization or transfer to the organization from outside. Individuals who acquire new methods and strategies can develop their potential more fully and this can increase their enthusiasm (Wenström, 2020). According to Shakoor and Iqbal (2018), teachers are a source of power and that power is devoted to teaching every day at school. Teachers need support from colleagues and administrators to maintain their power and enthusiasm in this regard. In particular, the professional knowledge of education administrators and the application of the latest teaching techniques in the school can increase the energy and ambition of teachers. The cultivation of teacher enthusiasm should be on the agendas of school administrators. It is within the scope of the responsibilities of the school administration to develop strategies that will increase student learning and to introduce practices that will improve and enrich teacher performance for this purpose (Bloom, Lemos, Sadun, & Reenen, 2015).

According to Bakker et al. (2017), organizational climate is one of the important professional resources buffering the negative effects that teachers are exposed to due to teaching-related problems. Collaborative professional relationships that can improve the quality of teaching require a supportive culture and structure (Hargreaves & O'Connor, 2018). In light of the data obtained in this research, it can be said that the practices and organizational norms at the levels of both school administrations and teachers exert effects on teacher enthusiasm. The positive emotional experiences of both teachers and students regarding teaching practices in the classroom are beneficial for both teacher satisfaction and students' academic and social development. In this respect, mechanisms that encourage cooperation within the school community can be important resources for improving the quality of teaching.

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Validity Analysis of Development of Socrates-Based Linear Algebra E-Modules

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Abstract

The aim of the study was to investigate the validity level of Socrates-based linear algebra e-module, both material validity and design. This is a research and *development* (R&D) with ADDIE procedure: analysis, design, develop, implement, and evaluate. The participants were 30 students and 2 lecturers who supervised linear algebra courses in the mathematics education study program of Universitas Muhammadiyah Metro. Data collection techniques uses questionnaires provided to material and design validators. Data analysis uses quantitative descriptive. The results showed that the validity rate xof Socrates-based linear algebra e-modules on material aspects was 81.33% with highly valid categories and on design aspects 88% with highly valid categories. Based on the results of the study obtained the conclusion that the e-module algebra linear based on Socrates is declared very valid. Furthermore, further research can be conducted related to the use of Socrates-based linear algebra e-modules in learning to find out effectiveness of using e-modules.

Keywords: E-Modules, Socrates, Validity

1. Introduction

The rapid development of technology and information and the covid-19 outbreak affect various aspects of life. One of them affects education where there are learning activities. This situation requires educators to have a role in learning to quickly follow the ongoing developments. One of the efforts to improve the quality of learning is the use of teaching materials that meet the students' needs. Some experts (Dimas, 2017; Prastowo, 2014) state that teaching materials are all forms of materials that are systematically arranged to facilitate the learning process and to achieve the graduates' learning outcomes that have been determined. The same thing is also stated by (Gazali, 2016; Nisrokha, 2015) that teaching materials can improve the quality of learning.

Based on the results of observations of linear algebra learning, it was obtained information that students had difficulty in understanding and solving problems independently. The teaching materials that the students had were still very limited to a printed book where students had difficulty in learning the book without the help of lecturers during the current pandemic. Theories have suggested that the use of appropriate teaching materials

determines the quality of learning (Perwitasari & Wahjoedi, 2018). The research analysis of the needs of teaching materials has been done by (Vahlia et al., 2021) to answer that condition, the results of the study showed that it was necessary to develop linear algebra teaching materials that meet the students' characteristics and existing technological developments to facilitate their learning during pandemic times. In the current pandemic, students urgently need teaching materials that are easy to understand and can be used independently. It is believed that the teaching material can lead students to construct their knowledge through questions and steps arranged in sequence from the simplest things, to facilitate online learning today.

Pandemic circumstances and technological developments demand a digital-based learning. This is according opinion (Ceyhan, 2022), that the effective use of technology affects the learning method positively. It is also supported by the situation in the field where almost all students have already been using android. To that end, one of the teaching materials that can be developed and integrated with technology is linear algebra e-modules to facilitate students to study independently. (Ekayanti, 2017; Lestari & As'ari, 2013) state that modules are teaching materials that are systematically arranged with clear learning criteria to facilitate students to learn independently. (Anwar & Rahmawati, 2017) also state that the use of constructivism based mathematics module was very effective in improving students' mathematical understanding on algebra operation material. Thus, e-modules or electronic modules are digitally a form of modules and contain the most directed material in the form of sound impressions, graphics, images, videos, and animations. These e-modules can facilitate students to learn more interactively and independently so that the planned learning achievements can be achieved. Mobile learning is an essential tool to help make sense of mathematics (Johnson & Williams, 2020). The development of this e-module is very necessary because through this e-module students can easily study anywhere and anytime independently. Learning requires interactive and interesting innovations to increase student motivation in learning (Maskur et al., 2017; Sagala et al., 2019).

In addition to modules must accommodate the development of technology in the form of e-modules, and modules must also adapt the characteristics and needs of students. E-modules must be developed according to the learning criteria clearly and coherently (Sipayung & Simanjuntak, 2017). Socrates is a method of learning in which there is an activity of giving questions that lead students in constructing knowledge with steps in order (Yunarti, 2016). Through the Socrates method applied in the e-module of learning, students can think of simple steps first in constructing knowledge and solving their problems. The questions in the e-module are arranged to follow scientific rules. Therefore, the Socrates method can be classified as one of the methods based on scientific approaches. Prior study (Ernawati & A Muhajir Nasir, 2018) concluded that the application of Socrates method could improve mathematics in students in mathematics education study programs.

Based on the results of needs analysis research (Vahlia et al., 2021) and literature review, it is found that there has not been a development of Socrates-based linear algebra e-modules, therefore, sub-sequent research was carried out related to the development of Socrates-based linear algebra e-modules. One of the stages of e-module development is to validate each component in the e-module (Sukiminiandari et al., 2015), with the aim of producing a Socrates-based linear algebra of e-module that is feasible to use in learning.

2. Method

This research is an R&D development research. The development model used is ADDE through the stages of *Analysis, Design, Develop, Implement and Evaluation*. (Aldoobie, 2015; Branch, 2009). The analysis stage processes the importance of the development of e-modules in linear algebra learning covering *analysis of problems* in learning, *analysis of students' characteristics* in learning and *analysis of learning materials and learning objectives*. The design stage includes the design of e-modules to accommodate a conceptual framework of e-modules. This design activity consists of studying learning achievements to determine educational materials, designing Socrates-based e-module scenarios, designing e-module materials and designing e-module evaluation questions.

The development stage is an activity as an embodiment of the conceptual framework at the design stage. The made conceptual framework is implemented in the form of Socrates-based e-modules. Besides, this stage also

arranges a validation of e-modules to obtain e-modules that are worth using. The evaluation stage provides feedback on the compiled e-modules which are further revised. The evaluation stage is done in each stage that has been done.

The subjects of this study are 30 students and 2 lecturers who supervise linear algebra courses in the mathematics education study program of Universitas Muhammadiyah Metro. In addition, the study also involved 6 validators: material validators and e-module design validators. Data collection instruments employ the form of questionnaires and interviews. Questionnaire consists of students' and lecturers' response questionnaires, material validation, and design validation questionnaires. Data analysis techniques consist of qualitative and quantitative data. The data that has been obtained is further analysed using the Likert scale to present descriptively.

3. Results

The results of this development research are in the form of a product called Socrates-based linear algebra e-module. Socrates-based linear algebra e-modules are electronic modules that lead students to understand the concept of linear algebra. The e-module is designed to guide students in understanding the concept of linear algebra through organized questions to stimulate students' thinking starting from simple steps in constructing knowledge and resolving problems without being told in advance by lecturers.

The designed Socrates-based linear algebra e-modules are further validated by three materials experts and three design experts using the provided instruments. Validation of the material is performed by three lecturers of mathematics education who had more than ten years of teaching and research experience. While design validation was completed by three lecturers who had teaching experience and technology-based learning research. The material validation instrument consists of nine assessment indicators; *content accuracy, self-instruction, self-contained, stand alone, adaptive, user friendly, face, language use, Socrates characteristics*. While the design validation instrument consists of seven assessment indicators: *format, organization, attractiveness, shape and size of letters, space or blank spaces, consistency and supporting quality*. Data validation of both material and design validation are assessment scores, comments and suggestions related to Socrates-based linear algebra e-modules. Material validation aims to assess the content of Socrates-based algebra linear e-module material before being use in student learning. Validation data from three material experts are presented in table 1 as follows:

Table 1: Product Validation Results Data by Material Experts

Validator	Number of Scores	Percentage	Category
V _{m1}	60	80,00%	Valid
V _{m2}	62	82,67%	highly Valid
V _{m3}	61	81,33%	highly Valid
Average		81,33%	highly Valid

Information:

V_{m1} : material validator expert 1

V_{m2}: : material validator expert 1

V_{m3}: : material validator expert 1

The data of material validation results in Table 1 shows that the material validator expert 1 grades the validation assessments with 80.00% as valid category. Validator-2 rates the validation assessments with 82.67% as highly valid category. Validator-3 scores the validation assessments with 81.33% as highly valid category. The average assessment of the three material validators is 81.33% and is in the category of highly valid. The validators also provide comments and related suggestions for e-module. The comments and suggestions from all three expert material validators are presented in Table 2 as follows:

Table 2: Material Expert Comments and Suggestions

Validator	Comments and suggestions
V _{m1}	the exercise section is good, but the examples of problems need adding so that readers understand more to do the exercises. The display of the material is good, but it needs additional views to make readers more interested.
V _{m2}	All definitions and theorems should use numbering as a name and exercise. You need to give examples of problems and solutions. It should be given a limited example in the form of how to answer some questions. All definitions on the module should be numbered to make them easier for students to refer and to which definitions are used in proofing
V _{m3}	the material map section should contain a concept map only, to be more meaningful. In general, this module is good in typing and writing equations, exercises and tasks, and the language with a detail explanation.

Table 2 shows that the exercises on the module are well and complete because a variety of possible problems are provided. What needs improving includes the additional of problem examples and their completion to make students can more easily understand the materials independently to meet the function of the module or is called self-instruction. The provided materials in the module meet the learning achievements of linear algebra courses but the appearance of the material needs improving to make students more interested in learning. In addition, it is also necessary to improve the numbering of all definitions and explanations of the meaning of each definition to make students easy when referring to the definition in solving their problems. Lastly, the material map section should contain a concept map to be more meaningful for users or students. The conclusion of the expert's assessment of material validators indicates that the module is worth using after being revised.

Media validation aims to assess the design of the Algebra Linear e-module application before students use it. A Socrates-based linear algebra e-module can be directly downloaded by a validator for assessment. The result of media validation is presented in full in table 3 below:

Table 3: Media Expert Validation Results

No	Validator	Total Score	Percentage	Category
1	V _{d1}	48	96%	Very valid
2	V _{d2}	45	90%	Very valid
3	V _{d3}	39	78%	Valid
		Average	88%	Very valid

Information:

- V_{d1}: design validator expert 1
- V_{d2}: design validator expert 2
- V_{d3}: design validator expert 3


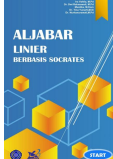


Table 5 shows that the assessment by the design validator-1 is 96% which means highly valid category. Validator design-2 grades 90% which means highly valid category. Validator design-3 scores 78% which means valid category. The average design validation resulted from the three validators is 88% which belongs to highly valid category. It is concluded that the results of the assessment of the three design expert validators on the e-module are very valid and can already be used after revision. Although the assessment of the category is very valid, the application of linear algebra e-modules still requires improvement in some parts to meet the suggestions and comments given by validators. The suggestions and comments provided by the three design validators are presented in Table 4:







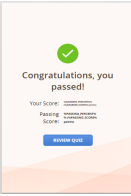
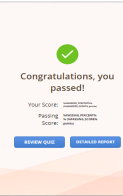
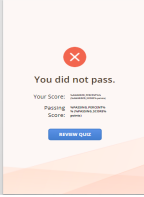
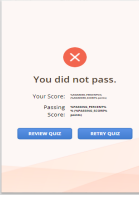
Table 4: Media Expert Advice and Comments

Validator	Saran dan Komentar
V _{d1}	<p>The app is very interesting and useful.</p> <p>Paragraphs can be more corrected, but overall, it is appropriate.</p> <p>Font on customized image (scaled down)</p> <p>App functionality is appropriate</p> <p>Very bright and attractive colours</p>
V _{d2}	<p><i>In the cover is written</i> “developer team.” It should be replaced with bright colours (white) so that more button “starts” and should use a type of icon (png) with transparent <i>background</i>.</p> <p>There are six boxes of <i>material buttons</i> in the introduction that may provoke users to choose one, but the six boxes of material do not have a link. For that reason, it is good to use the menu <i>list</i> only instead of the material boxes.</p> <p>The app does not have <i>mute</i> sound option. The design of <i>the single sound icon</i> should work for <i>sound-on</i> and <i>sound-off</i> and there should be button “<i>next, previous</i> and <i>exit</i>” and please use transparent <i>background</i> for them.</p> <p>In the <i>evaluation menu</i> should be provided options “<i>reset</i>” for users to retry the provided quiz and at the end section there should be a button “<i>passing score</i>.”</p> <p>Validators recommend that the <i>layout</i> application is made vertical by ensuring the <i>auto rotate</i> function because the <i>auto rotate horizontal</i> display design will become smaller and is difficult to read.</p>
V _{d3}	<p>Please notes the use of this module should meet the appropriate application and tested in various OS which is commonly used by students such as android in various versions.</p> <p>The display of definition should appear <i>step by step</i>, based on the being described materials.</p> <p>Regarding the contents of quiz, it is good to be multiple choice.</p>

Considering comments and suggestions from both material and design validators, the Socrates-based linear of algebra-modules are to revise as final product version and the results are presented in table 5 below:

Table 5: Revised Results of Linear Algebra E-Module Applications

No	Before the revision	After revision
1.	 <p>On <i>the cover</i> there is a black text colour which is not clearly visible. The start button is also the colour combination which is blurred.</p>	 <p>On the colour cover the text is changed to white so that it is clearly visible, and the start button of the colour combination is fixed</p>
2.	 <p>The material box at the beginning of the application allows users to click on the box, although there is not any link.</p> <p>Spaces in paragraphs are still too short and the distance between words are jumbled.</p> <p>There is not any animation yet in the application to make it more attractive for</p>	 <p>The omitted material box is converted into a list of materials so that it is not clicked by the users.</p> <p>Spaces in paragraphs are changed from one space to double so that it looks neater.</p> <p>Animation is inserted in the application so that it looks more attractive. In some parts there is also animation.</p>

No	Before the revision	After revision
3.		
	<p>Layout is further arranged between menus and sub menus to avoid confusion among students.</p>	<p>The arrow of layout has been changed and no longer confuses users.</p>
4.		
	<p>Use of one space is too tight</p>	<p>Use of spaces is changed to 1.5</p>
5.		
	<p>There is not any description of the mathematical symbol.</p>	<p>There is already a description of the mathematical symbol.</p>
6.		
	<p>There is not any detailed report menu to make the assessment explanation can be more detailed.</p>	<p>Improvement of the quiz menu is made. When passing the passing score there is a detailed report menu enabling the assessment explanation to be more detailed</p>
7.		
	<p>When you do not pass <i>the passing score</i> there is not any <i>menu “retry quiz”</i> to repeat the work of the quiz.</p>	<p>Menu improvement quiz is made. When users do not pass the passing score, there is a retry quiz menu to repeat the quiz work.</p>

4. Discussion

E-module is one of the teaching materials that can help students in the learning. (Sari & Anantyarta, 2018) states that one of the factors that affect the ability of students to teach materials is e-module. Socrates-based linear algebra e-modules were developed to facilitate students’ learning linear algebra courses both independently and in the assistance of lecturers. The developed e-module based on Socrates is an e-module containing questions that lead students in constructing knowledge. The questions are arranged in order starting from a simple model to a more complex one. Thus, it can train students to hone thinking skills in solving problems.

The results of validation of e-module materials show that Socrates-based linear algebra e-modules are very valid and still need revising. The revision of the e-module is done by adding examples and numbering definitions and explanations so that the students can understand the materials independently. This result is confirmed with the statement of (Nafsiah & Rizal, 2019) stating that e-modules are teaching materials used to help students learn independently based on learning achievements.

Validation of e-module design shows that the e-module is highly valid despite some revisions. The design expert validator provides suggestions to improve e-modules related to the appearance: the use of letter colours, spaces, and menus. This is to make students more interested in using it. E-module design is designed well to make students can easily use it and meet the criteria of user friendly. Similarly stated by (Ariyanto et al., 2018; Oktaviana et al., 2015) who state that well-designed teaching materials motivate students to study well.

4. Conclusion

Considering the results of the development of the Socrates-based linear algebra e-module, the authors concluded that the e-module is declared highly valid seen from both the material and design aspects indicated by an average value of 84.67 ratings. Furthermore, the development of Socrates-based linear algebra e-modules can be continued to the implementation stage or use of e-modules in learning.

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Studies on the Translation of Red Culture Publicity from the Perspective of Cross-cultural Communication*

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Abstract

Red Culture is one of the symbols of Chinese national spirit in China. With the enhancement of China's international status, the world gets to know the Red Culture stage by stage. And yet, in the process of Red Culture's foreign publicity, the depth and breadth of cultural diffusion have been affected by different factors. This paper objectively analyzes the current situation of foreign publicity translation about Red Culture and then focuses on the Red tourism industry to explore the characteristics and advantages of foreign-oriented publicity translation under the intercultural communicative perspective. In the end, we are trying to come up with some methods to increase the accuracy of Red Culture publicity translation.

Keywords: Red Culture, Foreign-Oriented Publicity, Cross-Cultural Communication, Translation Methods

1. Introduction

The year 2021 marks the centenary of the founding of the Communist Party of China. As an excellent traditional culture developed and preserved during the Chinese revolution, Red Culture is rich in spiritual connotations and research values. With the enhancement of China's international status, China's Red Culture will continue to "go global." The foreign publicity of Red Culture can solidify the cultural confidence of our people and carry forward our fine ideals and beliefs to the world while bringing the world a better understanding of China.

Red Culture refers to the advanced culture with revolutionary colors and Chinese characteristics created by Chinese people during the wartime. As a unique and excellent traditional culture in China, Red Culture is worthy of in-depth exploration. Thus, we should not only promote it in China but also abroad. In recent years, one of the most popular ways of foreign-oriented publicity in China is Red tourism. As a form of cultural communication, foreign-oriented publicity translation is of great importance to the outward development of Red tourism. However, being affected by several factors, the current situation of foreign-oriented publicity is very worrying which directly influenced the effectiveness of the external communication of Red Culture. Due to our ability

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limitations, the source materials we cited are mainly from the South Lake Revolutionary Memorial Hall in Jiaxing and the Zhejiang Revolutionary Martyrs Memorial Hall in Hangzhou, Zhejiang Province.

2. Current Situation of Red Culture Publicity Translation in China

With the improvement of China's international position and influence, Red tourism has been popularized. This kind of industry is attracting a growing number of tourists at home or abroad. However, when visiting these scenic spots, we found many mistakes occurred in the text of those C-E translations, such as inappropriately translated proprietary vocabularies, confusing translation structure, translation errors and omissions, and a dearth of knowledge about the corresponding historical and cultural background, and so on.

The South Lake Revolutionary Memorial Hall is located on the shore of South Lake in Jiaxing. It was built to commemorate the First National Congress of the Communist Party of China at South Lake. Now, it has become an important base for educating, especially the youth the traditions of socialism with Chinese characteristics and patriotism. In the exhibition hall, most of the translations adopt the direct translation method. Though the expressions there are simple and straightforward, we found a lot of mistakes in them. For example, there is a sentence presented as “实现中华民族伟大复兴” The corresponding translation is “bringing forth a rejuvenation of the Chinese nation,” but “bringing forth” means “to produce or to put forward (suggestions, evidence, etc.),” which is different from the meaning of the original text “实现”(i.e. to realize). It is suggested that the translation should be consistent with the English version of the *Government Work Report*, which is directly translated as “achieve national rejuvenation,” “realize (or fulfill) the Chinese Dream of national rejuvenation” or “realize the great rejuvenation of the Chinese nation.” Another example we cite here is the sentence “十月革命一声炮响给中国送来了马克思列宁主义” the accompanying translation printed is “The salvos of the October Revolution brought Marxism to China.”, which simply translated the “马克思列宁主义” into “Marxism.” The correct translation should be “Marxism-Leninism.”

The Zhejiang Revolutionary Martyrs Memorial Hall is located on Yunju Mountain, which is adjacent to the West Lake in Hangzhou. The memorial was established to pay tribute to the martyrs' deeds and promote their spirits. Coincidentally, the translations use the direct translation method mostly as well. And there are still some incorrect translations. For example, the phrase “以身许国的光复先驱” is translated as “Restoration Pioneers Dedicating Themselves to the Country.” But the “restoration” literally means “the act of bringing back a law, tax, or system of government,” while the actual meaning of “光复先驱” denotes “the pioneers from the Restoration Society,” so it is supposed to be translated wholly as “Pioneers from the Restoration Society Dedicating Themselves to the Country.”

3. Analysis of the Causes of the Current Situation

3.1. Affected by the Society

Firstly, most people in China do not know much about Red Culture and only have superficial knowledge about it. They have no interest to understand it deeply. Most of them do not have deep attainments in English and pay little attention to the English version of these texts, so they cannot find the errors in the translation when visiting these memorials. Therefore, the supervision of foreign publicity translation from the masses is almost zero. Secondly, since the end of 2019, people's travel has been restricted by the pandemic. The number of visitors to the Red tourism scenic spots has also plummeted, which cannot promote further development of Red tourism. In addition, the number of foreign tourists has decreased as China's control over incoming and outgoing international flights becomes stricter.

3.2. Affected by the Government

First of all, the government does not pay enough attention to the outreach of Red tourism and lacks financial and technical support. Secondly, the government's supervision of the standardization of the foreign publicity translation of memorial halls is not strong enough, resulting in the problems of poor standardization of translation. Finally, the government's efforts for cultural publicity are insufficient. Most of the public signs in scenic spots are substandard. There are even scenic spots with blurred handwriting on the signs. If foreign tourists want to search for Red tourism scenic spots online, they can only find publicity videos in Mandarin instead of in English or other languages. Comprehending Red Culture is really a huge difficulty for foreign tourists who do not speak Chinese. Reading signs without English translation will discourage them from understanding the culture.

3.3. Affected by the Industry

There is a lack of unified translation standards in this industry for the translation of Red Culture vocabularies and texts. For some common Red words alone, there are three or four versions of their translations. For instance, the word “井冈山” is translated as “Jinggang Mountain,” “Jinggang Hill,” “Mt.Jinggang,” and other different versions. Sometimes you can even see many different versions of the same proper noun in one scenic spot. It will make foreign tourists feel confused and cause certain obstacles to their reading and understanding, thus influencing the effect of Red Culture transmission.

3.4. Affected by Translators Themselves

For translators, many factors like limited level, insufficient knowledge of Chinese history, and a lack of cross-cultural awareness make errors occur. There are some revolutionary verses in the introduction of Red Culture scenic spots. If the imagery contained in the verses is simply translated according to the literal meaning rather than the connotation and spirit in them, foreign tourists cannot understand the profound connotation. In addition, Chinese and Western cultures are different from each other. Red Culture vocabulary and texts should be translated on the basis of good understanding, otherwise, we will not only confuse tourists but also damage China's national image in their minds.

4. Characteristics and Advantages of Red Culture Publicity Translation Based on Cross-cultural Communication

4.1. Characteristics

There are two main features of foreign-oriented publicity translation of Red Culture based on cross-cultural studies: First, it is easier for readers to receive the information and cross the gap of cultural differences. Red Culture has strong political and military colors and a lot of cultural connotations. Being closely related to the history of revolution in China, Red Culture has many revolutionary stories and spirits and generates many special terms. It is difficult to express the connotations without a deep understanding of the original text and the history in the process of translation. Therefore, the translation of Red Culture texts based on cross-cultural studies is from the perspective of readers and helps them recognize this special Chinese culture. According to the different social systems and ideologies of China and the West, the relevant historical background is appropriately added to the translation to facilitate the readers to know and understand the Red Culture and make the Red Culture spread more widely. Second, foreign-oriented publicity translation based on cross-cultural studies can help people bridge the chasm in the aspect of language and the way of thinking between the West and Chinese culture. For example, China is a country of high-context culture with more subtle language expressions and deeper meanings, while most Western countries are of low-context cultures with more direct language expressions. Consequently, the translation based on cross-cultural studies takes into full consideration the way of language expression and thinking, presents the text from the perspective of foreign readers, and improves the comprehension of the translation of Red Culture based on the premise of fluency and accuracy.

4.2. Advantages

Translation based on cross-cultural studies is more accurate, professional, and standardized. For the government, accurate translation is conducive to building an international Red tourism city, promoting the development of local Red Culture foreign propaganda, thus promoting Red Culture to “go global.” This translation strategy enables the government to pay more attention to the cultivation of Red Culture translation talents. For the Red tourism industry, the professionalism and standardization of the foreign-oriented publicity translation are conducive to the unification of terminology in the translation of Red Culture and the development of the industry. It is beneficial to improve the translation quality of the Red tourism industry and the experience of foreign tourists. For translators, it will deepen the translators’ research about this area, help the translation talents become professional, and improve the accuracy of the contents, thus improving the degree of reproduction of the Red Culture connotations and promoting the cultural transmission.

5. Translation Methods of Red Culture Publicity based on Cross-cultural Communication

5.1 Aspect of Culture

5.1.1 Pay Attention to the Cultural Differences in Color Perception

Due to cultural differences, the word “*红*” has different connotations in different cultures. In Chinese culture, it contains an important social and cultural meaning, which is righteous and generally positive. Therefore, in the translation process of Red Culture, the word “*红*” in many nouns and phrases is directly translated as “red.” But in English culture, the word “red” is mostly used in a derogatory sense. For example, “be red rules of tooth and claw” is used to express the hatred of violent murderers and organizations, and “red-headed” is often used to express rage. To avoid excessive differences in the process of language conversion, it is important to check the semantic backgrounds of color words in different cultures.

5.1.2 Pay Attention to the Deviation of the Meaning

In English, each word often has multiple meanings. Therefore, we can find that there is a phenomenon called “familiar words with lesser-known meanings.” And sometimes different words with the same meaning need to be used in their own fixed contexts. If we neglect the broad and deep meanings behind some keywords in the C-E translation, it will lead to improper word choice. As a result, there will be the result of semantic deviation. In Red Culture, many proper nouns have their historical meanings. Choosing English words by virtue of their literal meanings alone may cause lexical deviations. Consequently, in order to achieve the expected effect, we should be careful and cautious when we need to do a translation about foreign-oriented publicity. That is to say, we should consider the accuracy of word usage carefully.

When translating, it is necessary to understand the text of the Chinese version, and to be more careful in word selection, so as to avoid meaning errors and deviations. Translators also need to look up the broad and deep meanings of the keywords. For example, the translation of “*抗日战争*” in the South Lake Revolutionary Memorial Hall is “Anti-Japanese War.” But this paper thinks that this translation is inappropriate because this is a war against aggression, a war to defend national sovereignty and territory, and a war of justice. The meaning of “Anti-Japanese War” is more inclined to “the war against Japan.” If we choose this version, the features of the war against imperialist aggression will not be reflected, and the readers may even misunderstand it. Therefore, this paper suggests that this term should be slightly modified as “the War Against Aggression of Japanese Imperialism,” which would be more appropriate.

5.2 Aspect of Thinking

5.2.1 Hypotaxis and Parataxis

The focus of the English language in the syntactic structure is formed. Therefore, the interconnections of the components in English sentences are often done with connecting words. On the contrary, Chinese focuses on meaning, and the interconnections of the components in Chinese sentences rely on semantic coherence and contextual connection. There are fewer connecting words in Chinese. The meaning connection of Chinese is implicit while English, on the contrary, is explicit, and needs more connecting words.

When doing language translation, we should pay attention to the context of the C-E conversion. We need to consider the thinking patterns of the readers so that we can add words or delete them appropriately and translate the text in a way that is correspondingly applicable to these readers. For example, in the Zhejiang Revolutionary Martyrs Memorial Hall, there is a sentence presented as “19 世纪中叶起, 由于西方列强的侵略和本国封建统治的腐朽, 中国逐步沦为半殖民地半封建社会, 国家积贫积弱, 战乱不已, 生灵涂炭, 陷入苦难和屈辱的深渊”. This paper translates it as “As of the mid-19th century, China gradually became a semi-colonial and semi-feudal society with the state being poor and weak. It was haunted by incessant wars, and the people being plunged into an abyss of misery and humiliation because of the aggression of the Western imperialist countries and the rotten feudal governance of Qing Dynasty”.

5.2.2 Breaking up the Whole into Parts & Assembling the Parts into a Whole

As long as there is no mistake in structure and grammar, no matter how long and complex the sentence is, it can appear. Therefore, in E-C translation, we often turn long and difficult sentences into many simple sentences. When writing or speaking, Chinese people are inclined to use short sentences. These short sentences are held together by the whole topic. Therefore, the C-E translation is often done by converting a number of fragmented Chinese sentences into a single English sentence.

When translating Red Culture texts into English, we need to consider the overall structure and the logical relationship of the phrase or the whole text. We also need to think about the combination of each sentence, translating the text in accordance with the reading and writing habits of people from English countries.

5.2.3 Objectification and Personification

Chinese emphasizes personification, while English emphasizes objectification. The English language often expresses how objective things act on human perception. When using the object as the subject, it also needs to use the passive tense. Chinese tends to narrate things from the perspective of a person and often use the person as the subject. The morphology is mostly the subject tense. Therefore, when translating from English to Chinese, the subject should be appropriately converted. For example, the sentence in the Zhejiang Revolutionary Martyrs Memorial Hall “在浙皖起义、光复上海、光复浙江、攻克南京等革命活动中, 尽显光复会志士们的英雄本色和杰出才华” is translated as “During various revolutionary activities, including Zhejiang-Anhui Uprising, restoring Shanghai, restoring Zhejiang and conquering Nanjing, the members of the Restoration Society had fully demonstrated their heroic character and outstanding talents.” But when we consider the converting of objectification and personification, this sentence should be translated as “The heroic natures and outstanding talents of the members in Restoration Society were fully demonstrated during various revolutionary activities such as the Uprising in Zhejiang-Anhui, the Restoring in Shanghai, the Restoring in Zhejiang and the Conquering in Nanjing.”

5.2.4 Putting Emphasis on the Head or the End of the Sentence

The English language tends to put the judgment or conclusion in the front and the description behind. And the emphasis of an English sentence is usually put on the head. However, the Chinese are completely different. It puts the emphasis on the end of a sentence. Therefore, when translating, we should pay attention to the position of emphasis in the original text beforehand. The translation version should consider the reader's expression and reading habits. For example, in the Zhejiang Revolutionary Martyrs Memorial Hall, the sentence “在这场革命

运动中，浙籍的革命志士为创立民国、捍卫共和作出了重要贡献” is translated as “During this revolution, the revolutionaries born in Zhejiang had made an important contribution to the establishment of the Republic of China and the defense of republicanism.” If we consider the position of the emphasis correctly, this sentence should be translated as “During this revolution, significant contributions had been made for the establishment of the Republic of China and the defense of republicanism by the revolutionaries born in Zhejiang.”

6. Conclusion

Chinese Red Culture is very rich in connotations and profound in meanings. To avoid deviations, mistakes, and misunderstandings during the process of translation, the emphasis on the translation should be gradually shifted. Translators should try to use more translation strategies and translate from a cross-cultural perspective to demonstrate the linguistic and cultural connotations of Red Culture. They should deepen their understanding of the historical background. For some specific cultural words, translators should not only express their original meanings without deviations but also show readers the profound connotations in them. At the same time, society should pay more attention to the translation texts, the government should offer more support to funding, talents, supervision, and publicity, and the industry should improve the relevant translation standards so as to improve the quality of translation. We believe that the joint efforts of many parties will reduce the understanding obstacles caused by different cultural backgrounds.

This paper has analyzed a series of problems with the Red Culture foreign publicity translation and the causes of these problems. Meanwhile, we expounded the characteristics and advantages of using the intercultural translation methods. In the end, we tried to give some suggestions for the translation strategies from the perspective of cross-culture. We sincerely hope that the practical recommendations providing in this paper will be helpful for those who are going to do translation in this field. In conclusion, we hope this paper can offer some help to improve the quality of foreign-oriented publicity translation of Red Culture and make it “go global” more and go further.

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Effectiveness of Using Animated Videos via Google Sites in Enhancing Socio-culture of Native English-Speaking Countries

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Abstract

This research aimed at 1) studying the second-year university students' achievement after using animated videos through Google Sites to enhance socio-culture of native English-speaking countries, 2) examining the efficiency of animated videos with an efficiency criterion of 75/75, and 3) exploring the students' level of satisfaction after using animated videos. The samples of the study selected purposively were 48 third-year students majoring in English for Communication program at a university in the southern part of Thailand. 15 animated videos on Socio-culture of native English-speaking countries, pre-test, post-test, and a questionnaire asking for the users' satisfaction were used to collect data which were analyzed by means of average value (\bar{x}), standard deviation (S.D), T-test, and E1/E2. The results were as follows: 1) pre-test scores averaged to 13.81 ($\bar{x} = 13.81$) while post-tests averaged to 22.52 ($\bar{x} = 22.52$). This revealed a statistically significant different level of .00, 2) the efficiency of the created animated videos on Socio-culture of native English-speaking countries was at 75.09/75.06 which was higher than the set efficiency criterion of 75/75, and 3) the students had a positive satisfaction towards the animated video at the highest level with the overall mean scores of 4.55 ($\bar{x} = 4.55$). The results pointed out that using animated videos to enhance Socio-culture of native English-speaking countries can effectively help the students increase their knowledge and understanding.

Keywords: Animated Videos, Socio-Culture of Native English-Speaking Countries

1. Introduction

In this current era, the teaching and learning processes in Thailand have definitely evolved, more specifically the learning methods in order to meet the standards of the policies contained in the Thai education management called Thailand 4.0 such as Student-centered Learning, Self-learning, as well as Online Learning. These types of teaching and learning process are more obviously used and seen during Covid-19 epidemic. This is because online learning does not only help learners to develop their skills, but they can also learn through it any time at any places and still

be able to interact with people just like in a classroom setting (Petchngernsee, Klinmalee and Rattanapan, 2018; Fungchantuk, 2010). To gain the attention from the learners, Adam et al. (2017) suggested that using animations can enrich learners' interests and simplify the complex content. Wijaya and Abbas (2018) asserted that traditional media, static slides, may not fully present complicated subject matter and concepts. The use of animation aids to have a more accurate portrayal of these difficult ideas because it displays stages on a regular basis. Berney and Bétrancourt (2016) concluded 3 functions of using animation for instructional purposes which are Directional animation, Transitional animation, and Instructional animation. The first function is utilized as attention gathering devices, bringing learners to the place where the animation wants to be focused. This can be done through signals, arrows, or anything else that might draw the learner's attention. The second is utilized to aid and lead learners through topic changes, as well as how to move them from point A to point B and comprehend where they are, where they went, and how they got there. The third is about nonverbal communication, or how an animation conveys information without using words. Apart from this, Google Sites is one of the online platforms that can respond to the online teaching style because it is efficient in linking content from a variety of sources such as pictures, audio, videos, etc., that students can easily access and study on their own at any time in their own pace. If these two methods are utilized together, they will explicitly be useful for the students.

As regard teaching foreign languages at present especially English, the pedagogical processes and approaches involved in have certainly evolved over time. Various online media have been used for teaching and learning. Learners can search for self-learning materials on the Internet such as English language teaching and learning videos on grammar, pronunciation, vocabulary, and conversation. However, if it is claimed that English plays an important role in international communication, cultural awareness is also imperative.

Nonetheless, the current issue of teaching and learning culture is widely debated. Some refer to it as "Language as a lingua franca" (ELF), meaning that English is spoken as a middle language without referring to the norm of native speakers (Seidlhofer, 2016). Some refer to it as "World Englishes", which is English is spoken all over the world without sticking with the norms of the mother tongue, but the speakers use their own norms. Speaking of World Englishes, Kachru, (1985) had divided the countries into 3 Circles: Inner Circle, Outer Circle, and Expanding Circle as shown in the picture below.

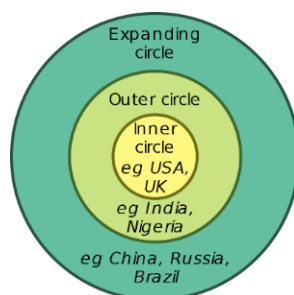


Figure 1: Kachru's three concentric circle model

Inner Circle involves native speaking countries (eg USA, UK, Canada) while Outer Circle refers to the countries that use English as a second language (eg India, Malaysia, Philippines), and Expanding Circle where English is used as a foreign language (eg Germany, Japan, China, Thailand).

In Thailand, World Englishes phenomenon has been raised and widely debated in Thai academic world in terms of tactics and content including the perceptions and attitudes of both teachers and students towards the understanding of World Englishes. Many researchers have attempted to examine this issue for almost a decade. They concluded that teachers and learners in Thailand still maintain a positive attitude towards the use of language and cultural norms in Inner Circle countries and are unfamiliar with the term World Englishes (Jindapitak & Teo, 2012; Saengsukkha, 2015; Katchamat, 2017). The students in these studies also give importance to the cultural differences and intercultural communication issues, however.

Ur (2009), Kongkerd (2013), and Songkhro (2020) confirmed that teaching English, especially in countries where English is used as a foreign language, learners should not only acquire linguistics but cultural issues should be included in both forms of intercultural and target culture in order to help the learners reach successful communication.

In regard to teaching English in Thailand, many universities offer courses related to Language and Culture, Intercultural Communication, Cross-cultural Communication, Socio-culture of Native English-speaking Countries, etc. for their students, particularly the ones majoring in English to provide learners with readiness and understanding of both international cultures and of native speakers. Oxford and Anderson (1995) stated that understanding of international cultures is important. This increases the understanding of intercultural communication and helps students develop their ability to communicate effectively from one culture to another. Although the content of Interculture and culture of native English speakers have already been included in the curriculum and taught to students, they still encounter problems in learning about such content. Such problems that have been stated are “important topics are not covered”. “The content is quite difficult, complicated, and inapplicable”. (Pasand and Ghasemi, 2018; Nhem, 2020). In addition, from the survey of online teaching and learning media on Interculture and culture of native English-speaking countries available on the Internet, it was found relatively rare compared to listening, speaking, reading, and writing skills.

The researchers, thus, attempt in developing animated videos by using Google Sites as a platform to contain the animations and study its efficiency and achievement in order to simplify the complex content and arouse the students’ attention which include facilitating their access to lessons from online platforms. The lessons mainly focus on the socio-culture of native English-speaking countries which responds to the curricula in Thailand and are still viewed as one of the important learning topics and standard.

2. Objectives

1. To compare the students’ learning achievement in socio-culture of native English-speaking countries before and after using animated videos.
2. To determine the efficiency of the use of animated videos of the socio-culture of native English-speaking countries via Google Sites basing on the efficiency criterion of 75/75.
3. To explore the students’ satisfaction towards learning with animated videos of socio-culture of native English-speaking countries.

3. Method

This research utilized the created animated videos presented in 15 videos which revolved around the socio-culture of English-speaking countries. Pre-test, post-test, and a set of questionnaires asking for the users’ satisfaction were used for the data collection procedures which are separated into four specific sections: participants, research instruments, data collection procedure, and data analysis.

3.1 Participants

Forty-eight second-year students (42 female and 6 male) majoring in English for Communication program at a public university in the southern part of Thailand who enrolled in Socio-culture of English-speaking Nations course during the second semester of the 2021 academic year were selected through purposive sampling method.

3.2 Research Methodology

The researchers performed specific set of procedures involved in the research methods in order which are as follows:

In order to create animated videos, pretest, posttest, and questionnaire, the researchers utilized Analysis, Design, Development, Implementation, Evaluation (ADDIE) model with the following steps:

3.2.1 Analysis

1. National and international documents and research papers on teaching of language and culture, more especially those related to the socio-culture of native English-speaking countries were analyzed.
2. After analyzing the documents, the notion of Hammerly (1982) on cultural knowledge that should be involved into the classroom was adopted for the creation of the animated videos in this study. He categorizes three types of cultural knowledge that teachers should teach and students should know. The animated videos in this study, thus, comprises 3 categories which are: 1) Informational culture (e.g history, geography, etc.), 2) Behavioral culture (e.g conversational patterns, gestures, expressions, table manners, festivals, beliefs, values, etc.), and 3) Achievement culture (art, literature, music, etc.). Each category contained five animated videos. The first lesson is Informational Culture comprising 5 videos which are as follows: American History, British History, Australia History, Canada History, and New Zealand History. The second lesson is on Behavioral Culture covering the following topics: Non-verbal Language and Symbols, Everyday Conversations and Taboos, Table Manners, Beliefs, and Festivals. The third lesson is focused on Achievement Culture representing USA's Culture: Music, Arts, and Famous People, UK's Culture: Music, Arts, and Famous People, Australia's Culture: Music, Arts, and Famous People, Canada's Culture: Music, Arts, and Famous People, and New Zealand's Culture: Music, Arts, and Famous People. The length of each video is not over five minutes.

3.2.2 Design

1. The researchers consulted with an instructor having more than five years of experience in teaching Socio-culture of native-speaking countries to determine the scope of the content and its learning objectives.
2. Selected topics on Informational Culture, Behavioral Culture, and Achievement Culture were used to create a storyboard in terms of its content, images, graphics, and sounds by focusing on the three functions of using animation for instructional purpose proposed by Berney and Bétrancourt (2016) as a model, namely, Directional animation, Transitional animation, and Instructional animation.
3. Animaker program was the tool used to create the animated videos.
4. Then, the researchers constructed a test to be used to gauge the students' learning achievement.
5. A questionnaire adopted from Khedif, Engkamat, & Suriani (2014) was modified further in accordance to the objectives of this study. It comprises 15 items with 5-Likert scale to assess students' satisfaction.

3.2.3 Development

1. Four experts, namely, 1 English native speaker, 2 English lecturers who have experience living in a native English-speaking country for more than 3 years, and 1 lecturer who specializes in media creation were the ones who determined the content validity of the 15 animated videos utilized in this study. The content validity value was found at 0.82.
2. With regard to the test used to determine the students' learning achievement, it consisted of 50 multiple choice items with four alternatives. Each item weighed 1 mark. The test aimed at measuring the students' knowledge of the socio-culture of native English-speaking countries after learning with the animated videos on Google Sites. The scores did not have any positive or negative impact on their English courses.
3. The test was examined for its correctness and content validity by three experts, specifically, 1 English native speaker, and 2 English lecturers who have experience living in a native English-speaking country for more than 3 years. The result was 0.80 which makes the test valid.
4. In this stage, a questionnaire asking about the students' satisfaction was also checked for Item Objective Congruence (IOC) for confidence by three experts, namely, two English lecturers and one lecturer who specializes in media creation. The validity of the questionnaire was found at 0.86.

3.2.4 Implementation

1. The completed version of the animated videos was piloted with 15 third-year students in English for International Communication program to find out the areas of the created materials which require further improvement and development before carrying out with the experimental group.
2. A multiple-choice test which comprised 50 items was used to compare the students' learning achievement. The test was examined by three experts and was also tried out for pilot testing with 15 third-year students in English for International Communication program. The results for the pilot test were then analyzed to find out their difficulty indexes. The items with an index lower than 0.20 (too difficult), or higher than 0.80 (too easy) were omitted from the actual test. Fifteen items with a difficulty index between 0.18-0.36, and 5 items with an index between 0.78-0.84 were discarded. The remaining 30 items with indices of difficulty index between 0.40-0.74 were, hence, retained in the actual test. The 30 items were again examined for test validity by the 3 experts. The result of the validity test was 0.78 which signifies that the test was valid.

3.2.5 Evaluation

The researchers determined both the instrument's efficiency and the students' learning achievement according to the following data collection procedures.

The study was carried out during the semester 2 of academic year 2021 in Socio-culture of English-speaking Nations course at a public university in the south of Thailand. Forty-eight second year students majoring in English for Communication program took part in this study. Before the experiment, the students were informed of the objectives of the study and other specific instructions about the tests they would be taking. They were asked to take a 30-item pretest within one hour. After that they were directed to study three categories of animated videos within four weeks. After finishing each lesson, they were required to complete 15 quizzes in order to check their understanding. After completing four weeks, they were asked to take a posttest within 1 hour and accomplish the satisfaction survey section on the use of the animated videos about the socio-culture of native English-speaking countries on Google Sites.

The data were statistically analyzed according to the research objectives. Dependent Samples T- test was run to compare the results of students' learning achievement. The Efficiency of Process (E1) and Efficiency of Product (E2) were employed to determine the efficiency of animated videos through Google Sites. Mean (\bar{x}), standard deviation (S.D.), and percentage (%) were run to analyze the data of students' satisfaction. A five-point Likert scale was also employed to range each item average as the following criteria and interpretation: 4.51-5.00 (Highest), 3.51-4.50 (High), 2.51-3.50 (Moderate), 1.51-2.50 (Low), and 1.00-1.50 (Lowest).

4. Results

The scores obtained by the participants from the test were statistically analyzed as reported below.

Table 1: The second-year English major students' learning achievement before and after the implementation of animated videos about the socio-culture of native English-speaking countries

Tests	N	\bar{X}	S.D.	t	Sig.
Pretest	48	13.81	5.21	12.20	0.00
Posttest	48	22.52	2.84		

*P < .05

Table 1 shows the differences in the scores the students obtained from their pretests and posttests about the socio-culture of native English-speaking countries. The mean score of the pretest was found at 13.81 (\bar{x} = 13.81), while

the posttest garnered a mean score of 22.52 (\bar{x} = 22.52). This revealed a statistically significant different level at .00. In other words, the students performed better in the posttest.

Table 2: The results from determining the efficiency of using animated videos on Google Sites to enhance students' knowledge of the socio-culture of native English-speaking countries with an efficiency criterion of 75/75

Efficiency	E ₁	E ₂
Animated videos	75.09	75.06

Table 2 demonstrates the average scores obtained by the learners in each quiz they took after studying each lesson which is 75.09 as well as their average score in the posttest which is 75.06. The average scores 75.09/75.06 indicate that the created animated videos on Google Sites of socio-culture of native English-speaking countries are efficient instructional tools as the scores meet the efficiency criterion which is 75/75.

Table 3: Students' satisfaction towards learning via the animated videos of socio-culture of native English-speaking countries

Items	(\bar{X})	(S.D.)	Level
1. Studying with animated videos on Google Sites can increase academic achievement.	4.56	0.50	Highest
2. Studying with animated videos on Google Sites helps students better understand the content.	4.48	0.54	High
3. Studying with animated videos on Google Sites enhances self-study skills.	4.65	0.48	Highest
4. Studying with animated videos on Google Sites helps me better remember the content.	4.48	0.58	High
5. Studying with animated videos on Google Sites can save time.	4.50	0.50	High
6. The content of the videos imparts knowledge with clear explanations and examples.	4.52	0.54	Highest
7. Animated videos in each category can help me understand the content.	4.44	0.64	High
8. The quizzes in each category can measure my understanding of the content.	4.52	0.61	Highest
9. The content covers cultural issues among English native speakers.	4.63	0.48	Highest
10. The content of the stories is not complicated.	4.60	0.49	Highest
11. Animated videos are interesting and modern.	4.69	0.46	Highest
12. The template and format of Google Sites help arouse interests.	4.42	0.57	High
13. The main menu is easy to understand and access.	4.58	0.49	Highest
14. The proportions of the screen are appropriate and appealing.	4.56	0.50	Highest
15. Font, colors, and illustrations are appropriate and consistent with the content.	4.60	0.49	Highest
Total	4.55	0.52	Highest

4.1. Basic information of the students

Most of the participants were female with 87.3% whereas 12.7% were male. All participants have experienced studying online through Google Sites. All of them agreed that mastering the socio-culture of native English-speaking countries is essential.

4.2. Second-year university students' satisfaction towards using animated videos through Google Sites

As shown in Table 3, the students' overall satisfaction with the animated videos was at the highest level ($\bar{x} = 4.55$). Eight over fifteen items achieved 'highest level' and 'Animated videos are interesting and modern' had the greatest mean score with 4.69 followed by 'Studying with animated videos on Google Sites enhances self-study skills' with $\bar{x} = 4.65$, and thirdly, 'The content covers cultural issues among English native speakers' with $\bar{x} = 4.63$. Both 'The content of the stories is not complicated' and 'Font, colors, and illustrations are appropriate and consistent with the content' were also among the 'highest level' items and had similar mean scores of 4.60. Another 'highest level' item is 'The main menu is easy to understand and access with 4.58. The remaining two items under the 'highest level' category, specifically, 'Studying with animated videos on Google Sites can increase academic achievement' and 'The proportions of the screen are appropriate and appealing' both garnered similar mean scores of 4.56. On the other hand, seven items obtained a rating of 'high' wherein 'The content of the videos imparts knowledge with clear explanations and examples' and 'The quizzes in each category can measure my understanding of the content' were the two items that ranked at the top of the 'high level' category as they similarly obtained a mean score of 4.52 followed by 'Studying with animated videos on Google Sites can save time' with $\bar{x} = 4.50$. Then, both 'Studying with animated videos on Google Sites helps better understand the content' and 'Studying with animated videos on Google Sites helps me better remember the content' shared the same mean values of 4.48. The remaining two items under the 'high level' category are 'Animated videos in each category can help me understand the content' and 'The template and format of Google Sites help arouse interests' with $\bar{x} = 4.44$ and $\bar{x} = 4.42$, respectively.

5. Discussion

1. The post-test average value after using animated videos about the socio-culture of native English-speaking countries via Google Sites was higher than the pretest at a statistically significant different level of .00. This is because the lessons had been created and checked for its quality through several processes. The animated videos in the lesson were well-designed with the aim of arousing the students' interest, particularly in terms of colors, images, and the content which was simplified for the learners to comprehend the materials easily. Animaker was used to create and design each animated video as this program provides new and modern features suited to the students in this generation. Apart from this, the created animated videos also allow the students to study on their own at any time and in any places before discussing in the class. The results correspond with a previous study by Khalidiyah (2015) who investigated using animated video to improve students' reading skills. The results show that the use of animated video as the media in teaching reading is more effective than using conventional method in improving student reading ability with a statistically significant different level of .00. Aside from this, Kim (2020) whose study was on Enhancing Student Achievement, Engagement, and Satisfaction Using Animated Instructional Videos found a statistically significant difference in scores from pre-test to post-test and the students in his research. The students in the study reported that they preferred the animated instructional videos over the textbook. Likewise, the results of the study by Alice, Joseph, and Judith (2019) on the effectiveness of animated video and written text resources for learning microeconomics suggested that videos are effective alternatives. Lui and Elms (2019) attempted to explore the use of a series of animated videos to teach advanced and complex course at an Australian university. They also found the satisfying results of animated videos and helped improve students' self-assessed understanding of the technical content. Similarly, Weng and Yang (2017) asserted that animation can help learners to master and understand the difficult and challenging unit. This confirmed the notion from Schnotz & Lowe (2003) that animation is a dynamic representation that can be used to make change and complex processes explicit to the learner. In other words, these findings highlight many pedagogical advantages of employing animated instructional videos in the classroom while teaching complicated content.
2. The results of the efficiency of utilizing animated videos about the socio-culture of native English-speaking countries via Google Sites revealed that the students' performance from the quizzes in each lesson and their post-test scores had an efficiency rate (E1/E2) of 75.09/75.06 which was higher than the set efficiency criterion of 75/75. This is due to the fact that the research was carried out in accordance with Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model. It is aligned with the study of the

course description, objectives and content scope. The animated videos were then designed by focusing on its graphics, colors, images, text, and other elements suitable for the sample group. The content had also been revised according to advice of 4 experts in both technical and content areas and was in accordance to the pilot test results obtained from 15 students belonging to different English programs in order to attain quality animated videos. This finding was in accordance with Kittidharma-Opas and Tirakoat (2012) who investigated the efficiency of simulation animation on a science lesson and Korbuakaew (2016) who examined using video lessons to develop the skills to solve problems in Mathematics. They found that the level of efficiency was higher than the pre-set criterion at 80/80 (82.77/80.13 and 83.75/82.17). The result from this study, therefore, indicated that animated videos could help stimulate and reinforce the students in overcoming the complex content in the course. However, although the current study's E1/E2 results were higher than those set at 75/75, the scores were slightly different with decimal points compared to other studies. Such points may be due to a number of reasons. One of them is "Distracting Students from Learning" proposed by Rowe in 1999. He stated that extraneous details in the animations can distract students from the relevant messages. Animations or any type of "fun" learning materials could easily distract students from learning. The main source of distraction may come from the lack of context in the videos. Therefore, aesthetic design is not enough for effective educational animations. Teachers also need to be well aware of what learning objectives the videos are serving. Any elements of the videos must contribute some value to the course.

3. Upon determining the students' satisfaction towards learning with animated videos about the socio-culture of native English-speaking countries via Google Sites, the findings revealed that all students agreed that learning about the culture of English native speakers is necessary in EFL classroom. They also have a positive opinion on teaching and learning management via online platforms. With regard to the students' overall satisfaction towards animated videos, it was found that their satisfaction rate was at the highest level ($\bar{x}=4.55$). Considering each item, it was found that the top three possessing the highest mean score were "Animated videos are interesting and modern" which was found at the highest level ($\bar{x}=4.69$), followed by "Studying with animated videos on Google Sites enhances self-study skills" and "The content covers cultural issues of English native speakers" which both had the same average ($\bar{x}=4.63$). Likewise, "Font, colors, and illustrations were appropriate and consistent with the content" and "The content story is not complicated" also had the same mean score ($\bar{x}=4.60$). The results supported Ismail M.E. et al's study in 2017 on the use of animation video in teaching to enhance the imagination and visualization of students in engineering drawing. The participants reported that the animated video design is attractive and its design is appropriate with an average mean score of a high level. They agreed that the video animation is able to give them a better understanding and is appropriate to be used as teaching aids. This is also in accordance with Highsmith (2021) who investigated on assessing the impact of animated video on learner satisfaction, engagement, and knowledge retention. The findings positively revealed that the students were satisfied with the design of the animated video. They also supported the use of animated video as an instructional aid.

In summary, from the main aim of creating animated videos on socio-culture of native English-speaking countries to be an interesting and modern learning materials that help simplify the complicated and difficult content of the course, it was found that the students were interested in learning with animated videos as it indicated a significant achievement both from the pretest and posttest based on the statistically significant difference of .00 level. This finding indicated that animation could effectively perform its functions for instructional purposes as proposed by Berney and Bétrancourt (2016). This result, however, interestingly implied that the students' cultural knowledge of English native speaking countries is relatively low according to the pre-test average mean which is 13.81 ($\bar{x}=13.81$) as compared with the posttest which garnered a mean value of 22.52 ($\bar{x}=22.52$). Thus, it pointed out that teachers should more provide their students with linguistic knowledge along with cultural knowledge of that language.

5. Suggestions for future research

In order to obtain other dimensions of results regarding using animated videos as a means to enhance students' knowledge, the recommendations below should be taken into account.

1. A comparison study between using animated videos and other types of online lessons such as Instructional Module and Web-based learning should be investigated.
2. A replicate study with a control group in order to compare the learning achievement with an experimental group should be conducted.
3. Further investigation should emphasize on intercultural knowledge.

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Education Behind Bars: Problems and Strategies for Teaching English to Protégés of Central Lombok Juvenile Detention Center

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Abstract

This research investigates the encountered problems and strategies for teaching English to an inclusive classroom contains of law-conflicted students. This research is based on an educational ethnography study conducted in Tojong-Ojong in Central Lombok District, Indonesia. This research highlights on the issues regarding the problems faced and strategies applied by the English teacher, challenging teachers' capability to assist the troubled students on the subject, their utilization of teaching approach with limited learning resources while adjusting the needs' of these students, and managing the impact of internal and external on students' engagement and disengagement in the learning process. This penitentiary applies to equivalency program of A,B,C packages. However, this study focuses on protégés with C-Package equivalency, involving 12 students in total. There is only 1 certified English teacher assisted with a tutor without significant teaching qualification. Qualitative method was applied in this study by combining teacher interview, students' questionnaire, observation with video and audio recording, and field notes. The results of the collected data shows several problems occurred during the teaching and learning process and what strategies used by teacher to overcome them. The problems and strategies were categorized into three parts. The problems were concerning (1) teacher-related, (2) student-related and (3) teaching related problems, while the strategies including (1) course materials, (2) teaching approach, and (3) teacher strategies.

Keywords: C-Package, Educational Ethnography, Equivalency Program, Inclusive Classroom, Juvenile Detention Center, Law Conflicted-Students, Penitentiary, Problems, Protégés, Strategies

1. Introduction

Considering Hugo (1862) beliefs that the right education can save people from criminal minds arouses the assumptions criminals are born and not generated causing people to oppose this belief. Although it is considered controversial that criminal can be both born and made (Herrnstein and Wilson, 1985). In fact, there are various categories of criminals: violent criminals, property criminals, white-collar criminals, organized criminals, and consensual or victimless criminals. A crime is caused by a combination of a predisposing biological traits

channeled by social circumstances into a criminal behavior, meaning the traits alone cannot trigger someone to perform criminality, but the combination of both can. The social settings of criminality grounds different causes, for instance: insanity, poverty, peer pressure, drugs, politics, religion, family conditions, society, unemployment, deprivation, or the merely unfair judicial system. Machin, et al (2010), stated that education could prevent intention of crime. There are three main channels in which education can prevent a criminality to happen: income affects, time availability, and patience or risk aversion. Although, a person was encouraged by the social settings, an individual with educated character would not be affected. Nevertheless of their status as a criminal, based 1945 Constitution's law of education rights article 31 paragraph 1, every Indonesian citizen has the right to get a proper education. Thus, criminal or not, every human being is worthy of the right education. When criminal children are incarcerated in a juvy as the redemption of their wrongdoing; cloistered away from having their rights of freedom, the remaining rights must live on. In this case is the right of education for the sake of their future and their nation.

On the other hand, Foucault (1975) believed that locking a children or juveniles in penitentiary is considered a torture exercised by the authority to constraint and control personal freedom: freedom of education, freedom of power, freedom to economic resources, making sure that these children grow to their expectation for the sake of national development. Speaking of freedom of education, formal or informal education depends on the agency policy: as long as these children are taught and gain positive inputs for their life regardless of their status as Juvenile Protégés. Therefore, despite years of practice under the authority regulation, the quality of the education they could obtain behind these cold bars is yet to be questioned until now.

Additionally, Snowman et al (2009) adjusting learning materials and approaches to students with special needs with a variety of backgrounds such as juvenile protégés are challenging for some teachers but it is considered crucial to bridge the achievement of the educational gap in the 21st century. In this case, bridging through language is required in almost every case of nowadays such as requirements of jobs, higher education, and students exchange, scholarships (Reddy et al, 2016), global communication and information exchange, publications such as book, academic and scientific writings, and even a promising proposition for better career or position, promotion and higher salaries. English education in normal school is commonly practice and usually provided extensions such as student exchange or abroad scholarship. However, the capacity of English education provision inside a Juvy⁴ is yet to be extended as further, neither does the educator feels the need to inform the students about the benefit of acquiring English to this extent. With that being assumed, students will grow disengaged and have a lack of motivation in learning English.

Based on the background, investigation concerning the problems¹ faced and strategies² used in conducting an educational environment and the encouragement of English teaching and learning for these juvenile and protégés, in particular, are important to investigate. This study will investigate: what problems¹ arise when teaching English to protégés and what strategies² used by teachers to overcome this problem to produce constructive inputs for the better capacity of 21st-century education and English competence of juvenile protégés inside the Juvy⁴, which will take place in Central Lombok Juvenile Detention Center (Lembaga Pemasyarakatan Khusus Anak Lombok Tengah).

2. Method

This research aimed to examine any forms of learning deficiencies such as students' bad behavior, academic motivation disengagement, and disposition, in search of its resolution therefore an educational ethnography method is adhered, assisted by a cross-sectional approach meaning the research centered on the subjects of observation in their educational environment and record the teaching and learning process as it occurred and as the research is conducted to appoint detailed and comprehensive results of the study (Grenfell, 2012). This type of combinational study produced important information on classroom conditions: Teaching and Learning engagements in classroom relating to deficiency (learning barriers) in learning English and its solving methods.

The population of this research is classified into (1) target population, referring to the main subject of the research which is concentrated to protégés of central Lombok Juvenile detention center; and (2) accessible

population, referring to individuals of the related interest such as teaching training students, teacher/ teacher candidates, and researchers. The sample of this research is the 12 C-package protégés of central Lombok Juvenile Detention Center in which the sampling method applied is non-probability purposive sample to allow researcher to contain the initial understanding of the under-researched population to fulfill the significance of this study: analyze English teaching and learning problems and the strategies used to overcome them.

The data were collected through two types of data including primary including teacher interview, students' questionnaire, environmental and classroom observation, and field notes; while the secondary data were collected including teacher modules and teaching materials. The collected data were analyze through Grounded Theory Methods of ethnographic coding methods by Williams and Moser (2010) in which it involves 3 levels of coding including (1) open coding, where the data is identified; (2) axial coding, where the data is classified; (3) selective coding, where the data described and explained to develop theories and answer research questions (Straus & Corbin, 1990).

3. Results

To obtain the data, the researcher participate in-classroom observation as a silent-observer and did not take part in the instructional process or to interact with students or teacher during the process besides taking notes of the indicators that define students' disposition that appears when teaching and learning occur at the given time. The main focus of the observation was to track and record the actual learning process which will be later compares to students' questionnaire and teacher's interview to gain more accurate data regarding the problems and strategies in teaching English to C-package protégés. According to the data during the research, there were 12 male protégés in total of C-package equivalence in Central Lombok Juvy.

Despite gathering difficulties encountered by researcher during data collection in the field due to teacher absence through several classroom meeting leading to teacher interview had to conduct via online-call, the data were successfully obtained and the protégés, officers and the penitentiary are very responsible and helpful to help researcher collects data as actual as possible. Meanwhile, according to protégés' level of English skills, conditional factors such as students' relative amount due to their confinement period, provision of teacher and tutor, the B and C package equivalence are combined into one class a week. Based on the latest circular letter, the English class was rescheduled from Friday evening to Tuesday morning at 9.00. The material taught is mainly based on B-package equivalence module considering the majority of protégés' level of English. The aim of equalizing both B and C package protégés is to help these students to restart their English learning from the beginning in order to strengthen their foundation of understanding the course. At the end of this research, researcher also figured out of 12 C-package protégés that filled in students' questionnaire, only 6 protégés registered in the UPK while the others were already taken the test in the last year.

The results of the collected data were classified into several categorizations. The problems founds within the English teaching and learning process in this penitentiary were categorized into three including (1) problems related to teacher consisting of teaching assignment and experience; teacher's classroom management; and teacher's teaching commitment. Meanwhile, the strategies for these problems were categorized into three including (1) course materials; (2) teaching approach, consisting of technique and grammar and memorization; and (3) teacher strategies, consisting of course delivery, motivating students, and managing students. To be clear, the analysis of these classification is explained as below:

From the 12 students' questionnaire, researcher found that factors affecting protégés engagement in learning English is marginally affected by peers' discouragement such as chatter during lesson or invitation to play or jokes within the learning process. Other personal factors are relating to difficulty in spelling and pronunciation of English words.

From the teacher and tutor interview, researcher found that factors arising problems in teaching English to C-package protégés are the inadequate provision of learning medium such as insufficient module, access to

information, and provision of English teacher/tutor, and protégés' personal background such as social life and environment inside or outside the Juvy, and their low level of English skill despite their level of equivalence.

From the observation, researcher found that factors hindering English learning and teaching are mainly caused by the insufficient teacher/tutor and teacher absence towards classroom meetings. As a language teacher of an inclusive classroom with protégés as their students, it is important to understand that the presence of a teacher is crucial for the learners' learning progress. This observation also shows that, out of five classrooms meeting in total, the teacher was able to attend only one meeting, and missed two meetings before the UPK or Equivalency Education Exam and therefore meetings had to be conducted by another English tutor. The term tutor itself refers to Juvy's officer who has applicable skills in a certain course to act as substitute teacher when the teacher is unable to attend the class.

After classifying the problems found in the collected data, researcher categorized strategies used by teacher to overcome each of the identified problems. In the students' questionnaire, the protégés stated how teacher helped them through their difficulty catching up with the class and these statements were also claimed by teacher during the interview and researcher confirmed the practice of these strategies during the observation. For instance, when protégés were disengaged by peers-relationship in form of distraction during class, teacher nominated these protégés to speak up or come forward to answer question regarding the material presents by the teacher. Next, when protégés having difficulty in spelling and pronunciation words, teacher recall their memories by giving examples or clues. Next, to substitute the limitation of learning medium and media, such as variation of books and audio recording, the teacher acts as the main source of information by listing vocabularies and demonstrating expressions in English. Another problems concerning teacher frequent absence during meeting is usually handled by replacing class with assigning homework. However, this strategy was hardly successful because the mandate was rarely delivered to the protégés by the officers and staffs due to communal responsibility of the protégés. Therefore, the penitentiary initiated teacher substitution by the tutor in order to fulfill unmet classes before the equivalency exam.

4. Discussion

These analysis aims to discuss and compare the identified problems and strategies in teaching English for C-package protégés with other studies on similar issues. The previous findings shows there are marginally 3 sources of problems in teaching English to these protégés including (1) Teacher-related strategies which mainly concerning the limitation of teacher, teacher's poor work commitment, and juvy's poor compensation for indiscipline; (2) protégés-related strategies which mainly concerning difficulty in understanding materials, parents' disrepute towards education, limited parental guidance, limited access to information and gadget, and negative peers relationships; and (3) problems related to teaching which marginally concerning about limited English teacher, insufficient learning module and media, and poor classroom management.

4.1. Analysis of Problems in Teaching English to Protégés in Juvenile Detention Center

The most common teacher-related problems in the case of teaching-learning English inside the juvy are the limitation of teacher. Hakim (2015) and Widodo and Dewi (2018) confirmed this statement in their research. They stated that limited number of teacher and tutors are often seemed normal to be found in juvy. Hakim (2015) added that the teacher's existence in assisting these students are often neglected due to the teacher main focus are generally pours in the formal school. Beside of that, since students in juvy are have different condition with students in normal school, they often behave passively yet difficult to arrange causes teacher to struggle in developing significant teaching method.

Widodo and Dewi (2018) mentioned similarly comparable problems regarding teaching English to students in primary school. Problems regarding the students are categorized into four, including (1) discipline during class; (2) English ability; (3) support from parents; and (4) habits of practicing English in daily life. Hakim (2015) explained that problems related to students in the case juvy's protégés are mostly comes from their character or behavior especially when these protégés are legally declared as conflicting with law. He also stated that these

protégés hardly understand material although they were taught the very basic or easiest material due to the prohibition of taking notes or book. On the other hand, based on the observation conducted in central Lombok juvy, protégés are genuinely allowed to bring and have their own notebook into the class to take notes of the lesson.

Moreover, Widodo and Demi (2018) mentioned that one of the challenges in teaching young learners is to maintain their focus during the teaching and learning process. The term young learners can be related to protégés since they are considered teenager which also explain why they are confined by juvenile justice law. Widodo and Dewi also mentioned that these youngsters often distracted from teacher's presentation due to having chatter and playing with their friends. Brown (2001) stated keeping children to focus is by making them curious to materials discussed in the classroom. Harmer (2018) believes that students' understanding comes not merely from explanation, but also from observing and listening, touching or feeling and interacting with hands-on learning and will likely decrease the level of boredom during the learning process.

The next problems related to students' English ability. These types of students with already detained background are often lose motivation and attention towards the learning process. This causes them to find difficulty in understanding materials or even easiest materials and worse they tend to quickly forgot what they just learn.

Practicing English in daily life is often challenging for these protégés. Peers relationship and family support usually becomes the main causes. Distraction such as chatter and invitation during lesson and practice often misguided them from the main objectives. As Nunan (1999) claimed that learners are effectively learn language by doing it whilst Harmer (2010) claimed that learning a language is assisted performance that need someone to practice with. Unfortunately, not all friends and parents or family are willing or even able to communicate in English. Therefore, students' ability in communicating English might be interrupted.

Regarding the limitation of teaching module and documents, traditional methods and poor classroom management are considered normal to occur inside the juvy. Hakim (2015) mentioned in his research entitled *The Implementation of English Language Teaching Learning Methods for Juvenile Offenders in Kutoarjo Juvenile Corrections Purworejo* that the condition of the protégés have caused challenges for the teacher to convey the materials as much as teaching normal students. He also believed that motivation and attention also have significant impact on the continuity and progress of these protégés learning.

On the other hand, learning medias such as LCD projector, audio-video, et cetera are yet fully complete to support the learning process to be more interesting and less monotone for the students.

4.2. Analysis of Strategies Teaching English To Protégés in Juvenile Detention Center

According to Hakim (2015), teacher delivered materials based on the syllabus. The teacher also use modules and internet sources as media of learning. However, teaching and learning in central Lombok juvy are contrary to this concept. Although there are teaching modules, the teacher often taught material by adjusting and pressing the materials for both B and C package from the most basic lesson as briefly and understandable as possible. Moreover, internet access are considered illegal for protégés to use.

The books used are B package equivalence Module 4 *I See A Wonderful Village* of 2017 published by the ministry of education and Package C English of 2013 published by Penerbit PT Eaststar Adhi Citra.

As an inclusive classroom containing students with special condition, the correct teaching approach has important role in helping students achieving learning objectives. To aid several weaknesses in the education system, method becomes the most important thing in supporting the success of the teaching-learning process. Similar to the methods used by teacher in central Lombok Juvy, in the case of Hakim (2015)'s research, it was found that Kutoarjo Juvy also adapt to approaches such as (1) question-answer on pre-activities and post-activities learning; (2) grammar translation method where teacher writes, reads and explain material taught or discussed; (3) Total Physical Response where teacher provides authentic examples and students were instructed

to reenact them to their daily life. However, this type of method was an exception in central Lombok juvy. In return, teacher and tutor use nomination to encourage protégés' with most act of disengagement or shown distracted behavior to perform in front of the class.

Based on the accumulation of collected data from the research conducted in Central Lombok Juvenile Detention Center concerning problems and strategies in teaching English to C-Package protégés, it can be concluded that the problems in teaching English to C-Package protégés of Central Lombok Juvenile Detention Center are categorized into three including (1) Teacher-related strategies which mainly concerning the limitation of teacher, teacher's poor work commitment, and juvy's poor compensation for indiscipline; (2) protégés-related strategies which mainly concerning difficulty in understanding materials, parents' disrepute towards education, limited parental guidance, limited access to information and gadget, and negative peers relationships; and (3) problems related to teaching which marginally concerning about limited English teacher, insufficient learning module and media, and poor classroom management. Meanwhile, the strategies for teaching English to C-Package protégés of Central Lombok Juvenile Detention Center are categorized into three including (1) course material where teacher reset lesson into basic English to adjust with protégés' low level of English competence; (2) teaching approach where the technique used by teacher is giving motivational speech pre-class, perform traditional teaching where teacher describe, present and explain materials taught such as explaining function of basic grammar, translating words meaning and instruct memorization practice; (3) teacher strategies including course delivery of basic English lesson such as simple vocabularies and grammar, motivating students of the benefits and role of english in real life, and manage distracting students through nomination of question and answer

Finally, after completing this research, researcher figures that despite numerous problems occurred and encountered in the process of teaching and learning English to C-Package Protégés at Central Lombok Juvenile Detention Center, the strategies used by teacher to overcome these problems are evidently and significantly effective proven by the results of the most recent Equivalency exam showing an adequate scores of all 5 protégés participate in this research.

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The Trends of Education after the COVID-19 Situation in Thailand

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Abstract

This research aims to synthesize the views from domestic and international references on the trends of education after COVID-19 situation, then convey the results of the synthesis to the experts from different groups to examine the trends and the feasibility of mix-method research which would be applied in Thai education after COVID-19 situation. The research conducted an in-depth interviewing of 15 experts and used the discussion method with other target groups of 15 experts. The research results defined the proposals of 31 issues for the trends of education after COVID-19 situation in Thailand. These proposals were similar to those of the educational paradigm shift from the 20th to the 21st century. As a result, Thailand is becoming a more digital society and people have to focus on using information and communication technologies (ICT) to gain the maximum benefits to develop the quality of Thai education.

Keywords: Education after the COVID-19 Situation, Online Learning, Hybrid Learning, Educational Paradigm Shift in the 21st century

1. Introduction

The situation of Corona Virus 2019 or COVID-19 outbreak started in December 2019. The pandemic disease was first found in Wuhan, the provincial capital of Hubei Province in the central China region. On December 30, 2019, the Wuhan Health Commission officially announced lung inflammation of unknown aetiology by the most likely cause of disease transmission from meat sold in a seafood market in Wuhan. Since Wuhan had a high population density, the widespread transmission was passed. After the pandemic outbreak in Wuhan, China and The World Health Organization (WHO) announced the name of the new virus as SARS-CoV-2 or COVID-19, which was the official name of a respiratory disease caused by a new kind of virus that was transmitted between people through respiratory droplets. Then, the World Health Organization (WHO) declared the disease outbreak as the Public Health Emergency of International Concern (PHEIC) on January 30, 2020. Later, the confirmed cases were found in many countries around the world. On March 11, 2020, WHO declared that the big outbreak of COVID-19 and there were sharp increases in numbers of cases outside China such as South Korea, Italy, Iran, Spain, and France. There were 3,000-4,000 new patients per day around the world. In addition, the numbers of dead patients continued to increase by 200-300 per day. The mortality rate caused by this infectious disease was about 3.5%, and most of the severely ill patients were the elderly, smokers, and people with congenital diseases such as heart disease or diabetes. Moreover, several countries in Europe, the United States, Brazil, Russia, India and South

Africa had gradually become the centers of the epidemic. Some countries were in a continual infectious situations and some were new pandemic areas. It was found that the mutation crisis of COVID-19 caused more rapid spread of this disease. The report on February 11, 2022, revealed that there were 406, 270, 115 infected persons, 326,029,900 recovery patients and 5,808,584 dead persons (Department of Disease Control, Ministry of Public Health, 2021).

As for the situation of the COVID-19 epidemic in Thailand, it was found from the survey of Ophanukhrakul (2021) that since the first case was found on January 19, 2020, the number of infected people had slowly increased from one to ten persons at the beginning stage to a hundred ones in March 2020. It was the first wave of an outbreak which led to a lockdown situation with intensive disease control measures. This resulted in having fewer than 5,000 COVID-19 infected persons from January 12 to December 19, 2020. Until the second wave of the outbreak on December 20, 2020, there were 576 new infected persons, bringing the total number to 5,289. More than 10,000 people were infected on January 9, 2021. The number of infections in Thailand had been increased sharply especially in January 2020. This situation brought about the government's alert level from 3 to 4. Due to a significant increase in numbers of infected people and the spread of the ultra-transmissible Omicron in many provinces, the government suggested Thai people to refrain from the following activities, namely eating together, drinking alcohol in restaurants, going to all kinds of high-risk places, getting close to others outside the house, participating in group activities, not taking all types of public transport, and travelling abroad. In addition, high-risk places for catching Coronavirus such as bars and restaurants were also closed. The government also suggested people to work from home and refrain from cross-provincial travel. Moreover, others measures were used to prevent the epidemic increase such as Covid-19 vaccinations, Polymerase chain reaction (PCR) test or Antigen Test Kit (ATK) test.

Anyhow, the outbreak of the disease raised various questions for the study. How will the Ministry of Education design an effective learning in epidemic situations? What will be the role of technology in learning? Will technology make the inequality of education worse? Therefore, the Ministry of Education adopted a learning management policy under the epidemic situations by closing educational institutes and having them continue online teaching and learning activities at all levels and in all educational types: basic education, vocational education, private education, non-formal and informal education, and education for the disabled and the disadvantaged. Important skills such as English and digital technology (coding) (Office of the Education Council, Ministry of Education, 2020) had to be prepared during the semester break. At the same time, Department of Health, Ministry of Public Health (2020) the Ministry of Public Health provided the three-staged guideline for COVID-19 protection in educational institutes: before the opening day of the institutions, at the opening day and during the semester. There were recommendations on various practical measures for each stage.

Following the mentioned guidelines affected negatively the teaching and learning situations: the existing problems aggravated, the disparity in quality of education became wider, the stakeholders composed of students, teachers, parents, and schools had difficulty coping with a new measure of the Ministry of Public Health. In addition, the pandemic of COVID-19 forced the students to stop attending school. They had to do their study at home by following online learning programs or satellite television services provided by the schools. The impacts were as follows: 1) Students from poor families were at risk of permanent absence from school 2) Students had experience regression in learning 3) Students suffered from mental health problems and accumulated stress from online learning 4) Teachers had problems with teaching and paperwork increases 5) Parents had problems of taking care of their children 6) Schools had financial problems. (Watcharasindu & Chiratrachoo, 2021) This was in accordance with the World Bank estimation of COVID-19 crisis that would disrupt the studies of most students or would result in a decline in the quality of education. The impact of COVID-19 would also be a crucial factor which would increase the inequality of education in the country. The students living in poor families or in remote areas and the students who had learning disabilities would have difficulty adjusting themselves to online learning. Finally, it would also increase the disparity between high and low-income countries. (Tuangrattanaphan, 2021)

2. Research Objectives

The COVID-19 crisis was one of the biggest education challenges for most countries which required great effort to solve educational problems. They had to manage to keep on teaching and learning activities of the students during the unusual time. Nevertheless, this crisis created something new in education and the new learning experiences during the pandemic time would become important lessons which will lead to the development of new thinking. Moreover, the education system will be adapted in response to the current situation and will be flexible for the educators to develop the learners' abilities towards the desirability of educational policy. However, the outbreak of COVID-19 was only at the beginning stage of the adjustment of the educational system in Thailand and in the world. Therefore, there is the question 'What will be the trend of education in Thailand after COVID-19?'. The researcher therefore defines the objectives of this research as 1) To synthesize views on the trends of education after the COVID-19 situation in Thailand from domestic and international references; 2) To bring the results of the synthesis to the experts from different groups to examine trends and feasibility for mix-method research; 3) To present the results of research on the trends of education after the COVID-19 situation in Thailand.

3. Literature Review

The researcher studied the views on the trends of education after the COVID-19 situation in Thailand from both domestic and international reference sources. The results of the study revealed 26 proposals for applying in the education after the Covid-19 situation in Thailand as follows:

1. *Re-evaluating what matters*: The threatened COVID-19 situation forced everyone in the world to find an effective way to deal with unexpected situations. Leaders must know how to turn a panic situation into a positive impact through a harmonious blend of roles, leadership and innovation. (Marymount University, 2021)
2. *Doing safe and uninterrupted return to school*: While the suspension at schools may have made it more adaptable to online learning, studying in the classroom is still a preferred approach by many schools. When the situation of the outbreak starts to fade away, the safe and uninterrupted return to school will be applied for better education. (Amarinthewa, 2021)
3. *Providing Outdoor classroom as an alternative to safe and open learning*: Learning is not only just sitting at the desk and writing on the board in the classroom, it is also relevant to outdoor classroom situations which allow students to experience up close and do their learning from the nature and the way of life of the area. The activities for learning the environment of the area have to be prepared for the students. (Amarinthewa, 2021)
4. *Adjusting the course to open the door to the world after COVID-19*: The huge impact of the outbreak will remain and will change the world completely. As a result, the curriculums need to be modified in the long term to prepare children and the youth to grow up to be ready to cope with the changing world of the coronavirus. (Amarinthewa, 2021; International Commission on the Futures of Education, 2020; Intharawiset, Jareoan-sa, & Yüang-sōi, 2021; Vegas & Winthrop, 2020)
5. *Integrating online teaching and learning management of each school*: The COVID-19 outbreak brought an important role of online teaching and learning management to the world of education. From now on, the two learning aspects have to be integrated into each educational institute. (Watcharasindu & Chiratrachoo, 2021)
6. *Providing financial support for the educational institutions and parents*: This should be done to reduce the risk of the students' dismissal since the educational institutions and the parents have no financial support for the students' expenses. (Watcharasindu & Chiratrachoo, 2021)
7. *Harnessing education technology*: Deploy education technology to schools in the long term. This will power them up to meet the needs of educators' teaching and students' learning; otherwise, technology will risk a costly distraction. (Vegas & Winthrop, 2020)
8. *Protecting domestic and international financing of public education*: The pandemic has the power to undermine several decades of advances. National governments, international organizations, and all education and development partners must recognize the need to strengthen public health and social services but simultaneously mobilize around the protection of public education and its financing. (International Commission on the Futures of Education, 2020)
9. *Protecting the social spaces provided by schools as transforming education*: The school as a physical space is indispensable. Traditional classroom organization must give way to a variety of ways of 'doing school' but the

- school as a separate space-time of collective living, specific and different from other spaces of learning must be preserved) (International Commission on the Futures of Education, 2020)
10. *Providing education in a digital world*: Online learning can take place anywhere. Improving online learning in order not to leave anyone behind is important. Online learning will help children who dropped out of the educational system to return to their learning life after the solutions to the COVID-19 problems. (Amarinthewa, 2021; Li & Lalani, 2020; Office of National Higher Education Science Research and Innovation Policy Council, 2020; Sylvan & Cortesi, 2021; Tam & El-Azar, 2020; Watcharasindu & Chiratrachoo, 2021)
 11. *Creating learning in the hybrid classroom era and collaborating to stop using traditional teaching styles that may not be necessary and bringing the new educational innovations to use in a mixed form*: The reopening of the schools was not, of course, like the normal situation before the disease outbreak, but it was a semi-closed, semi-open school such as alternating school days to reduce congestion in schools. Nevertheless, schools had to be closed to allow students to study at home when the epidemic returned. However, online learning did not end, but became part of a new way of teaching and learning in unusual conditions. Currently, many classrooms are now hybrid classrooms with the following questions: How can a hybrid classroom that combines school learning with home screens still be effective or can use this opportunity to help students learn more? (Amarinthewa, 2021; Carvalho & Hares, 2020; Intharawiset et al, 2021; Li & Lalani, 2020; Office of National Higher Education Science Research and Innovation Policy Council, 2020; Martin, 2021; Tam & El-Azar, 2020; Watcharasindu & Chiratrachoo, 2021)
 12. *Valuing the teaching profession and teacher collaboration*: There has been remarkable innovation in the responses of educators to the COVID-19 crisis, with those systems most engaged with families and communities showing the most resilience. We must encourage conditions that give frontline educators autonomy and flexibility to act collaboratively. For teachers, guiding the future of education means getting involved and advocating for their students. Teachers can't fix all their students' pandemic-related problems, but there are essential steps that they can take. (International Commission on the Futures of Education, 2020; Intharawiset et al, 2021; Western Governors University, 2021)
 13. *Prioritize Tech education for teachers*: It is important to note that the COVID-19 pandemic has brought many new challenges into their lives. One of these challenges is the problem of accessing and leveraging the right technologies to deliver engaging, effective, and collaborative lectures. This is not so much a problem for younger generations of students who are, in fact, digital natives and are innately tech-savvy individuals who know how to attend classes online and participate in lectures. For older teachers, however, this can be a big challenge, which is why an emphasis should be put on making technology accessible to older generations. If teachers are to deliver quality to their students in the digital realm, then they will need to learn how to properly use various tech and even some advanced tech like VR and AR to create a more engaging classroom for all. (Andersson & Mattsson, n.d.; Nieves, 2021)
 14. *Leveraging auxiliary learning platforms*: As for students, there is no denying that the COVID-19 crisis has forced them to become more creative in their learning styles and the resources they use. Given the lack of face-to-face interaction or the ability to exchange notes with their peers in person, students are now using auxiliary online learning platforms to supplement their learning. (Nieves, 2021)
 15. *Weaving socialization into the online classroom*: One of the biggest challenges for educators in the post-COVID world is to mimic the kind of engagement and socialization that the physical classroom brings to students. Given the fact that schools are not just intended to teach, but also to mold children into thriving young adults, it is important not to lose this vital component of education when teaching online. One way to do this is to leverage immersive learning with advanced technologies. The other way is to focus on collaborative learning experiences and optimize online classrooms as interactive workshops for children to participate in. Of course, it's important to use both technology and advanced teaching skills to create such an immersive online space. (Nieves, 2021)
 16. *Increasing emphasis on educational cooperation between the public and private sectors*: Diverse stakeholders - including governments, publishers, education professionals, technology providers, and telecom network operators - should come together to utilize digital platforms as a solution to the crisis. Rising public support should be emphasized. There is newfound public recognition of how essential schools are in society and a window of opportunity to leverage this support for making them stronger. (International Commission on the Futures of Education, 2020; Vegas & Winthrop, 2020; Intharawiset et al, 2021; Tam & El-Azar, 2020)

17. *Building resilience into educational systems*: The rapid spread of COVID-19 has demonstrated the importance of building resilience to face various threats, from pandemic disease to extremist violence to climate insecurity, and even rapid technological change. The pandemic is also an opportunity to remind ourselves of the skills students need in this unpredictable world such as informed decision making, creative problem solving, and perhaps above all, adaptability. To ensure those skills remain a priority for all students, resilience must be built into educational systems as well. (Foster, 2021; Tam & El-Azar, 2020)
18. *Promoting student, youth and children's participation and rights, and new education allies*: Intergenerational justice and democratic principles should compel us to prioritize the participation of students and young people broadly in the co-construction of desirable change. The pandemic has galvanized new actors in the community—from parents to social welfare organizations—to support children's learning like never before. The pandemic gives a chance for parents and teachers to forge stronger, more trusting relationships. (International Commission on the Futures of Education, 2020; Vegas & Winthrop, 2020)
19. *Making free and open-source technologies available to teachers and students*: Open educational resources and open access digital tools must be supported. Education cannot thrive with ready-made content built outside of the pedagogical space and outside of human relationships between teachers and students. Nor can education be dependent on digital platforms controlled by private companies. (International Commission on the Futures of Education, 2020)
20. *Expanding the definition of the right to education*: The expansion of the definition of the right to education plays an important role in creating connectivity and access to knowledge and information among learners of all ages. (International Commission on the Futures of Education, 2020)
21. *Emphasizing on Diversity, Equity, and Inclusion*: Transformative leaders in education will jump at the chance to make greater strides in diversity, equity, and inclusion. By developing the skills needed to engage with diverse audiences and stakeholders about organizational practices and theories, leaders can strategically collaborate with key partners to develop cultural intelligence, build global context, and provide support to the teachers, students, employees, and families who need it the most. Put public schools at the center of education systems given their essential role in equalizing opportunity across dimensions within society (Marymount University, 2021; Western Governors University, 2021; Vegas & Winthrop, 2020)
22. *Advancing global solidarity to end current levels of inequality*: COVID-19 has shown us the extent to which our societies exploit power imbalances and our global system exploits inequalities. We should call for renewed commitments to international cooperation and multilateralism, together with a revitalized global solidarity that has empathy and an appreciation of our common humanity at its core. (International Commission on the Futures of Education, 2020)
23. *Prioritizing Mental Health*: Responses to mental health crises are never easy, but they can often be found and implemented with confidence. Leaders who apply their vision casting, innovating, and organizational skills to find mental health solutions for their teams and students will benefit individuals, whole institutions, and systems alike. (Marymount University, 2021; Sylvan & Cortesi, 2021)
24. *Focusing on the instructional core*: Emphasize the instructional core which is the heart of the teaching and learning process. What we should do are as follows: focus on more engaging instruction, reduce silo mentality and increase more collaboration, let students choose the subjects they want to study, have fewer classes during a school day, have smaller class sizes, and cultivate digital citizenship skills. (Marymount University, 2021; Stojkowska, 2020; Vegas & Winthrop, 2020)
25. *Reducing tests and increasing practice*: Testing does not represent the students' ability at all. It usually measures how much information a person can remember or how much knowledge a person can have. This information or knowledge is possible to be forgotten in a short time. Practical learning allows us to apply knowledge and experience in real life. Practice will lead us to acquire new skills and help us to expand our knowledge. (Stojkowska, 2020, Surachet & Sanrattana, 2021)
26. *Insisting on applying knowledge in real life and giving less importance to grades*: Students have more pressure to get high grade. Eventually, grades do not represent the knowledge at all but the most important thing is to understand what to learn and how to apply knowledge in real life. (Stojkowska, 2020)

4. Methodology

This research used a policy research methodology. Majchrzk (1984 cited in Sanrattana, 2018) stated that the policy research was the process of studying the fundamental problems with a feasible, practical-oriented proposal for presenting to the policy makers for decision-making to solve such problems. In this research, the researcher has defined the research process in 2 steps as follows: the first step was to examine the documentary research to explore academic views on the trends of education after the COVID-19 situation both abroad and in the country. The second step was about mixed methods which were applied as the equivalent status design and parallel of the qualitative research, with the in-depth interview and the focus group discussion (Tashakkori & Teddie, 2009 cited in Sanrattana, 2020) to examine the results of documentary research and on the trends of education after the COVID-19 situation in Thailand. The explanations were as follows:

Step 1: Documentary research: To explore the academic perspectives related to the trends of education after the Covid-19 situation such as; Amarinthewa (2021), Andersson and Mattsson (n.d), Carvalho and Hares (2020), Foster (2021), International Commission on the Futures of Education (2020), Intharawiset et al (2021), Li and Lalani (2020), Martin (2021), Marymount University (2021), Nieves (2021), Office of National Higher Education Science Research and Innovation Policy Council (2020), Stojkowska (2020), Sylvan and Cortesi (2021), Tam and El-Azar (2020), Vegas and Winthrop (2020), Watcharasindu and Chiratrachoo (2021), Western Governors University (2021) Finally, the researcher obtained 26 proposals on the trends of education after the COVID-19 situation in Thailand. They were presented in the literature reviews.

Step 2: Mixed methods was applied as the equivalent status design and parallel of the qualitative research, with the in-depth interview and the focus group discussion to examine the results of documentary research and the trends of education after the COVID-19 situation in Thailand.

As for the in-depth interview, due to the preventive measures of the infection with COVID-19, the researcher used the Zoom Program to interview the 15 experts individually. The experts were consisted of 1) five university lecturers who teach the Educational Administration Courses, Curriculum and Instruction, Educational Technology, Educational Psychology, and Educational Fundamental; 2) two educational service area administrators, from the Office of Primary Educational Service Area and the Secondary Educational Service Area; 3) two school administrators, from the primary school and secondary school; 4) 2 teachers, from the primary school and the secondary school; 5) two parents, from the primary school and the secondary school; and 6) two local educational sages.

The researcher used the in-depth interview methods with interview schedule and used a summary of the recommendations for the trends of education after the COVID-19 situation in Thailand. The results obtained from the review of 26 issues that the researcher submitted to study 10 days in advance. The in-depth interview of each expert with the same questions such as 'Do you agree with the proposal 1, 2, 3... that considers the feasibility of action?' 'Do you have any additional proposal?' The answers from those experts were recorded and processed for the overall results of all cases later.

As for the focus group discussion, the researcher used the Zoom program to have a discussion with a new group of 15 experts and classified the data in the same way as the in-depth interviews. The proposals were concluded for organizing a post-COVID-19 education management based on 26 issues that the researcher submitted to study 10 days in advance. The discussion with a group of 15 experts used the same questions such as, 'Do you agree with the proposal 1, 2, 3... that considers the feasibility of action?' 'Do you have any additional proposal?' The answers from the focus group discussion were recorded and processed the overall results of all cases later.

5. The results

From the in-depth interviews and the focus group discussions, the experts did agree with the feasibility of applying the 26 issues proposed by the researcher after the end of COVID-19 situation in Thailand. The government and the educational personnel at the ministry level, department level, regional level, provincial level, school level,

including the private sector and all people in the society should realize the problems of education in the pandemic time and also should engage in intensive remediation to provide better quality of education and set up a crucial mission to achieve throughout the country. Apart from the 26 issues, the experts proposed 5 more important issues (No. 27-31) to be applied. Therefore, there were 31 expert proposals issues, of which 5 were added, namely:

1. Re-evaluating what matters.
2. Doing safe and uninterrupted return to school.
3. Providing Outdoor classroom as an alternative to safe and open learning.
4. Adjusting the course to open the door to the world after COVID-19.
5. Integrating online teaching and learning management of each school.
6. Providing financial support for the educational institutions and parents.
7. Harnessing education technology.
8. Protecting domestic and international financing of public education.
9. Protecting the social spaces provided by schools as transforming education.
10. Providing education in a digital world.
11. Creating learning in the hybrid classroom era and collaborating to stop using traditional teaching styles that may not be necessary and bringing the new educational innovations to use in a mixed form.
12. Valuing the teaching profession and teacher collaboration.
13. Prioritize Tech education for teachers.
14. Leveraging auxiliary learning platforms.
15. Weaving socialization into the online classroom.
16. Increasing emphasis on educational cooperation between the public and private sectors.
17. Building resilience into educational systems.
18. Promoting student, youth and children's participation and rights, and new education allies.
19. Making free and open-source technologies available to teachers and students.
20. Expanding the definition of the right to education.
21. Emphasizing on Diversity, Equity, and Inclusion.
22. Advancing global solidarity to end current levels of inequality.
23. Prioritizing Mental Health.
24. Focusing on the instructional core.
25. Reducing tests and increasing practice.
26. Insisting on applying knowledge in real life and giving less importance to grades.
27. Prioritizing the accessibility and digitalization of technology among poor students, especially in rural areas. Empirical evidence has shown that many students lacked of tools for their online study.
28. Focusing on teachers' empowerment in school because of the stress of their adaptation to the pandemic situation and their increased workloads.
29. Focusing on professional development of teachers and raise the awareness of teachers about the concept of "student achievement should be the ultimate goal of any teacher professional development activities".
30. Focusing on the review of the mission of educational management in schools. This will reduce unnecessary workload and create the new tasks for the real development of students.
31. Focusing on the communication and public relations to encourage people in the society, especially educators and educational personnel to realize the trend of education after the end of COVID-19 situation.

6. Discussion

Comparing the paradigm shift proposal from 20th century to 21st century with 31 proposals for the trends of education after the Covid-19 situation in Thailand, they are all consistent such as, from textbook-driven to web-driven, from passive learning to active learning, from classroom within 4 walls --- learners work in isolation to global classroom --- learners work collaboratively with classmates and others around the world, from time-based to outcome-based, from memorization of discrete facts to what students know, can do and are like after all the details are forgotten, from little to no student freedom to great deal of student freedom, from fragmented curriculum to integrated and interdisciplinary curriculum, from grades averaged to grades based on what was learned, from print is the primary vehicle of learning and assessment to performances, projects and multiple forms of media are used for learning and assessment, from diversity in students is ignored to curriculum and instruction address student diversity. (Tirto, 2010 cited in Sanrattana, 2013).

The researcher stated the view that the key factor led to all the proposal were digital society. Digital society is a modern, progressive society that is formed as a result of the adoption and integration of information and communication technology (ICT) at home, at work, in education and for re-creation (Lokshina, Durkin, & Lanting, 2019). Therefore, ICT which includes the internet, wireless networks, cell phones, broadcasting technologies (radio and television), and telephony and other communication mediums are the key factors for the trends of education after the Covid-19 situation in Thailand. In educational field, ICT is used to assist students to learn more effectively by providing teachers with access to a wide range of new pedagogy, and also to enable teachers to do administrative tasks more efficiently (Fleckno, 2002). However, the users must take into account especially in terms of the effectiveness of ICT. Ra (2016), the director of human and social development division, South Asia department, Asian development blog (ADB), suggested the ICT introduction for use as follows; 1) Take a holistic approach towards the development of ICT in education plans and policies. This includes support for ICT at both the national and individual school levels. This includes measures such as involving education stakeholders in how to integrate ICT skills in the curriculum, or tap teachers to help develop policy plans. 2) Build the capacity of teachers, administrators and other education leaders to use and integrate ICT in education systems. Education leaders should be provided with professional development opportunities so they can engage teachers and together demonstrate a shared commitment to ICT in education. 3) Share best practices and lessons learned among countries in Asia, and among schools within the country. This accumulated knowledge can then be used to inform the development of blueprints and tools to better support ICT in education practices. 4) Forge public-private partnerships (PPPs) and collaboration with tertiary institutions to bring in additional technical and management expertise, as well as financial resources. 'Education PPPs' combine the strengths and capabilities of both sides to ensure the sustainability and scalability of ICT in education initiatives. Governments should drive and facilitate partnerships that include attracting private sector investments on a sustained basis, and tap upon the expertise and resources of both private sector and tertiary institutions, with an emphasis on equal access to quality, ICT-enabled education. and 5) Mobilize resources for research and evaluation of ICT in education to spur innovation and scale up its use. This includes working with tertiary institutions to act as research centers. Governments can create incentives for R&D on innovative uses of ICT in education, including for instance making software and hardware more affordable and relevant for students. Rigorous evaluation studies on ICT effectiveness can provide evidence-based justification for transforming the education sector to embrace ICT.

7. Recommendations

The outbreak of COVID-19 caused difficulties for people of all sectors and of all countries in the world. We will not allow this crisis to destroy everything. We must learn how to adapt ourselves in the New Normal era in order to survive and create a better future for Thai education. All sectors must dedicate themselves to implement the new trends of education after the Covid-19 situation in Thailand. This research proposed 31 issues to be applied for these new trends. In addition, the proposals of educational paradigm shift from 20th century to 21st century are practical, effective and efficient in achieving the high impact of students' learning. To achieve the goals of education for the 21st Century, school administrators and teachers need to adapt education system, not just through a one-off reform, but continuously. They also have to change their teaching perspectives, adapt their teaching techniques to motivate students' curiosity, and implement new technology in schools. Students should be equipped with the kinds of skills that prepare them to live in and shape the society in the future. Moreover, school administrators and teachers have to seek new knowledge and apply to the new paradigm in particularly mixed teaching methods between online and onsite. The new education system will be most capable of responding effectively to the current and changing needs of young people in the society.

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Socio-Cultural Adaptation of International Students in Vietnam

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Abstract

The paper is the first to examine international students in Vietnam despite the country's long-existing effort at internationalization. The empirical study is conducted at a large public university in the capital of Vietnam, a popular destination for foreign students. The study explores socio-cultural adaptation of foreign students and finds that lack of support system severely affects their adaptation, especially in academic adaptation. The paper aims to draw attention to the renovation of university system in order to better serve the needs of a diverse student body.

Keywords: Higher Education, Internationalization, Socio-Cultural Adaptation, University Renovation

1. Introduction

In an increasingly interdependent business world, students have to be prepared to work with and next to counterparts from different parts of the world and from different cultures. Not surprisingly, academicians and businesspersons in unison emphasize that universities should nurture global awareness and engagement in our students. The Association of International Educators (NAFSA, 2003) has continually in the last decade said that “Study Abroad must become the norm, not the exception, at higher education institutions (p.3). We need to aggressively promote it to each rising generation”. In 2019, there are over six million students moving across their national borders for tertiary education not only in English-speaking countries and Europe but also in the Asia-Pacific region (OECD, 2021).

As part of the internationalization initiatives of the Vietnamese government, attracting international students to come study in Vietnam has increasingly received attention from several key universities and the MOET (Tran et al., 2014). It is considered “as a way for Vietnam to promote Vietnam’s education to the world” – as stated by the Vice-Minister of Education and Training at that time, Bui Van Ga (2011, cited in Pham, 2011). However, there is no clear plan on how to attract international students to study in Vietnam; in fact, there is little information about the current administering of international students at Vietnamese universities.

Research on international students in Vietnamese context is mostly about outbound mobility (Vietnamese students studying overseas), literature on foreign students in Vietnamese universities is rare to be found. Some have mentioned the issue of attracting international students to Vietnam, pointing out that inbound student mobility is low in Vietnam as a result of bureaucracy and inflexibility, lack of English-based courses and low reputation (see Pham, 2011; Tran, Marginson & Nguyen, 2014). There is little to none study specifically on experiences of foreign students in Vietnam despite its importance as “Delivering the best possible student experience” is one of the essential ways to strengthen the education export sector (Australian Government, 2016). Therefore, this research intends to explore sociocultural adaptation of international students at Hanoi University, discovering factors that affect their adaptation to Vietnamese settings.

2. Literature Review

On the topic of experiences of international students, challenges in adaptation to the host environment are perhaps the most researched issue. Existing literature concurs that foreign students often struggle to adjust to life in the host country (Oreilly, Ryan, & Hickey, 2010). Adaptation to a new culture can be understood as a “cultural and psychological change that takes place as a result of contact between two or more cultural groups and their individual members (Berry, 2005, p. 698). Related to this, there is the term “sociocultural adaptation”; which is viewed as a behavior that demonstrates cultural competency, and concerns one’s acquisition of cultural and social skills (Berry & Sam, 1997; Ward & Kennedy, 1999). Sociocultural adaptation can be defined as behavioral outcomes of individuals in performing daily tasks in foreign environment (Ward & Kennedy, 1992; Ward & Rana-Deuba, 1999; Ward & Searle, 1991). Ward and his colleagues have advanced the research on the socio-cultural adaptation of international students with a framework that identifies two interrelated dimensions of the process: the first is sociocultural adaptation as predicted by factors such as social skills, linguistic abilities, and length of stay; the second is psychological adaptation as shaped by factors such as social support, coping style, and personal traits. This theoretical framework, called Sociocultural Adaptation Scale (or SCAS), has been empirically evaluated (Ward and Kennedy, 1999), with regular revisions (Wilson et al., 2017). SCAS is one of the most popular measurements to examine intercultural issues such as cultural competence (Bierwiazczonok & Waldsus, 2016; Wilson et al., 2013) and adaptation (Hippler et al., 2016; Wu and Mak, 2012).

2.1. Hypothesis development

Templeman, Robinson, & McKenna (2016) inspected intercultural experiences of medical students and found out that those with Western backgrounds have better socio-cultural and academic adaptation than those with non-Western backgrounds. Though, differences between those in the same continent seemed to be insignificant. However, the study by Lee & Ciftci (2014) suggested that Asian international students tend to be more open and less prejudiced towards other cultures and thus, may attempt to establish relationships in host countries, which facilitates their adaptation. Due to such conflict in existing literature, this study attempts to test the following:

Hypothesis 1. There is a relationship between nationality and socio-cultural adjustment of international students.

According to Berry (2002), gender is another crucial factor that influences cross-cultural adaptation. Nevertheless, research on gender differences in the adaptation of international students produced mixed results. Ward & Kennedy (1994) and Yeh & Inose (2003) found no gender differences in cross-cultural adaptation of international students, Rhein (2014) found no significant difference in adaptation between men and women students studying in Thailand. Meanwhile, Church (1982) proposed that women tend to have more difficulties in adjusting to host culture and have worse psychological well-being compared to men. The study by Ying & Han (2006) revealed that Taiwanese female students in the United States adapted to the host culture better and endured more psychological comfort than men counterparts. On the same note, Lee, Park and Kim (2009) examined the role of gender in academic adjustment of students and found out that female students had a higher level of adjustment compared to male. Mahmood & Burke (2018) discovered that female students are slightly more competent in adapting to new environments compared to their male counterparts. The discrepancy in current literature prompts this research to test the following:

Hypothesis 2. Female international students have better socio-cultural adjustment compared to male counterparts.

Hwang, Wang, & Sodanine (2011) discovered that international students' adjustment was significantly affected by social support and a supportive campus environment. Social support has been examined in relation to cross-cultural adjustment but most research has been on the role of families and friends instead of the university where international students enroll. Research by Wang & Hannes (2014) at a Belgium university reported that without active organizations and clubs, international students find it difficult to form social networks. On the same note, Lee & Ciftci (2014) proposed that relationship with co-national, host-students and home-country students is a critical factor in the adjustment of international students. Coles and Swami (2012) suggested that universities could facilitate the adjustment of international students by creating opportunities for them to communicate and build relationships through the arrangement of accommodation, work groups in labs and seminars, and social clubs. Nevertheless, language differences may create communication barriers between foreign students and local students and local people. In fact, language capacity is an important factor that affects socio-cultural adaptation (BeBe, 2012; Tsegay, Zegegerish & Ashraf, 2018), and Tsegay, Zegegerish & Ashraf (2018) suggested that university support by introducing local language at basic level would better facilitate international students' communication in the host environment. Additionally, the study by Pavlushkina et al. (2016) highlighted the importance of pedagogical support in facilitating foreign students' social adaptation in Russian universities. They proposed and experimented a pedagogical model which included three phases from introducing national culture to facilitating intercultural connection, then developing necessary skills for foreign students to adapt to educational requirements. The result showed a significant improvement in social adaptation of international students after the experimented course of action, which implied the important role of university support in the adjustment of foreign students. Gladkova (2017) specifically stressed the important role of academic advisors in providing not only educational assistance but also psychological counseling and helping international students in adjusting to a new life. The hypothesis is proposed as follow:

Hypothesis 3. Socio-cultural adjustment of international students has a positive association with university support.

There has not been any study which inspected the relationship between international students' field of study and their socio-cultural adaptation, though there has been research on the association between field of study and factors of socio-cultural adaptation. Yu & Shen (2012) examined the role of linguistic confidence of students and found out that students in the Faculty of Engineering and Information and in the Faculty of Economics and Business respectively reported the highest and the lowest level of linguistic confidence, proficiency and socio-cultural adaptation among the five faculties sampled.

Hypothesis 4. There is a relationship between socio-cultural adjustment level and the field of study.

It may seem logical that the length of study affects socio-cultural adaptation of international students: the longer the stay, the better adaptation. This was confirmed by Kuo & Roysircar (2004); Wilton and Constantine (2003) who concluded that difficulty in adaptation (measured by stress level) is correlated with duration of stay. However, several other studies showed a different result. For example, Ward and Searle (1991), Zhao (2010) and Wilson (2011) found that duration of stay has no impact on socio-cultural adaptation. The study by Antonakopoulou (2013) on U.S. students of an abroad program also proved no difference in socio-cultural adaptation between short-term (4 weeks) groups of students and long-term (three semesters) groups. Research by Güzel, H., & Glazer, S. (2019) inspected socio-cultural adaptation difficulty and claimed no significant correlation between length of stay and socio-cultural adaptation. Due to such inconsistencies in existing literature, this study proposes that:

3. Methodology

3.1. Participants

The population in this study was undergraduate international students at Hanoi University. The university is one of the most prestigious public universities in Northern region, with a long-standing reputation for its linguistic

programs. Therefore, the university is among very few to host a large number of foreign student body. The target subjects include short-term exchange students who study for one or two semesters, and regular standard ones who spend the whole 3 years or more studying in Vietnam. According to the International Collaboration Office of Hanoi, University, there are only very few faculties hosting international students, including Faculty of Vietnamese studies, Faculty of Management and Tourism, and Faculty of International Studies. Therefore, the survey was distributed online to the students in these faculties.

3.2. Instrumentation

Data was collected by using a questionnaire. The questionnaire was adapted from the Sociocultural Adaptation Scale by Ward & Kennedy (1999). The final version of the framework had 40 items on 5-point Likert-type scale. The framework included 40 items grouped into four sections: Basic needs and Transportation & Adapting to living environment, Social life, Impersonal Endeavors and Perils, and Adapting to College life.

Section I - Basic needs and Transportation & Adapting to living environment

The 11 items in this section describes experiences in dealing with daily life and ability to take care of essential needs such as food, clothing and transportation systems. Students who score high in this section perceive themselves as having difficulty adapting to the new living environment and in performing tasks in the new environment.

Section II - Social life

Items in this dimension measure the ability to understand and communicate well with others. Students who score high in this dimension see themselves as having difficulty in fitting socially in the new environment

Section III - Impersonal Endeavors and Perils

This section “concerns the management of impersonal interactions (e.g., bureaucracy, authority) and/or awkward situations (e.g., unsatisfactory services)” (Ward & Kennedy, p. 670). Students who score high on this section perceive themselves as having difficulty in dealing with external factors outside of their control.

Section IV - Adapting to College life

This dimension describes experiences in dealing with everyday life at the university. Students who score high on this dimension see themselves as having difficulty in adapting to the university.

4. Analysis and Findings

4.1. Descriptive analysis

A total of 147 responses were collected, all were enrolled at Hanoi University in the last 5 years. The number of male and female students are quite balanced. The majority of respondents are foreign students in Vietnamese Studies, and the rest are from Management Faculty and International Studies. Nearly 80% of survey participants are from Asia, and only 20% are from other continents. Over half of total participants reported that they studied either Vietnamese culture or Hanoi University before coming to Vietnam. Most students reported that they perceived Faculty support in terms of cultural introduction when they first came to the country. Details of population’s demographic and preliminary information are provided in Table 1 below.

Table 1: Demographic characteristics

Characteristics	n	%
Gender		
Male	78	53.1
Female	69	46.9
Nationality		
Africa, America, Europe	30	20.4

Asia	117	79.6
Major		
Management, International Studies	21	14.3
Vietnamese linguistics	126	85.7
Self-preparation		
No	55	37.4
Yes	92	62.6
Faculty support		
No	33	22.4
Yes	114	77.6
Overall	147	100.0

Regarding difficulties in adapting to the living environment, understanding the local accent is considered as the most challenging task (with 26% respondents rating this as highly difficult) while going shopping is the easiest as over 50% of foreign students viewed it as extremely easy or easy.

In terms of social life, most students find it hard to express themselves (25%). Interestingly, they seem to have the least trouble when making friends.

In respect to impersonal endeavours, most students find it the most difficult when dealing with bureaucracy (38%). Dealing with someone unpleasant/aggressive, and taking a local perspective (both accounting for 36%) were also rated as difficult. Meanwhile, most students reportedly have little to none difficulty in understanding cultural differences (35% rated this as extremely easy).

Lastly, in adaptation to college life, generally international students find it easy to communicate to university staff. Not surprisingly, the most burdensome tasks rated by students include expressing their ideas in class (18%) and coping with academic work (14%).

4.2. Regression analysis

At the confidence level of 95%, results of regression analysis (Table 2) prove a relationship between socio-cultural adaptation and students' nationality (with $\text{sig.}=0.036 < 0.05$), major ($\text{sig.} = 0.002 < 0.05$), and duration of stay ($\text{sig.} = 0.001 < 0.05$); therefore, we accept Hypothesis 1, 4, and 5. Other variables: gender and university support does not have any relationship with socio-cultural adaptation.

Table 2: Socio-cultural adaptation and variables

Coefficients ^a		Unstandardized		Standardized		95.0% Confidence Interval		
		Coefficients		Coefficients		for B		
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	1.766	.284		6.217	.000	1.204	2.328
	ETH	.254	.120	.174	2.117	.036	.017	.491
	MJR	.432	.135	.264	3.200	.002	.165	.698
	DUR	-.008	.002	-.266	-3.367	.001	-.013	-.003

a. Dependent Variable: OverallAdaptation

Hypothesis 1 proposes that nationality affects sociocultural adaptation, and results show that international students from Asia show a better level of adaptation ($M=2.88$) compared to those from European, American, and African continents ($M=2.56$). To be more specific, the impact of nationality on adaptation is demonstrated most

strongly in terms of Impersonal Endeavours and Perils ($\text{sig.}=0.002<0.05$) (Table 3); Asian students seem to deal with unfavorable situations much better ($M=3.05$) than students from the other continents ($M=2.60$).

Hypothesis 4 proposes that students' field of study has a relationship with sociocultural adaptation. Students are from grouped into two majors: Vietnamese studies and others (including International Studies, Management and Tourism). ANOVA test was run for analysis and results in Table 4 shows differences in students' ability to adapt. Specifically, the relationship between major and adaptation is demonstrated in aspects of Impersonal Endeavours and Social Life ($\text{sig.}<0.05$); Vietnamese linguistics students can adapt much better in social situations ($M=2.92$) and in impersonal situations ($M=3.05$) compared to those of other majors ($M=2.52$ and $M=2.37$ respectively).

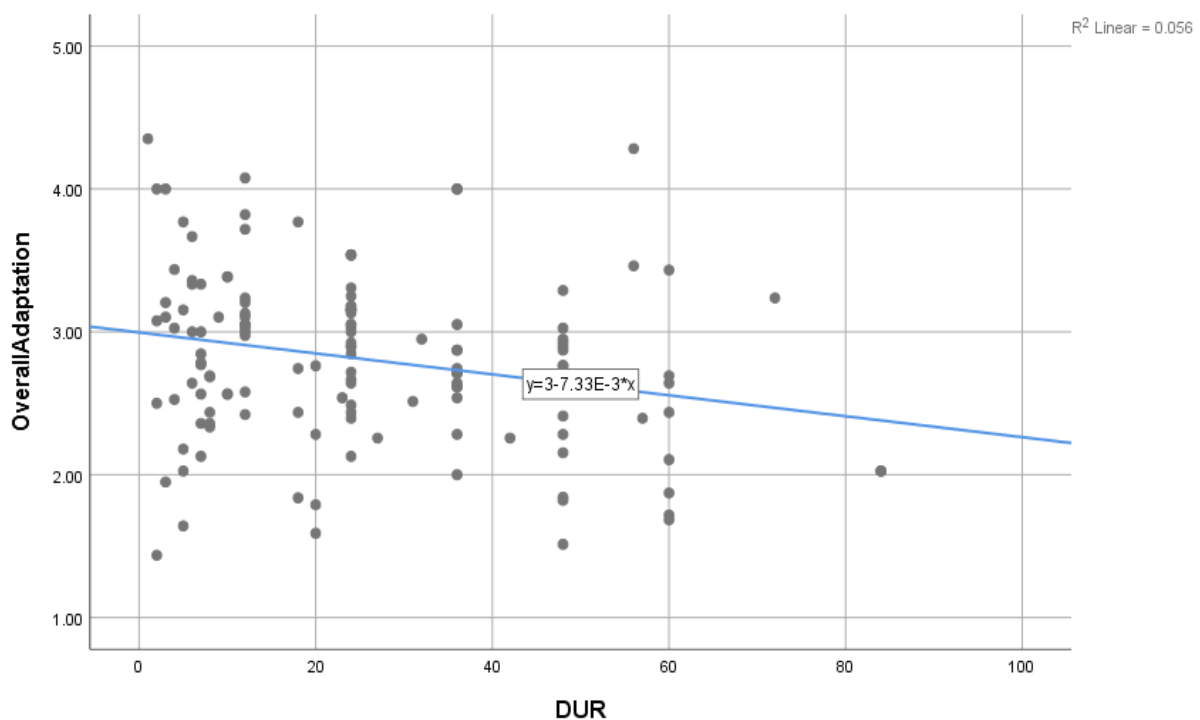
Table 3: Socio-cultural adaptation differences by major

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
SocialLife	Between Groups	2.916	1	2.916	6.077	.015
	Within Groups	69.570	145	.480		
	Total	72.485	146			
Endeavours	Between Groups	8.300	1	8.300	17.886	.000
	Within Groups	66.821	144	.464		
	Total	75.121	145			

Hypothesis 5 proposes that students' duration of stay affects their sociocultural adaptation, and statistics in Table confirm this relationship with $\text{sig.} = 0.005$.

Further inspection shows a peculiar trend: the longer the stay is, the lower socio-cultural adaptation is (Graph 1).



Graph 1: Scatter plot of socio-cultural adaptation and duration of stay

5. Discussion

Enrolment of international students would continue to be important in the internationalization process of Vietnamese higher education. This trend is even more relevant in the context of rising global connectedness, and increasing pressure on Vietnamese universities to take control of student enrolment and financial matters as a part of the governmental initiative to reduce state control over higher education. However, low credibility, limited number of courses in English, and lack of marketing plan to attract foreign students make HEIs in Vietnam remain a non-popular destination. The majority of foreign students at Vietnamese universities enroll in courses on Vietnamese studies such as Vietnamese language or literature; very few select other disciplines such as sciences or economics (Pham, 2011). This is reflected in this study where the majority of respondents are from the Faculty of Vietnamese studies, and a marginalized number are in Business or International Studies major.

This study is the first to examine the experiences of international students in Vietnam. The results showed that international students have moderate level of social adaptation when studying in Vietnam. Of the four dimensions: Living Environment, Social Life, Endeavours, College Life, adaptation to college life is the worst while surprisingly, dealing with impersonal perils and endeavours has the highest score. This result is similar with existing literature. Difficulties in adaptation to college life have been discussed as one of the main challenges for international students. Several studies (Xiong and Zhou, 2018; Girmay, 2017) showed that adjustment to academic environment is one of the main themes summarizing challenges for international students. International students have to adjust to the differences in academic systems, norms and expectations regarding teaching styles, evaluation methods, and class activities.

This demonstrates that universities need to have academic consultants for international students to help them get adapt to the learning environment in the foreign country. However, currently, there are no academic advisors for international students at Vietnamese universities; most just have a unit that supports international students in general matters and mainly provide paperwork or administration assistance. There is absolutely no consultancy regarding cultural differences in academic life such as communicating with classmates, or doing teamwork. And emotional support or stress-handling assistance caused by living in new environment is not offered.

This suggestion does not contradict but further explains one finding in this paper that said university support is not related to socio-cultural adaptation of students. The type of university support currently provided is insufficient and ineffective to the point that it has no impact on students' adaptation. Noteworthy, that is also why the adaptation of international students has a peculiar trend of worsening the longer they stay. Without proper consultation and emotional support along the way, alienated feeling replaces the excitement students feel in the beginning when they first arrive in the country.

It is not surprising when foreign students of Vietnamese linguistic majors have better cultural adaptation compared to those of other majors. Linguistic courses include subjects and activities that help students to understand the host culture better, which in turn improves their understanding and adjustment to the host environment. Additionally, language classes are often arranged in ways that allow students to be in the same class during the whole program, which strengthens their camaraderie and provides emotional support while students are far from home. On the contrary, students of other majors select their courses based on their preferences, which means their classmates change course after course and there are more difficulties for them as they have to adapt to new classes every semester. As a result, socio-cultural adaptation of linguistic student is especially better in social and impersonal situations, but not in academic aspect. This further underlines the importance of establishing academic support for international students rather than leaving them to their own resources. Professional and standard support from the school cannot be replaced with personal resources such as friendship and companionship.

6. Conclusion

To advance the education system in Vietnam, the government aims to internationalize universities by attracting international students. Besides, the number of foreigners arriving in Vietnam to work and live with their family have increased, which means a huge potential for Vietnamese schools to target new audience of students. Even

though there are more and more English-taught programs opened, improvement is still needed to help foreign students to adapt to academic life. This paper is the first one to examine the adaptation of international students in Vietnam. Findings of the paper show that international students from Asian continent and studying Vietnamese language have better socio-cultural adaptation than those from other continents and studying other majors. However, this better adjustment is only in terms of social situations and not college life. An odd trend of worsening adaptation despite longer stays demonstrate that lack of proper support may lead to poor adaptation over time. Therefore, this paper stresses the necessity of establishing school support for international students in terms of both academic and cultural aspects.

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Investigating the Relationship Between Physical Education Teachers' Perceptions, Technological Knowledge and Classroom Management Profiles

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Abstract

Overcoming the technology barrier is critical to integrating technology and education. Emerging and changing technologies are rapidly impacting individuals' daily lives as well as their educational lives. The concept of technostress seems to be associated with technological pedagogical field knowledge and classroom management profiles. This study also aims to determine if there is a relationship between PE and physical education teachers' technostress levels, technological pedagogical knowledge, and classroom management profiles. 275 PE and physical education teachers working in Ankara province participated in the study. Data collection was done using the scale to determine teachers' technostress level, technological-pedagogical knowledge and class management profile. The levels of technostress and technological-pedagogical knowledge did not differ significantly by gender, educational status, sport type, place of graduation, age, professional seniority, and time of technology use of physical education teachers. When examining classroom management profiles, there were differences by gender, educational status, athletic department, and age group, but no significant differences between place of graduation, professional seniority, and time of technology use. When examining the class management profiles by gender variable, it was found that female teachers are on the peripatetic and ignorant profile compared to males, by educational level of graduates and in the scatter profile, those who are in the athletic department in the individual sports do not match those in the team sports department in the profile, and in the age group of 24-34 years old were highly rated by the class management profiles in the 35-44 years old category. As a result, it was found that there is an excellent level of significant relationship between the perception of technostress and class management profiles of physical education teachers, in a negative way, while there is a non-significant relationship between Tpba and technostress, with class management and Tpba being positive.

Keywords: Class Management Profile, Technological Pedagogical Field Information, Technostress

1. Introduction

Technology is a duty in every aspect of our lives, and for teachers it is not a privilege but a routine requirement. It is of great importance that technology is integrated into education (Komis, Ergazakia & Zogzaa, 2007). The presence and impact of technology in applied courses outside of theoretical courses can also be assumed as an undeniable fact in educational activities. Teachers need to keep up with the demands of our time in order to develop personally (Erdem and Akkoyunlu, 2002). In order to improve the quality of education, lessons must be delivered in a way that appeals to multiple sensory organs of individuals (Kosar et al., 2003). As education is changing in today's conditions, in addition to the use of technology, year plans and measurement assessments have been fully integrated with technology so that learning can be delivered to students with a simpler understanding (Scherer et al., 2019).

Stress is a physiological and psychological response of individuals that are influenced by a variety of factors (Keller et al., 2012). Individuals' responses to technology-related stress, such as anxiety about technological activities, discomfort, or nervousness, are referred to as technostress (Weil and Rosen, 1997). Technostress; As a result of an adaptation problem in the face of emerging technological progress, it causes the body's reactions against technology (Cicek and Kilinc, 2020). Problems in adaptation of people due to the constant change of technology; Physical technostress, psychological vulnerability, anxiety, emotional technostress, technology dependency, minimization of socialization, increased workload in behavioral technostress and transfer of data stored in digital media to secure environments, and psychological technostress have also arisen as the responsibilities are not apparent (Ennis, 2005). Technostress induced; working more than hours techno overload, increased responsibilities of employees outside work techno infestation, people not adapting to technology enough techno complexity, fear of not keeping up with emerging technologies with the advancement of technology, techno distrust and lack of knowledge of how far these technologies will go has led to the emergence of techno insecurity components (Taraftar vd., 2007).

Due to technological advances, the concept of technostress is addressed in different dimensions; There have been several studies in the literature in order to be familiar with the emotional well-being of the person (Arnetz and Wilholm, 1997), the physical and physiological well-being of the person (Califf et al., 2015), the effort to make permanent changes to their behavior (Longman, 2013) and the acceptance of information technologies (Akgun, 2019).

The method of technological pedagogical field information has started to talk about itself in education today. The technological pedagogical field information model tries to explain the content, pedagogy and technology in a whole state to ensure that technology adapts to the programming and learning process in the broadest sense. In the theoretical framework, technological pedagogical field knowledge is that teachers use technology effectively to teach students a topic effectively. Known as Technologic Pedagogical Content Knowledge (TPACK), technological Pedagogical Field Information (TPAB) in Turkish; today's technological requirement is an important part of the training that enables teachers to use it in training, and support it with pedagogical information (Koehler and Mishra, 2009).

The technological Pedagogical Field Information (TPAB) model is an important concept that affects each other and determines the areas of area, pedagogy and technology information as a junction (Mishra and Koehler, 2006). The model includes technology information (TB), pedagogy information (PB) and field information (EU), which can be ranked as three different types of information on its basis, along with pedagogical field information (PAB), technological field information (TAB), technological pedagogy information (TPB) and technological pedagogical area information (TPAB) as a result of intersecting these areas.

Teachers are very effective in increasing quality of education. In order to be effective in education, class management requires the use of methods that improve students' performance and provide permanence (Palic and Keles, 2011). The basic concept of classroom management is to pedagogically plan courses for the needs of students and to put people into learning action using resources efficiently according to the environment of the classroom (Jelep, 2008). Teachers are obliged to demonstrate the most appropriate class management profile,

taking into account the conditions of the class, students and environment. Kris (1996) class management profiles; the profile shape in which all authority is in the teacher, boundaries are determined by the teacher is authoritarian; the profile shape in which students are given a control mechanism for understandable reasons for certain goals is appreciated, the profile shape of which students are free to act and the teacher is very little active is unattended; The profile of teachers who are completely uninterested in events where their presence and absence are not apparent in the classroom is considered a class management profile (Ekici and Kurt, 2014).

Teachers, who are responsible for organizing educational activities within the classroom, present different class management profiles. More authoritarian, accendiated, unattended and indifferent class management profiles are used (Ekici, 2012).

In the technological era, it is very important for teachers to mix different class management profiles when passing information to students, but teachers are not able to receive proper maid training in technology, which has revealed the concept of technostress and has a negative impact on teachers' performance. In this study, it is believed that the perception of technostress by physical education teachers will help students and teachers to find out what kind of relationship they have between these concepts by examining them in terms of class management profiles as a result of this study.

2. Method

This section contains the model of the research, research group, data collection tools and analysis of the data.

2.1. Model of Research

This study uses a scanning model from quantitative research methods. The aim of screening is to describe the subject under study, and to reveal the current situation, so studies in education are often used for screening studies. (Buyukozturk et al., 2014). This type of research is generally used in social sciences for descriptive studies to reveal the basic research subjects for an audience with over sampling (gender, age, education level, work experience) (Can, 2020).

2.2. Research Group

The universe of this study consists of physical education teachers working in public schools under the National Directorate of Education in Ankara and physical education teachers working in the central districts of Ankara province. For this study, 295 physical education teachers in Ankara were reached. Data from a total of 275 teachers were used to extract incompatible data to make the statistics meaningful. The demographic data of the study participants are shown in Table 1.

Table 1: Frequency and percentage distributions of Teachers Demographic characteristics

Properties	Categories	<i>f</i>	%
Gender	Male	174	63.3
	Female	101	36.7
Education Status	License	221	80.4
	Master's and above	54	19.6
Graduation	Ankara	77	34.5
	Other Provinces	593	65.5
Sports Branch	Team	174	63.3
	Individual	101	36.7
Age	24-34 Age	77	28
	35-44 Age	118	42.9

	45 and More Age	80	29.1
Professional Seniority	1-7 Year	46	16.7
	8-15 Year	128	46.5
	16 Year and More	101	36.7
Daily Technology Usage Time	1-2 Hour	122	44.4
	3-4 Hour	107	38.9
	5 Hour and More	46	16.7
Total		275	100

2.3. Data Collection Tools

The study used the Scale of Teachers to Determine Tech Level developed by Çoklar, Efilti, and Şahin (2017), which consists of 28 items used to collect data on teknostress. The multipliers were found by Efilti and Şahin (2017) in the whole scale as Cronbach Alpha .92 in the reliability of the scale. All sub-dimensions of the scale ranged from .71 to .79. In this study, the internal coherence coefficient is .98 when all measured characteristics of the scale are considered. When all sub-dimensions of the scale are considered, it ranges from .87 to .95. Considering these results, the scale can be considered reliable.

The study used the "technological Pedagogical Field Information Scale" adapted into Turkish by Horzum, Akgun, and Ozturk (2014), which was developed by Schmitd and others (2009) consistedists of 51 items used to collect data on TPAB as a data collection instrument. Horzum, Akgun, and Ozturk (2014) found a Cronbach's alpha of .98 for the scale reliability of the entire scale. All sub-dimensions of the scale ranged from .82 to .89. In this study, the internal coherence coefficient is .98 when all measured characteristics of the scale are considered. When all sub-dimensions of the scale are considered, it ranges from .87 to .95. Considering these results, the scale can be considered reliable.

The data collection instrument used in the study, Class Management Profile Scale, was developed by Kris (1996) (Classroom Management Profile) and adapted to the Turkish "Class Management Profile Scale" by Ekici (2004). The entire scale developed by Pflug (2004) was assessed with a Cronbach's alpha of .80. All of its sub-dimensions ranged from .78 to .84. In this study, the internal coherence coefficient is .92 when all measured characteristics are considered. Considering these results, the scale can be considered reliable.

2.4. Data Analysis

SPSS 26.0 package program was used in the analysis of the data obtained as a result of the research. First of all, the data was edited and transferred to the SPSS program. Then the inverse substances found on the scales are converted. Another process performed before the analysis is to make the necessary extractions in terms of single-variable and multivariate outliers. The results of the Kolmogorov-Smirnov test were taken into account because the number of people in the subcategories was generally more than 30. In addition, the values of pressure and distortion were evaluated and as a result, it was discussed that the data were distributed normally. In addition to the hypothesis of normality, the homogeneity assumption was also tested and Levene's test was performed. As a result, the assumption of homogeneity was also found to be provided. Based on all this information, it was deemed appropriate to use parametric tests in the analysis of data obtained from both inventories. In this respect, independent sampling t test to test two variables; one-way variance analysis (ANOVA) was used to test three or more variables. LSD test from Post-Hoc tests was used to find the source of the difference when significant difference was detected as a result of one-way variance analysis. Pearson Moments Multiplication Correlation Coefficient (r) was used to test the relationship between teknostres, Tpba and classroom management profiles of physical education and sports teachers.

The data obtained by applying the teknostres scale, Tpba scale and class management profile scale to physical education teachers were recorded in the database and evaluated. Descriptive statistics were made by calculating percentage, frequency, average and standard deviations for each subdivision of the scale related to Teknostres

qualifications, Tpba levels and Classroom Management Profiles of physical education and sports teachers who participated in the study.

The descriptive characteristics of the scores of physical education and sports teachers who participated in the study from teknostres scale, Tpba scale and Class Management Profile Scale and the distribution of normality according to distortion and pressure levels are shown in Table 2.

Table 2: Simulational Statistics for Total Ratings from Teknostress perceptions, tab levels and Class Management Profile Scale

Scale Score	Minimum	Maksimum	Distortion	Plasticity
Technostress Total	1.14	4.61	.070	.356
Tpab Total	1.04	5.00	-.147	-.293
Class Management Profile Total	2.42	4.17	.057	-.254

3. Findings

In this section, the findings as a result of the analysis of the data collected for the research questions were provided with and interpreted in accordance with the tables and descriptions of the research questions.

Table 3: Descriptive Statistics of Physical Education and Sports Teachers

Teknostress			N	Minimum	Maximum	\bar{X}	S
Teaching Learning			275	1,00	4,86	2,90	,718
Fort he Profession			275	1,00	4,50	2,22	,699
Technical Topic			275	1,00	4,83	2,94	,746
Personal Sourced			275	1,00	4,80	2,40	,793
Socially Focused			275	1,00	5,00	3,01	,741
Teknostress Total			275	1,14	4,61	2,69	,599
Technological Knowledge	Pedagogical	Content	N	Minimum	Maximum	\bar{X}	S
Technology Knowledge			275	1,17	5,00	4,04	,695
Pedagogical Knowledge			275	1,00	5,00	4,29	,581
Content Information			275	1,00	5,00	4,35	,605
Technological Content Knowledge			275	1,17	5,00	4,17	,647
Pedagogical Content Information			275	1,00	5,00	4,33	,613
Technological Pedagogical Information			275	1,00	5,00	4,19	,674
Technological Pedagogical Content Knowledge			275	1,00	5,00	4,17	,673
TPAB Total			275	1,04	5,00	4,23	,573
Class Management Profile			N	Minimum	Maximum	\bar{X}	S
Authoritarian			275	1,00	4,67	2,86	,675
Appreciated			275	2,67	5,00	4,06	,568
Stray			275	1,67	5,00	3,54	,703
Doesn't Mind			275	1,33	4,67	2,87	,558
Class Total			275	2,42	4,17	3,33	,338

What are the teknostress levels of pysical education and sports teachers?

Table 4: Independent Samples T-Test Results for Tech scores according to Teachers' Gender

	Gender	N	\bar{X}	S	t	sd	p
Teknostress Total	Male	174	2.64	.567	-1.84	273	.066
	Female	101	2.78	.645			

As shown in Table 4, the scores taken by teachers on the scale of technostress show that there is no significant difference in gender. According to the statistical results obtained, teachers' levels of technostress are not different from gender.

Table 5: Independent Samples T-Test Results for Tech Points based on Teachers' Education Status

	Educational Status	N	\bar{X}	S	t	sd	p
Teknostres Toplam	License	221	2.69	.608	.379	273	.705
	Master's and More	54	2.66	.568			

As shown in Table 5, the scores taken by teachers on the scale of technostress show that there is no significant difference in education. Based on the statistical results obtained, teachers' levels of technostress may not vary according to the education situation.

Table 6: Independent Samples T-Test Results for Teachers' Graduation of Teknostress Points

	Graduation	N	\bar{X}	S	t	sd	p
Teknostres Total	Ankara	95	2.73	.563	.804	273	.422
	Other Province	180	2.67	.618			

As shown in Table 6, the scores taken by teachers on the scale of technostress show that there is no significant difference in relation to where they graduated. According to the statistical results, teachers' levels of technostress are not different from where they graduated.

Table 7: Independent Samples of Technostres Scores by Teachers' Sports Branch T-Test Results

	Sports Branch	N	\bar{X}	S	t	sd	p
Teknostress Total	Team	174	2.68	.531	-.238	273	.812
	Individual	101	2.70	.705			

As shown in table 7, there is no significant difference in the type of sports branch when looking at the scores teachers receive on the technosters scale. According to statistical results, teachers' technostres levels do not differ according to the type of sports branch.

Table 8: Independent Samples of Teachers' Technostres Scores by Age One-Way Anova Results

	Age Group*	N	\bar{X}	S	Squares Total	Squares Average	F	p
Teknostress Total	24-34 Age	77	2.67	.661	.384	.192	.533	.588
	35-44 Age	118	2.66	.601	98.058			
	45 Age and More	80	2.75	.533	98.442			

As shown in Table 8, the scores taken by teachers from the technostress scale show that there is no significant difference in age group. According to the statistical results, teachers' levels of technostress do not differ by age group.

Table 9: Independent Samples of Teachers' Technostres Scores by Professional Seniority One-Way Anova Results

	Professional Seniority*	N	\bar{X}	S	Squares Total	Squares Average	F	p
Teknostress Total	1-7 Years	46	2.75	.679	.414	.207	.575	.564
	8-15 Years	128	2.65	.641	98.028	.360		
	16 Years and More	101	2.71	.501	98.442			

As shown in Table 9, the scores taken by teachers on the scale of technostress show that there is no significant difference in professional seniority. According to the statistical results, teachers' levels of technostress may not differ according to professional seniority.

Table 10: Independent Samples of Technostres Scores by Teacher's Technology Usage One-Way Anova Results

	Technology Usage*	N	\bar{X}	S	Squares Total	Squares Average	F	p
Teknostress Total	1-2 Hour	122	2.72	.569	.214	.107	.296	.744
	3-4 Hour	107	2.66	.621	98.229	.361		
	5 Hour and More	46	2.67	.635	98.442			

As shown in Table 10, the scores taken by teachers from the technostress scale show that there is no significant difference in technology usage time. According to the statistical results, teachers' levels of technostress may not vary according to the time of use of technology.

What is Physical Education and sports teachers' Technological Pedagogical Content Knowledge levels like?

Table 11: Independent Samples of Teachers' Tpb Scores Based on Their Gender T-Test Results

	Gender	N	\bar{X}	S	t	sd	p
TPAB Total	Male	174	4.24	.572	.620	273	.536
	Female	101	4.20	.577			

As shown in Table 11, the scores taken by teachers from the Tpb scale show that there is no significant difference in gender. According to the statistical results obtained, teachers' Tpb levels do not differ by gender.

Table 12: Independent Samples of Tpb Scores by Teacher Education Status T-Test Results

	Education Status	N	\bar{X}	S	t	sd	p
TPAB Total	License	221	4.22	.584	-.532	273	.595
	Master's and More	54	4.26	.530			

As shown in Table 12, the scores taken by teachers from the Tpb scale show that there is no significant difference in education status. Based on the statistical results obtained, teachers' Tpb levels may not vary according to the education situation.

Table 13: Independent Samples of Teachers' Tpb Scores by Graduation T-Test Results

	Graduation	N	\bar{X}	S	t	sd	p
TPAB Total	Ankara	95	4.24	.529	.356	273	.722
	Other Province	180	4.22	.597			

As shown in Table 13, the scores taken by teachers from the Tpba scale show that there is no significant difference in the places they graduated from. According to the statistical results, teachers' levels of Tpba may not differ from where they graduated.

Table 14: Independent Samples of Tpab Scores by Teachers' Sports Branch T-Test Results

	Sports Branch	N	\bar{X}	S	t	sd	p
TPAB Total	Team	174	4.20	.601	-1.173	273	.242
	Individual	101	4.28	.520			

As shown in Table 14, the scores taken by teachers from the Tpba scale show that there is no significant difference in sports. Based on the statistical results, teachers' Tpba levels may not vary by place in the field of sports.

Table 15: Independent Samples of Teachers' Tpab Scores by Age One-Way Anova Results

	Age Group*	N	\bar{X}	S	Squares Total	Squares Average	F	p
TPBA Total	24-34 Age	77	4.24	.630	.483	.241	.733	.481
	35-44 Age	118	4.26	.537	89.524			
	45 Age and More	80	4.16	.570	90.007			

As shown in Table 15, the ratings taken by teachers from the Tpba scale show that there is no significant difference in age group. According to the statistical results, teachers' Tpba levels do not differ by age group.

Table 16: Independent Samples of Teachers' Tpab Scores by Professional Seniority One-Way Anova Results

	Professional Seniority*	N	\bar{X}	S	Squares Total	Squares Average	F	p
TPBA Total	1-7 Years	46	4.23	.601	.163	.082	.247	.781
	8-15 Years	128	4.25	.580	89.844			
	16 Years and More	101	4.20	.555	90.007			

As shown in Table 16, the scores taken by teachers from the Tpba scale show that there is no significant difference in professional seniority. According to the statistical results obtained, teachers' Tpba levels may not differ according to vocational grade.

Table 17: Independent Samples of Tpab Scores by Teacher's Technology Usage One-Way Anova Results

	Technology Usage*	N	\bar{X}	S	Squares Total	Squares Average	F	p
TPBA Total	1-2 Hour	122	4.20	.560	.335	.168	.509	.602
	3-4 Hour	107	4.23	.605	89.672			
	5 Hour and More	46	4.30	.536	90.007			

As shown in Table 17, the scores taken by teachers from the Tpba scale show that there is no significant difference in technology usage. According to the statistical results, teachers' Tpba levels may not differ according to technology usage.

What are Physical Education and sports teachers' Class Management Profiles levels like?

Table 18: Independent Samples of Teachers' Class Management Scores Based on Their Gender T-Test Results

	Gender	N	\bar{X}	S	t	sd	p
Authoritarian	Male	174	2.89	.632	.720	273	.472
	Female	101	2.82	.745			
Appreciated	Male	174	4.03	.528	-1.109	273	.268
	Female	101	4.11	.631			
Stray	Male	174	3.47	.649	-2.108	273	.036*
	Female	101	3.65	.776			
Doesn't Mind	Male	174	2.82	.520	-2.046	273	.046*
	Female	101	2.96	.609			

As shown in Table 18, the scores taken by teachers on the scale of class management profiles show that there is a significant difference in gender. When the lower dimensions of the scale are examined, the authoritative, appreciated class management profile does not differ, but it has been determined that women ($\bar{X}=3.65$) of the unattended sub-size have scored statistically higher than men ($\bar{X}=3.47$); women of the indifferent sub-size ($\bar{X}=2.96$) than men ($\bar{X}=2.82$). According to the statistical results, teachers' class management profiles may be said that female teachers who have a stray and indifferent class management profile based on the lower level of their class management levels differ according to male teachers.

Table 19: Independent Samples of Class Management Scores by Teacher Education Status T-Test Results

	Education Status	N	\bar{X}	S	t	sd	p
Authoritarian	License	221	2.84	.681	-.612	273	.541
	Master's and More	54	2.90	.652			
Appreciated	License	221	4.01	.554	-2.699	273	.007*
	Master's and More	54	4.24	.591			
Stray	License	221	3.49	.677	-2.209	273	.043*
	Master's and More	54	3.70	.783			
Doesn't Mind	License	221	2.89	.576	.960	273	.338
	Master's and More	54	2.81	.474			

As shown in Table 19, the scores taken by teachers on the scale of class management profiles show that there is a significant difference in education status. When the sub-dimensions of the scale are examined, the authoritarian and indifferent class management profile does not differ, while the underrated graduate and higher ($\bar{X}=4.24$), according to the license ($\bar{X}=4.01$), the unattended sub-size graduate and higher ($\bar{X}=3.70$) were determined to have statistically higher scores than the license ($\bar{X}=3.49$). According to the statistical results, teachers' class management profiles can be said to be appreciated by the lower level of their level and have a disorderly class management profile and have a graduate degree above and graduate degree vary by teachers with a degree in undergraduate graduation.

Table 20: Independent Samples of Teachers' Class Management Scores by Graduation T-Test Results

	Graduation	N	\bar{X}	S	t	sd	p
Authoritarian	Ankara	95	2.85	.699	-.140	273	.889
	Other	180	2.86	.664			

	Province						
Appreciated	Ankara	95	4.09	.553	.751	273	.453
	Other Province	180	4.04	.577			
Stray	Ankara	95	3.47	.653	.213	273	.253
	Other Province	180	3.57	.727			
Doesn't Mind	Ankara	95	2.80	.533	.446	273	.094
	Other Province	180	2.91	.567			

As shown in Table 20, the scores taken by teachers on the scale of class management profiles show that there is no significant difference in relation to where they graduated. Based on the statistical results, it is possible that teachers' class management profiles do not differ from where they graduate.

Table 21: Independent Samples T-Test Results for Class Management Scores by Teachers' Sports Branch

	Sports Branch	N	\bar{X}	S	t	sd	p
Authoritarian	Team	174	2.83	.646	-1.009	273	.314
	Individual	101	2.91	.722			
Appreciated	Team	174	4.03	.541	-.962	273	.337
	Individual	101	4.10	.612			
Stray	Team	174	3.57	.717	1.051	273	.294
	Individual	101	3.48	.677			
Doesn't Mind	Team	174	2.82	.539	-2.199	273	.029*
	Individual	101	2.97	.578			

As shown in Table 21, the scores taken by teachers on the scale of class management profiles show that there is a significant difference in sports. When the sub-dimensions of the scale are examined, there is no difference in the profile of authoritarian, appreciated and unattended class management, but it has been determined that those who have undersized individual sports majors (\bar{X} =2.97) are statistically higher than those who are team sports (\bar{X} =2.82). According to the statistical results, the class management profiles of individual sports teachers may be said to differ according to the lower dimensions of their level, and the class management profile varies according to the teachers who play team sports.

Table 22: Independent Samples of Teachers' Class Management Scores by Age One-Way Anova Results

	Age Group*	N	\bar{X}	S	Squares Total	Squares Average	F	p	Post Hoc (LSD)
Authoritarian	24-34 Age	77	2.87	.685	.751	.375	.823	.440	
	35-44 Age	118	2.90	.632	124.068	.456			
	45 Age and More	80	2.78	.723	124.819				
Appreciated	24-34 Age	77	4.19	.665	2.138	1.069	3.367	.036*	a>b
	35-44 Age	118	3.98	.477	86.341	.317			
	45 Age and More	80	4.04	.575	88.478				
Stray	24-34 Age	77	3.50	.842	.331	.166	.334	.717	
	35-44 Age	118	3.53	.609	134.932	.496			
	45 Age and More	80	3.59	.690	135.263				
Doesn't mind	24-34 Age	77	2.94	.578	.929		1.499	.225	
	35-44 Age	118	2.88	.572	84.257	.464			
	45 Age and More	80	2.79	.510	85.185	.310			

As shown in Table 22, the ratings taken by teachers on the scale of class management profiles show that there is a significant difference in age group. When the lower dimensions of the scale are examined, there are no differences in the authoritarian, unattended and indifferent class management profile, while the underrated 24-34-year-olds (\bar{X} =4.19) were determined to score statistically higher than the 35-44-year-old group (\bar{X} =3.98). According to the statistical results, the class management profile of 24-34 year-olds teachers, which is appreciated by the lower level of their class management profile, may be said to vary according to the 35-44 year-old teachers.

Table 23: Independent Samples of Teachers' Class Management Scores by Professional Seniority One-Way Anova Results

	Professional Seniority*	N	\bar{X}	S	Squares Total	Squares Average	F	p
Authoritarian	1-7 Year	46	2.71	.646	1.232	.616	1.356	.259
	8-15 Year	128	2.90	.653	123.586	.454		
	16 Year and More	101	2.87	.712	124.819			
Appreciated	1-7 Year	46	4.15	.666	.753	.376	1.167	.313
	8-15 Year	128	4.07	.544	87.726	.323		
	16 Year and More	101	4.00	.550	88.478			
Stray	1-7 Year	46	3.51	.756	.030	.015	.030	.971
	8-15 Year	128	3.54	.704	135.233	.497		
	16 Year and More	101	3.54	.683	135.263			
Doesn't mind	1-7 Year	46	2.88	.618	.348		.558	.573
	8-15 Year	128	2.91	.566	84.838	.174		
	16 Year and More	101	2.83	.520	85.185	.312		

As shown in Table 23, the scores taken by teachers on the scale of class management profiles show that there is no significant difference in professional grade. Based on the statistical results, it can be said that the class management profiles of teachers do not differ according to the professional grade.

Table 24: Independent Samples of Teachers' Class Management Scores by Technology Usage One-Way Anova Results

	Technology Usage*	N	\bar{X}	S	Squares Total	Squares Average	F	p
Authoritarian	1-2 Hour	122	2.80	.656	.801	.401	.879	.416
	3-4 Hour	107	2.92	.702	124.017	.456		
	5 Hour and More	46	2.86	.661	124.819			
Appreciated	1-2 Hour	122	4.07	.530	.055	.027	.084	.920
	3-4 Hour	107	4.04	.605	88.424	.325		
	5 Hour and More	46	4.05	.588	88.478			
Stray	1-2 Hour	122	3.47	.652	1.006	.503	1.019	.362
	3-4 Hour	107	3.60	.787	135.257	.494		
	5 Hour and More	46	3.57	.615	135.263			
Doesn't mind	1-2 Hour	122	2.83	.513	1.202		1.946	.145
	3-4 Hour	107	2.87	.591	83.984	.601		
	5 Hour and More	46	3.01	.579	85.185	.309		

As shown in Table 24, the scores taken by teachers on the scale of class management profiles show that there is no significant difference in technology usage. According to the statistical results, teachers' class management profiles do not differ according to technology usage.

Table 25: Pearson Correlation Analysis Results for Relationship between Technostress, Technological Pedagogical Content Knowledge, and Class Management Profiles

	Teknostress		Tpba		Class Mangement	
	r	p	r	p	r	p
Teknostress Perceptions			.087	.148	-.122	.044*
Tpba Levels	.087	.148			-.037	.542
Class Management	-.122	.044*	-.037	.542		

*p<.05

As shown in Table 25, it has been determined that physical education teachers have a perfectly meaningful relationship with their technostress perceptions and class management profiles in a negative way ($r = -.122$; $p = .044 < .05$). It is possible to say that as teachers' levels of technostress fall, class management profiles become more positive. A negative-directional, non-positive relationship between Tpba levels and class management is found between technostress.

4. Discussion

In the research, when looking at the descriptive statistics of the scales, the highest sub-size social focus on the scale technostress, the lowest sub-size size of occupation; the highest sub-size field information on the scale technological education field information, the lowest sub-size technological knowledge; the class management profile recognized for the highest sub-size on the scale of class management profiles, has the lowest sub-size authoritarian class management profile.

The study examined the total score of technostress scale and its sub-scores, gender, educational status, place of graduation, sports major, and age. There were no statistical differences between professional seniority and daily time of technology use.

According to gender, Akgun (2019) in the study of technostress levels of lecturers, according to female lecturers, technology, acceptance values are high, and in Gokbulut and Dindas (2022) teachers, the study of technostress perceptions is higher than male teachers, Kopuz and Aydın (2020) in the technostress study of health personnel, males have higher levels of technostress than female health personnel, La Torre et al. (2019) in the systematic technostress research, that men have higher perceptions of technostress compared to women, and Ragu-Nathab et al. (2008) in the study of technostress in the use of organizations, that men have higher levels of technostress than women.

According to the educational situation, Kopuz and Aydın (2020) people with high levels of education in technostress levels for health workers have high techno uncertainty sub-size scores, Ragu-Nathab et al (2008) the higher the level of education in technostress research in the use of organizations, the lower the level of technostress, the more Turen et al (2015) in his research on technology use at work, it was found that technological uncertainties were higher than those graduated from college and college graduates.

Gokbulut and Dindas (2022) in their research on teachers' recognition of technostress found no statistical difference according to where teachers were stationed.

According to the age variation, Akgun (2019) teachers in their research have higher technostress score than those who are 48 years and older than 32 years and younger, and La Torre et al. (2019) in a systematic study on technostress, the increase of age in technostress increased, Marchiori et al. (2018) in the study of variables in the types of technostress of workers, older workers feel more pressured by technostress than young workers, Tams, etc. (2018) the result of age-based technostress study is that age is negatively affected by technostress.

Gokbulut and Dindas (2022) in the study of teachers' perception of technostress, many and many (2016) according to technostress in teachers' professional life, Longman (2013) there is no discrepancy in people who teach at technostress level for teachers professional experience for more than 10 years and teach for more than 10 years, Marchiori et al. (2018) concluded in the study on the variables of types of technostress that experienced

workers have more technostress than workers with young experience and that their technostress increases as their work experience increases.

In terms of everyday technology use, Coklar *et al.* (2016) found that teachers who use technology for 1 hour a day to study have a higher level of technostress at work than those who use the Internet for 1-2 hours, 3-4 hours, and 4 hours, and Jena (2015) found that technostress increases with increasing time of computer use and technostress.

In the study, the total score of technological pedagogical content knowledge scale and sub-scores were examined, and gender, education status, place of graduation, sports department, age, there were no statistical differences between professional seniority and daily time of technology use.

By gender; Jang and Tsai (2013) see that there is gender differentiation in the technological-educational study of secondary school students, Bakar, Maat and Rosli (2020) the study of mathematics teachers on technological-educational field information is not statistically different in gender study, Physical Education and Training by Erbas and Uenlue (2017) and physical education teacher candidates in technological pedagogical education, training and training levels, In the study of Koh, Chai and Tsai (2010), it was found that male teacher candidates have higher technology knowledge than female teacher candidates.

After the training situation; Car and Aydos (2022) concluded that there was no difference in our work parallel to the training situation in the study of technological pedagogical level of physical education teachers, and Turgut (2017) was no different in the study of technological pedagogical field knowledge competencies for teachers.

According to the graduate position; Hicyilmaz (2018), visual arts in the study of technological-pedagogical content information of teacher candidates; content information of visual arts teacher candidates studying in Inner Anatolian region; visual arts in other regions differ according to teacher candidates; Afacan and Cemil (2017), field information in the study of students by university variables in the study of TPAB's, Pedagogical field information and technological pedagogical field information were found that Gazi University has a change in its sub-dimensions where it is higher than Balikesir University.

According to the sport type; In the study of techno-pedagogical level of physical education teacher candidates, Erbaş and Unlu (2017) concluded that the techno-pedagogical competencies of physical education teachers performing individual sports and team sports did not change in parallel with our study.

According to the age variation; Car and Aydos (2022) 24-28, in the study of the techno-pedagogical levels of physical education teachers, the TPAB levels of physical education teachers aged 39-43 and 44-48 were higher than the TPAB levels, In Demirezen and Keles' (2020 25-29) study of technical-pedagogical field competencies, 23-28 year old teachers concluded that pedagogical information size and Dereli's (2017) teacher candidates increased their pedagogical information size scores according to other age group variables; Kaya and Drucker's (2019) views parallel our work on techno-pedagogical training competencies, In Bilici and Guler's (2016) TPAB study for teachers concluded that Sabo and Archambault (2012) found no significant difference between K12 online and traditional teachers when comparing technological pedagogical information size.

In relation to my professional group; In the research conducted by Niess, Suharwoto, Lee, and Sadri (2006), it was found that the newly appointed teachers with low level of pedagogical knowledge were weaker in connecting technology, pedagogy, and content.

In terms of using everyday technology; Car and Aydos (2022), physical education teachers who use technology three hours a day and more have increased from the TPAB level in their study to determine the technological pedagogical level of physical education teachers Physical education teachers who use technology two hours a day have increased from the TPAB level, Car and Aydos (2020) in their study teachers, who use one hour per day of technology from teachers who use three to four hours or more of technology per day, and Ucar, Demir,

and Hıgde (2014) showed that their research differed from teachers who use technology every day of the week based on technology use.

In their study, when examining the lower scores of class management profiles according to gender variability, it was found that female teachers were on the casual and indifferent profile compared to males. It was found that those who are in the field of individual sports are statistically different from those who are in the field of team sports, which are in the profile and age group that are 24-34 years old and higher than the class management profiles estimated by the category of 35-44 years old.

By gender; Yazar (2019) that there is no gender difference in the study of class management profiles in relation to the class teachers of Beyaztas (2009) and the study of class management profiles of English teachers, that Ciftçi (2015) in his study of class management styles has high authority scores compared to male teachers, Meray and Taskın's (2018) social information teachers class management profiles were also found to be statistically different from male teachers.

According to the educational situation; Yazar (2019) was found that the class management profile, which is estimated in the research among academic staff, is different from doctoral teachers and Oezcaker (2007) did not find any changes in the study of teachers' class management.

Karaman (2016) concluded that there are no differences in the study of teachers' classroom management behaviours.

According to the type of sport; In the study of class management behavior of physical education teachers by Celik (2014), it was found that there was no difference in class management behavior according to the type of sport.

According to the age variation; Yazar (2019) in the study of teachers aged 21-30 years and the class management profiles estimated by those aged 51 and above, Celik (2014) teachers aged 35-40 years have a higher grade point average than teachers aged 41 and above, Bila (2006) in her study has concluded that there is no difference for teachers working in private and public schools.

In relation to my professional group; Ekici (2012) has found a difference in the study of classroom management profile of teachers, Yazar (2019) has found that there is a difference between the profiles of teachers in the management of teachers with 1-10 years of professional experience compared to those with professional experience of 21 years or more, and the Car and Aydos (2022) have found a statistical difference between the behaviors of teachers in classroom management. has not been seen.

In Car and Aydos' (2022) study of teachers, it was found that those who worked three or more hours per day with technology had higher classroom management scores than teachers who worked only two hours with technology

5. Conclusion

It is thus assumed that physical education teachers must adopt new methods to keep up with the needs of the rapidly evolving and changing times. They are under some technological pressure to update their knowledge of technological pedagogical areas and their classroom management profile. In this research, it is found that there is a perfectly significant relationship between the perceptions of technostres and class management profiles in a negative way, a positive non-significant relationship between technostres and tpba, and a positive non-significant relationship between tpba and class management. Gokbulut (2021) is a negative low correlation degree in the relationship between technostres and technopathic competencies of teachers, Marchiori et al. (2018) in their study on the use of technology workers are more exposed to technology and also the technostres level increases, Atanasoff and Vanable (2017) in the study on technostres applications in adult workers, the development of career areas in technostresin workers who positively engage with customers and improve their personal

strategies, and Yao and Wang (2022) study on the effect of smartphone use and sleep on technostres found that smartphones had a positive relationship with information retrieval and sleep quality and technostres.

Disclosure Statements

1. The authors of this article are admitted that they complied with the principles of research and publication ethics.
2. No potential conflict of interest was reported by the authors.
3. This article was screened for potential plagiarism using a plagiarism screening program.

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The Role of Social Activities in Educational Institutions in the Socialization Process

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Abstract

In this research, we aimed to examine the social cohesion that folk dances activities have on secondary school students in terms of some variables. The sample of the research which was conducted using general screening model consists of 156 volunteer students who study at randomly selected secondary schools. The scale of social cohesion in sports was used as the data collection tool in the research. As a result of the research, based on the answers given by the secondary school students in the sample to the scale, it was determined that the general arithmetic average of the social skill level obtained by their participation in folk dances was statistically high. In the research, it was also determined that among the students who participated in the folk dance activities in the survey, female students, twelfth grade students, students who participated in folk dance activities for the eighth to eleventh times outside the standard training sessions, and students whose families' level of income was lower than the other students perceived social unity in a higher level than the rest of the students in the sample. Moreover, it was concluded that there was no statistically significant difference between gender, class, and the repetition variables of the folk dance activities outside the standard training sessions with the social cohesion-providing behavior changes, however, there was a significant difference between the income level variables.

Keywords: Folk Dances, Secondary Education, Student, Socialization, Sports.

1. Introduction

Socialization teaches people how to behave in certain situations and thus ensures that people learn and adopt their social roles (Afacan, 2001). Sociology is a scientific discipline which examines the structure of society, its functions, changes taking place according to its functions, and the social problems that arise as a result of these, with unique observations, and links them to some laws and principles (Yetim, 2011), and it can also be described as the sum of all the phases that a person needs to experience from birth, in order to gain acceptance in the society (Erkal, Guven & Ayan, 1998).

In other words, socialization can be defined as the process by which a person learns, internalizes the socio-cultural elements of the environment throughout his or her life, and integrates these with his/her personality under the influence of experiential and meaningful social institutions, and conforms to the social environment in which he or she must be integrated in (Sayin, 1994). In order to talk about socialization, psycho-social learning,

which occurs as a result of the interaction of the individual with other people, must be experienced (Bas & Sarigoz, 2018). The individual effectively learns to adapt to social life in this process. One of the environments in which these learning takes place in the sports environment (Ozdinc, 2005). Learning is an important factor in the socialization of individuals. Individual development, maturation, and growth develops learning (Sahan, 2008).

One of the places where the learning process takes place in the educational institutions. Schools are the institutions where individuals learn their social responsibilities (Sarigoz, 2021). The interaction of an individual with other individuals and their participation in the activities is realized at school (Bacanli, 2005). Sports activities improve individuals' attention, concentration, problem-solving skills, productivity, imagination, adhering to rules and using practical intelligence (Yetim, 2000). Today, sportive activities and human life are almost inseparable. For this reason, sports activities, which are made consciously and systematically at any age, play an important role in keeping people healthy, harmonious, successful and happy and keeping them in a good mood throughout their whole life (Olmez, 2010).

There is a balanced harmony of the body, arms and legs in terms of physical development in the training of folk dances which can be considered among sportive activities. Learning and management of motor skills allows for gradual control of the movements of arms and legs outside everyday life movements (Brown, 1991). Considering that the back and leg muscle strength of people who play folk dances is usually more developed than the ones who do not (Unal, 1992), we can say that folk dances contribute to the motor development of individuals. Folk dances, which show physically basic similarities with other sports branches, are social activities through holding hands and direct contact with other individuals. Folk dances help those who practice them to be a part of a group, to interact socially with other members of the group, to have a sense of belonging through acting in unison and thus development of group dynamics which in turn may help to prevent or reduce some psychological or social problems (Kocaturk, 2005). Dance, which contains sportive movements, is important in terms of providing individuals with social identity and thus contributing to their socialization, as well as being a group of movements. Individuals are happy with the success of the group or dance type they perform, and they can overcome the negativities they have accumulated in the life process with their group friends who share this happiness. When evaluated in this context, these areas, which support and contribute to the discharge and elimination of negative emotions and thoughts that individuals have accumulated in their lives, can also be seen as treatment places by psychiatrists (Tezcan, 1977). From a psychological point of view, dance can give individuals a sense of pleasure and happiness. Participation in dance can undoubtedly be seen as one of the most important methods of overcoming stress, which is called the disease of our age. Engaging in such activities can be seen as an important factor in reducing negative symptoms such as depression and anger (Crews & Landers, 1987). In addition, dance is important in that it contributes to positive personality traits such as confidence and internal control and that these are good for human psychology, being peaceful against the sense of aggression in human nature and providing the individual with the opportunity to relax (Steptoe & Cox, 1988).

In the light of the above information, it is important to determine the contribution of folk dance activities, which are the subject of our study, to the social integrity of individuals. In the research, it will be tried to determine the level of social cohesion perception felt by the students, through some independent variables.

2. Material and Method

The aim of this research was to determine the level of socialization perceived by the secondary school students engaging in folk dances as a part of their sports activities, by taking some variables into account. The general survey model, which is one of the descriptive survey methods, was used in the research. Survey model is defined as "the survey arrangements made on the whole population or a group, a sample, or a sample group to be taken from it in order to make a general judgment about the population consisting of many elements" (Karasar, 2015).

The population of the research consisted of secondary school students who participated in the folk dance group competitions organized in the youth category by the Turkish School Sports Federation in the 2020/2021 academic year. The sample consisted of a total of 156 secondary school students, 47 male and 107 female, who

were randomly selected from the population by the simple random method. The data required in the research were collected using the Social Integration Scale in Sports, which consists of 32 items (Yilmaz, Karli & Yetim, 2006). The reliability coefficient of the scale was calculated as .917. In this study, the Cronbach's alpha internal consistency coefficient of the scale was determined to be .899. The scale aims to determine the various levels of social integration in a five-point Likert type by ranking them as (5) Strongly Agree (4) Agree (3) Undecided (2) Disagree (1) Strongly Disagree. High scores obtained from the scale indicate that social integration in sports is positive.

The answers given by the students in the sample group to the scale items depending on the demographic variables were calculated with the help of a statistical package program. In the analysis of the data, the normality test was performed to determine whether the data were suitable for normal distribution. After the test, the skewness (-.220) and kurtosis (1.373) values of the scale were found to be between +1,500 and -1,500. Tabachnick and Fidell (2013) state that the data distribution occurs as a normal distribution when the skewness and kurtosis values are between +1,500 and -1,500. In this context, since the results obtained showed normal distribution, besides descriptive analyses, t-test for pairwise comparisons and Cohen's d data for effect size were examined. For comparisons of three or more groups, one-way ANOVA test was performed, and eta square (η^2) test was applied since we had only one dependent variable in the effect size. The effect sizes of the data were calculated for the independent t-test by using Cohen's d (Cohen, 1988), considering the mean differences .02, 0.5 and 0.8 as small, medium and large effects, and for two-way ANOVA by using eta square (η^2) (Lakens, 2013), considering the mean differences .01, .06 and .14 as small, medium and large effects. The statistical significance level was accepted as Alpha (α), and the error level as accepted as $p < 0.05$. The results obtained from the distributions were tabulated, the findings were interpreted, and necessary solutions were suggested. The option intervals and the general evaluation of the scales used in the study were calculated as follows.

$$SA = \frac{EYD - EDD}{SS} = \frac{5 - 1}{5} = 0,8$$

SA:	Option range	1.00 - 1.79:	Low
EYD:	Maximum value	1.80 - 2.59:	Below medium
EDD:	Minimum value	2.60 - 3.39:	Medium
SS:	Number of options	3.40 - 4.19:	Above medium
		4.20 - 5.00:	High

3. Findings

In this section, statistical findings on the data obtained from secondary school students in the survey are presented.

Table 1: Levels of social cohesion that the students perceive through folk dances

Social Cohesion Behaviors in Sports	N	\bar{X}	Ss
	156	4.47	.66

It was determined that the social skill perceptions obtained by participation of folk dances in sports by the secondary school students who participated in the research was of a high level, with a general arithmetic average of 4.47 points.

Table 2: Depending on the gender variable, the social integration status of the students participating in the folk dances with the folk dance sport

Gender variable	N	%	\bar{X}	Ss	Sd	t-	p>.05	Cohen's d
Male	47	30.1	4.40	.75	152	-.797	.426	.001
Female	107	69.9	4.49	.59				
Total	156	100	4.47	.66				

No statistically significant difference between female and male students was found ($t_{(152)} = -.797$, $p > .05$) from the answers given by the secondary school students who participated in the survey.

Table 3: Depending on the variable of grade level in which they study, the social integration status of the students participating in folk dances with folk dance sports

Grade	N	%	\bar{X}	Ss	The source of variance	Sum of squares	Sd	Average of squares	F	p>.05	η^2
Ninth	16	10.3	4.37	.82	Intergroup	.393	3	.131	.29	.831	.005
Tenth	20	12.8	4.40	1.05	Intragroup	67.956	152	.447	3		
Eleventh	52	33.3	4.48	.55	Total	68.349	155				
Twelfth	68	43.6	4.52	.55							
Total	156	100	4.47	.66							

No statistically significant difference between students in different grades was found ($F_{(3,152)} = .293$, $p > .05$) from the answers given by the secondary school students who participated in the survey.

Table 4: Social integration status of students participating in folk dances depending on the situation of performing folk dances more than once.

Repetition	N	%	\bar{X}	Ss	The source of variance	Sum of squares	Sd	Average of squares	F	p>.05	η^2
1-3	46	29.5	4.46	.51	Intergroup	.601	3	.200	.450	.718	.008
4-7	44	28.2	4.45	.46	Intragroup	67.748	152	.446			
8-11	9	5.8	4.57	.74	Total	68.349	155				
11 and above	57	36.5	4.42	.73							
Total	156	100	4.47	.66							

No statistically significant difference was found in terms of their perception of social integrity between students who repeated their folk dance activities outside the trainings and those who did not ($F_{(3,152)} = .450$, $p > .05$).

Table 5: Social integration status of students participating in folk dances depending on their families' income levels.

Level of income	N	%	\bar{X}	Ss	The source of variance	Sum of squares	SD	Average of squares	F	p<.05	η^2
a) Low	102	65.4	4.55	.57	Intergroup	8.72	2	4.364	11.199	.000	.127
b) Medium	44	28.2	4.51	.71	Intragroup	59.621	153	.390			
c) High	10	6.4	3.57	.69	Total	68.349	155				
Total	156	100	4.47	.66							

Tukey
a,b- c

A statistically significant difference was found between the social cohesion perceptions of the students depending on the level of income of their families ($F_{(2,153)} = 11.199$, $p < .05$, $\eta^2 = .127$). As a result of the Tukey test, which was conducted to determine between which groups the significant difference was, it can be said that families with low and middle income levels are more socially integrated than families with high income levels.

4. Discussion and Conclusion

It has been determined that the general arithmetic average of the social skill perceptions of the secondary school students participating in the research obtained by their participation in folk dances is statistically at a high level. It can be said that individuals' self-confidence is completed by getting rid of selfishness and strengthening the awareness of cooperation with each other, and the development of their sense of responsibility thanks to their participation in sports activities (Biskin, 2001). The need of individuals to be a social being is at least as important as the desire to be sportive and healthy. At the same time, dance is effective in personal and social development as well as in gaining personality by instilling emotions such as willpower, determination to succeed, and the desire to progress into the individual, making the destructive, aggressive, hurtful and intolerable impulses that exist in the human structure positive (Tercan, 2016). When the relationship between physical activity and educational success of the dancing classes and the non-dancing classes was examined in the USA, it was seen that academic and social success was more in favor of the dancing classes (Robinson, 2018). When the literature is examined, it is stated in some studies on the subject that the effect of sportive activities on socialization is positive (Akcalar, 2007; Cakmakci, 2001; Hacicaferoglu, Hacicaferoglu, Kayhan & Doganay, 2017; Okmen, 2003; Ozturk, 2016; Sahan, 2008; Tuncalp, 2011; Zeynep, 2010).

In the study, it was determined from the answers given to the scale by the students that there was no statistically significant difference between the female and male students in terms of the gender variable. In this case, it can be said that the thoughts of the athletes regarding social cohesion are equal to one another in accordance with the gender variable; however, females were found to perceive folk dance activities more spiritually developing than competitive sports, when looked at the arithmetic points they received. In the literature, it is stated in some of the research that the level of socialization of women by sport activities is higher than that of men (Aytan, 2010; Theberge, 2000; Yilmaz, 2006). Another research indicates that men do more sports activities compared to women to socialize (Ozdinc, 2005). In contrast, there are also some research results indicating that sports have an equal level of socialization impact on both females and males (Tuncalp, 2011). The literature presents us research results that sports activities have a statistically significant relationship between gender variable and socialization perception (Aytan, 2010; Yilmaz, 2006), but there are also results which have stated completely the opposite (Kaya, 2003).

It was determined that there was no statistically significant difference between the social integration perceptions of students depending on the variable of grade. Therefore, it can be said that the level of social cohesion the students perceived through the folk dances during the research are close to one another, regardless of their grade. Nevertheless, when the total arithmetic scores are examined, it is determined that the students who study in the twelfth grade perceive more social cohesion than the other students. It can be said that the level of perception of socialization perceived by the students who study in the upper grades is higher because of students' being at an age that allows them to make their own decision and choose their own friends. In a related research, it is stated that the effect of the grade of the students participating in nature sports on the social integration is between medium and high levels, and there is not a statistically significant difference (Yilmaz, 2006). In another study, however, it was stated that the higher grade of the students was, the lesser socialization points they had and there was no statistically significant difference (Aytan, 2010).

It was determined that there was no statistically significant difference between students' perceptions of social cohesion due to the variable of repeating the folk dances outside normal training sessions. When looked at the answers given, it was determined that students who exhibited this sport 8 to 11 times outside normal training sessions as an arithmetic score perceived more social cohesion than the others. It can be said that it can help provide joy and stability in troubled lives and alleviate the tensions caused by violence and bullying that may occur in schools (Robinson, 2018), and it can be said that it is important in realizing social cohesion by coping with negativities such as anxiety that may occur during the life process (Hacicaferoglu, Hacicaferoglu & Secer, 2015). Participation in physical activity positively affects the individual's ability to socialize and build social relationships (Reppucci, 1987). In this context, it can be said that the individuals who are frequently engaged in sports activities are more active in establishing social relations and are more successful in their profession than the participants who are engaged in these activities less frequently (Ozturk, 2016; Yilmaz, 2006). As the years of

doing sport increase, it has positive effects on the socialization of the individual (Kizmaz, 2004). In addition, it can be said that cultural activities such as folk dances included in the recreation programs implemented by the educational institutions will contribute to the socialization of the students by increasing their commitment to their schools and their surroundings, positively affecting group formation, group dynamics and group solidarity among students and thus affecting their academic performances positively (Kocaturk, 2005). It can be said that participation in physical activity, which does not have a large number of training sessions, will contribute positively to the individual's social development and ability to establish social relations (Reppucci, 1987; Ozturk, Akin, & Damar, 2016). On the other hand, it is seen that there are also research results in which the socialization integrity is high, although the number of training is less (Hacicaferoglu & Sumer, 2019).

It was determined that there was a statistically significant difference between students' perceptions of social cohesion depending on the income levels of their families. It is also seen that the income level groups of the students are close to each other. On the other hand, it was determined that the students with families having a lower and middle income level perceived more social cohesion with this sport branch as an arithmetic score. Considering the research conducted by Kotan et al. (2009), it is stated that the rate of doing sports increases as the income level increases. It can be said that as the family income level of the students being athlete increases, it can lead to an increase in the social and sportive activity opportunities and diversity of the students in parallel with the improvement of the socio-economic conditions (Gullu et al., 2016). Some research results on the subject show that the income levels of the participants are low (Ozdinc, 2005; Tuncalp, 2011), medium (Yilmaz, 2006), and high (Zeynep, 2010) in various studies.

As a result, in this research, which aimed to determine the social cohesion imposed by folk dance activities on the secondary school students in terms of some variables, it was determined that the level of social skills acquired by participation in the branches of folk dances was statistically high, based on the answers given by the secondary school students in the sample. It was also determined that female students, twelfth grade students, the students who were engaged in folk dance activities eight to ten times more than the normal training sessions, and the students whose families' income level was low and medium perceived more social cohesion in terms of arithmetic score, in folk dance activities compared to the other students. It was also found that there was no statistically significant difference between variables such as gender, grade and the repetition of folk dance activities outside normal training sessions by the students and social cohesion providing behavior; nonetheless, there was a significant difference between students of different family income levels.

4.1. Suggestions

It can be said that folk dance activities provide positive contributions to the socialization process and that the individuals who are trained in this branch can experience a more effective socialization process. In this context, folk dance activities, which combine music, rhythm and physical activities, should be taught as a separate folk dance class for students in secondary education institutions together with their conventional physical education lessons. In addition, the age groups and the educational levels of the students who will participate in this sports branch may be different, so the people who will teach this class should take the pedagogical formation training. Sports and cultural events usually held at the end of educational periods are required to be repeated more than once a year. Thus, more awareness can be raised about the folk dance sport, which can contribute effectively to the socialization process of individuals.

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A Qualitative Research on the Effect of Chaos and Butterfly Effect on Education

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Abstract

Chaos is a scientific approach that refers to the fact that systems or behaviors that are thought to be irregular, complex, impossible to predict actually occur in an orderly manner. The aim of this research is to determine what chaos and butterfly effect mean in terms of education, the importance of chaos and butterfly effect in education and its effects on education. The research is a qualitative study aimed at determining the opinions of teachers about chaos and butterfly effect. The case study method was used in the research. The research was carried out with 23 teachers selected on a voluntary basis among 44 teachers who are doing master's degrees in educational sciences. Research data were collected with a semi-structured interview form developed by the researcher. All the data obtained were analyzed by coding using the content analysis method. In the research, it was concluded that the chaos and butterfly effect positively affect students' development of different ideas, improve their ability to analyze, activate metacognitive functions, and give students the ability to solve problems more quickly by evaluating them from different point of view.

Keywords: Chaos, Inconsistency, Unpredictability, Uncertainty, Butterfly Effect

1. Introduction

From the first-time educational activities were implemented in schools until the 2000s, traditional, behaviorist or teacher-centered methods were used in teaching, and after the 2000s, constructivist or student-centered methods began to be used. Although the methods used have positive, problematic or limited aspects, it can be said that all systems used in education until today have been applied in a uniform order. Especially after the 2000s, with the effect of modernization and technological changes in many fields, it became inevitable to bring a new postmodern movement to the field of education, which is monotonous. In other words, in this century, it is necessary to move from modern education to postmodern education (Akcin & Zengin, 2020; Altun, 2001) and this new understanding of education, which should be applied in schools by arranging the education of all countries with a postmodern understanding of education, is the concept of chaos and the butterfly effect, which includes order in complexity and disorder (Warren, 2021).

Although it has just begun to be noticed today, the history of chaos, which is a philosophical concept, dates back to the first age civilizations (Yazgan, 2020). However, early studies on chaos theory started in Europe and the first findings about the theory were brought to the literature by researchers working mainly in Europe (Bicici, 2016). The concept of chaos derives from the verb *khasko* and was used in the meanings such as fracturing by yawning, yawning, opening, openness, splitting to give birth to something (Durusken, 2004: 6), today the concept of chaos has meanings such as disorder, confusion, irregularity and uncertainty (Ruelle, 2014: 93). In other words, chaos refers to disorder, which is the opposite of the concept of cosmos, which means order, arranging, correcting or tidiness (Akcin & Zengin, 2020; Egi, 2014).

Chaos theory is an unpredictable, irregular order of disorder in which similar situations occur, that is, a disorder with a purpose (Toremen, 2000: 204). Chaos is variable, non-linear, complex situations, inconsistencies, unpredictable events, processes or situations encountered in society (Bolay, 2018; Demir & Yakut, 2018; Turan, 2008). Although the theory of chaos seems to mean chaos and disorder at first glance, it does not express this exactly and chaos refers to the scientific investigation of order within disorder (Yakut, 2018; Yick, 2009; Gursakal, 2001-2007; Levy, 1994).

The inventor of the concept or theory of chaos is Edward Lorenz, a meteorologist and professor. Lorenz discovered a pattern that constantly repeats at the output when graphing the weather on a computer, but never the same repeats are exact. In 1961, while examining a long string, instead of examining the record from beginning to end, for shorthand, a middle value was entered into the computer as the initial value. In summary, he started calculating with the number 0.506921 and changed this initial value to 0.506. When he examined the change in this mathematically very small numerical sequence, he encountered a surprising result and this was the beginning of a new scientific view (Karacelik, 2021; Ucar, 2010; Gleick, 1987; Verma, 2005). Lorenz realized that when the data in the program developed to calculate the changes in the weather conditions are changed in this way, the possible result undergoes a great change (Ucar, 2010). Based on these results, Lorenz also realized that there is no room for predictions in non-periodic physical systems. Because, according to him, the equations consist of generalizations that only roughly describe the atmosphere (Gleick, 2016). Based on these studies, Lorenz introduced the concept, theory or method that he called the 'butterfly effect'.

The concept of the butterfly effect, which was put forward by Lorenz and used to express chaos, is explained as a very small change in the state of the system at the zero point, causing a change that follows it and grows exponentially over time (Ruelle, 2014: 59). In other words, it is the ability of someone who knows the initial states or conditions to calculate approximately how the system will behave (Gleick, 1995: 7). Based on Lorenz's statements or predictions, the butterfly effect or sensitive dependence on initial state theory (Guastello & Liebovitch, 2009; Benbya et al., 2020) has led to predictions on many subjects (Ufuktepe, 2004) such as *a butterfly flapping its wings in the Amazon may cause a hurricane in Texas* (Lorenz, 1995; Weitkamp, 2021; Cramer, 1998), *a butterfly flapping its wings in Beijing, China may cause a hurricane in New York, USA* (Arslan, 2020; Gursakal, 2001; Gleick, 1995), *a nail saves a horse, a horse saves a horse, a horse saves a soldier, a soldier saves a war, a war saves a homeland*. Thus, the butterfly effect actually revealed how important initial conditions or tiny irregularities are in chaos (Aricioglu & Karabiyik, 2019; Sardar & Abrams, 2011; Baysal, 2014: 23; Karatay, 2004).

Based on all these discourses, chaos is a scientific approach which states that systems and behaviors that are thought to be irregular and impossible to predict, indeed disorder itself, occur in an orderly manner. In the chaos and butterfly effect, there are reasons that cannot be determined exactly, rather than a simplified cause-effect relationship (Ural, 2004: 4). Events that do not draw our attention in daily life, seem to be coincidences, but are actually part of a systematic order, are actually evidence of chaos (Aybala, 2018: 6).

The reason why education is desired to be provided with the chaos method is that education has a dynamic system and learning and thinking consist of non-linear processes (Seger, 2002; Akmansoy, 2012; Pamuk, 2013). Because the success of education systems depends on the fact that schools must have complex nonlinear feedback networks (Gunter, 1995).

There is a constant turmoil, confusion, disorder or chaos in education and training activities. Since schools and classrooms are constantly intertwined with problems, they have a chaotic structure between consistency and inconsistency. In order for a school to be successful, especially the structure of the school must be complex and full of chaos. Because school systems are open systems and they have structures that can cause disorder and chaos at any moment. Successful education systems are far from the balance between consistency and inconsistency (Toremeh, 2000). A simple incident that may occur in schools can have a huge impact in the future. The fact that a teacher gives a small punishment to an unsuccessful student can cause huge changes in the student's behavior or academic achievement. Schools may become more sensitive, fragile and chaotic over time due to sudden, unexpected, and large-scale events experienced in changing environments with the uncertainty coming to the fore (Karakose, Imamoglu & Ince, 2020). Therefore, schools should be shaped according to chaotic situations. According to Ruellle, (1995), it is necessary to implement models based on impositions, which are non-linear and intertwined with chaos in schools, and which will put into practise learning and research (Pallotti, 2018; Larsen-Freemen, 2018). For this reason, teachers in schools should be trained in terms of chaos and its effects. The teacher, who is the manager of the classroom, should be able to see the classroom as a chaotic environment and manage the chaos effectively (Demirtas, 2006). In chaotic environments, administration should focus on change and be open to changes (Yakut, 2018). School administrators should also be cautious against the chaos that may occur in the school, have a flexible management approach, cooperate, and be able to look at all kinds of events and problems that are experienced or to be experienced from different perspectives, job satisfaction of its employees and analyze the encountered problems according to multiple variables (Balyer, 2017; Erturk, 2012; Hacicaferoglu & Hacicaferoglu 2013; Northouse, 2016).

2.1. Purpose of the Research

The aim of this research is to determine what chaos and butterfly effect mean in terms of education. In addition, the importance of chaos and butterfly effect in education and its effects on education are also among the aims of the research.

2.1.1. Problem Statement of the Research

What are the teachers' views and thoughts on the chaos and butterfly effect in education?

Sub-problems of the research

1. What does chaos mean in terms of education?
2. What is the importance of chaos in education?
3. What is the importance of the butterfly effect in education?
4. What should be done when a chaotic event is encountered at school or in the classroom?
5. How can chaos and butterfly effect affect educational activities?

2. Method

2.1. Research Pattern

This research is a qualitative study to determine the opinions of teachers about chaos and butterfly effect in education. In the research, the data of the situations determined by the researcher were collected by interview method, and the case study method, in which "the situation is examined in detail and the themes related to the situation are described", was used in the research (Buyukozturk et al., 2014: 21). In addition, during the conversations and interviews with the teachers in this research, the opinions of the teachers about the chaos and butterfly effect were recorded and analyzed, and a case study design was also used in the research in order to describe the subject in depth, based on both the interviews and the analyzes made.

2.2. Study Group

The research was started with a total of 44 teachers working in various schools in Hatay, Turkey and doing postgraduate studies in the field of educational sciences at Hatay Mustafa Kemal University. Then, in order to reflect the diversity of individuals who may be a party to the problem at the maximum level, the research was carried out with 23 teachers selected on a voluntary basis among 44 teachers as a result of the interviews with the teachers through maximum diversity sampling, one of the purposeful sampling methods. While forming the study group, a volunteer agreement was signed with the teachers participating in the research in terms of research ethics, and the names of the teachers were kept confidential and coded as T1, T2, T3, ..., T23.

2.3. Data Collection Tool

In the research, a semi-structured interview form was prepared by the researcher and the research data were collected in order to get the opinions of the teachers about the chaos and butterfly effect. While preparing the interview form, first of all, previous research on the subject and the literature on the subject were examined. In addition, expert opinions were used for the semi-structured interview form to be used as a data collection tool in the research. First, a draft form was created, then the opinions of 4 doctoral faculty members working on chaos in education were received regarding the questions in the form, and the interview form and the questions in the form were corrected according to the feedback from the experts. Then, in order to eliminate the ambiguity regarding the questions, the questions in the form were revised with the help of 3 doctoral faculty members working in Turkish teaching, and the questions in the form took their final form. In order to collect the data in the research, each teacher was interviewed for an average of 20 minutes. During these interviews, some teachers wanted to fill in the form developed for the research, and some teachers wanted a voice recording. In line with the wishes of the teachers, the wishes of each teacher were fulfilled. In this way, the collection of research data took approximately 2 weeks.

2.4. Analysis of Data

While analyzing the data in the research, the questions in the interview form were used to determine the main themes. In the data analysis process, firstly the forms filled by the teachers and the recorded interviews were transcribed from the audio recording and all the data were transferred to the computer. All data obtained from the interviews were subjected to content analysis. In order to obtain accurate and reliable findings in the code generation process, the codes determined by the researchers were used in the analyzes in line with the consensus, by performing coding with 3 Doctor lecturers who worked in the field of curriculum development in education and had coded many times before. The generated codes were tabulated, and maximum attention paid to ensure that the codes were understandable.

3. Findings

In this part of the research, the findings, analyzes and analysis of the research is included.

Table 1: What is chaos according to teachers?

CATEGORY	CODE	PARTICIPANT	FREQ.
	Uncertainty	T1,T2,T3,T4,T5,T6,T7,T8,T9,T10,T12,T15,T17,T18,T19,T20,T22,T23	18
	Confusion, complexity, chaos, turmoil	T2,T3,T4,T5,T6,T7,T8,T9,T11,T12,T16,T17,T18,T19,T20,T22,T23	17
Inability to Predict	Irregularity, disorder	T3,T4,T6,T8,T10,T13,T14,T16,T17,T19,T21,T22,T23	14

	Imbalance,	T1,T2,T4,T6,T7,T9,T11,T15,T19,T21,T23	11
	Disharmony, discord	T2,T3,T4,T8,T11,T15,T16,T18,T20,T23	10
	Instability, inconsistency	T1,T3,T4,T5,T7,T9,T10,T15,T18,T21	10
	Unpredictability	T1,T2,T3,T4,T5,T6,T8,T10,T11	9
	Uncontrollable	T3,T8,T10,T12,T18,T19,T21,T23	8
Inability to Control	Nonlinear	T4,T7,T10,T15,T19,T20	6
	Turbulence, mobility	T5,T7,T15,T19,T22	5
	Negligence	T1,T9,T17,T21	4
	Emptiness	T2,T8,T19	3

When table 1 is examined, it is seen that the opinions of the teachers on the chaos and butterfly effect are first grouped under two categories as 'inability to predict' and 'inability to control', and then the views of teachers belonging to these categories are named with 12 different codes. *Inability to predict* category is named by coding as uncertainty 18, confusion, complexity, chaos, turmoil 17, irregularity, disorder 14, imbalance 11, disharmony, discord 10, instability, inconsistency 10, unpredictability 9, and *inability to control* category is named by coding as uncontrollable 8, nonlinear 6, turbulence, mobility 5, negligence 4 and emptiness 3.

Some of the teacher's views on chaos are as follows. T1 of the participants said, "Chaos is fear first for me. Then it is a complex and incomprehensible structure, inconsistency, unpredictability, ambiguity, neglect and obscurity". T3 said "Chaos is darkness, complexity, bewilderment, inability to understand, confusion, uncertainty, irregularity, non-compliance, inconsistency, turmoil with uncontrollable event or events". According to T4, "Chaos is a state of non-linearity, turmoil, confusion, unpredictability, imbalance, incoherence, instability, uncertainty. It is the being unaware of the process and consequences of an event to be experienced". T8 stated the idea that "something happens at any moment, an event is experienced and these things are uncertain, disharmony, unpredictability, uncontrollability, confusion and irregularity". According to T12, "Chaos is turmoil, uncertainty, confusion and events that cannot be controlled". T15 said "Chaos is not knowing what will happen or where events will lead, turbulence, inconsistency, imbalance, non-linearity, disharmony". According to T18 "Chaos is obscurity, instability, disharmony, darkness, turmoil, uncontrollable situation, confusion and uncertainty". T19 stated the idea as "Chaos is uncontrollable, mobility, turbulence, uncertainty, non-linearity and imbalance". T22 said, "Chaos is the state of being unable to make predictions about a subject, not being able to understand the subject, being uncertain, tension, stress, uncertainty and confusion". According to T23, "Chaos means disharmony, an event that cannot be controlled, uncertainty, imbalance, irregularity, confusion".

Table 2: The effects of chaos in education according to teachers

CATEGORY	CODE	PARTICIPANT	FREQ.
Success	Enriches/improves education by analyzing it.	T1,T3,T4,T6,T7,T9,T11,T12,T13,T14,T15,T16,T17,T18,T19,T21,T23	17
	Provides opportunities for those who fail in education.	T1,T3,T5,T6,T7,T9,T11,T14,T16,T17,T18,T20,T22,T23	14
	Increases the success of the school and the student.	T2,T4,T6,T8,T10,T11,T13,T15,T18,T19,T20,T23	12

	Provides feedback on staff and students.	T1,T5,T7,T8,T9,T12,T15,T18,T20,T21	10
Unexpected Effect	Leads from small changes to big changes.	T3,T7,T8,T9,T15,T17,T18,T20,T21	9
	Helps to deal with indecision.	T4,T7,T9,T12,T18,T20,T22	7

When table 2 is examined, it is seen that teachers' views on the effect of chaos in education are first gathered under two categories as *success and unexpected effect*, and then these categories are expressed with 6 different codes. *Success* category was coded as enriches/improves education by analyzing 17, provides opportunities for those who fail in education 14, increases the success of the school and students 12, provides feedback on staff and students 10 and *unexpected effect* category was coded as leads from small changes to big changes 9, helps to deal with indecisions 7.

Some of the teachers' views on the impact of chaos in education are as follows. According to T1 "First of all, chaos is uncertainty and confusion. However, sometimes being able to resolve small messes can prevent larger ones from emerging. Chaos also improves student skills by enabling students to develop ideas in teaching. Students who solve chaos situations can look at problems from different points of view and solve their problems more quickly. The academic success of the student who copes with a chaotic situation also increases". T4 said, "Chaos in education means a problematic situation. Therefore, problems in education should be analyzed and solved with students in a logical way. In this way, determined, combative and successful students who can cope with problems through chaos and struggle with chaos can be raised". T5 stated the idea that "Chaos means coping with problems and gives feedback to teachers about analyzing and solving problems of unsuccessful students in education. It also guides teachers on how teachers should conduct lessons". According to T8, "Chaos situations in education will improve students' problem-solving skills and thus help students gain behavior of coping with problems. Students who can cope with problems can get out of stressful and anxious situations more easily. Since these students are competitive in the face of the problems they encounter, these students are more successful in their lessons". T11 stated "Students who can struggle with chaos in education can analyze events more easily. Thus, even unsuccessful students can achieve success thanks to the attitudes they have gained. This success can sometimes be the success of the student, sometimes the success of the class and sometimes the whole school". T18 said, "Through chaos, students can learn to fight problems in education. These struggles can add diversity and richness to the student and the class in terms of teaching. It can increase the success of students, increase their fighting spirit, raise their awareness, and enable them to gain experience. It can give ideas to teachers about students". According to T20, "As chaos or chaotic environments are full of complexities, they can provide opportunities for unexpected situations to occur in the classroom. It can offer equal or near-equal opportunities to all students. By making unexpected changes in unexpected students, it can allow these students to exhibit unexpected performances. It can make students self-confident. It can increase self-confidence. However, for all these, students need to know how to fight against chaos and the teacher in the education and training environment should be knowledgeable enough about chaos and fighting against chaos."

Table 3: The effects of the butterfly effect on education according to teachers

CATEGORY	CODE	PARTICIPANT	FREQ.
Big Effect	Small changes lead to big differences	T1,T3,T4,T5,T6,T8,T9,T10,T11,T12,T13,T15,T17,T18,T19,T20,T21,T23	18
	Small irregularities create regularity	T1,T2,T3,T4,T8,T10,T11,T13,T15,T17,T19,T20,T22,T23	14
	Small problems can lead to big decisions	T5,T6,T9,T12,T14,T19,T20,T23	8

	Small disorders can bring more flexible management	T2,T5,T9,T15,T19,T21	6
	Precise commitment to the starting point	T2,T7,T8,T9,T11,T13,T14,T18,T19,T22,T23	11
Internal Effect	Depend on internal dynamics, not external factors	T1,T3,T4,T5,T8,T9,T13,T14,T15,T20	10

When table 3 is examined, it is seen that the opinions of the teachers on the butterfly effect in education were first grouped under two categories as 'big effect' and 'internal effect', and then these categories were expressed with 6 different codes. In the research, big effect category was coded with codes as small changes lead to big differences 18, small irregularities create regularity 14, small problems can lead to big decisions 8, small disorder can bring more flexible management 6 and internal effect category was coded with codes as precise commitment to the starting point 11, depend on internal dynamics, not external factors 10.

Some of the teachers' views on the butterfly effect in education are as follows. *T3 stated that "Some of the behaviors experienced in education can lead to great changes in the individual by personally changing the individual, arranging or improving the individual. It can even change the individual in a positive way and in every sense unpredictably. When this change is examined on a school or class basis, such effects can increase the success of the school or class". According to T8, "Behaviors that are too small to be insignificant can sometimes lead to huge, unexpected results. It depends on the first effect it will have on the individual or the individual being affected by the event. Some situations or changes that seem to be negative can change the individual in a positive way very dramatically". T9 said, "It is when a person is affected by a small event and brings about big changes in himself. Or, it is the fact that the individual achieves a great deal of success by expressing the power within him under the influence of a small factor. Here it is the initial effect that moves the individual. Based on this effect, the individual actually caught the big change by making his own decisions". According to T13, "It is the situations that a child encounters that activate his behavior, but which, according to some, are illogical and sometimes very minor. These small situations can enable the individual to change their behavior in a positive way or to be more mature. As a result, such situations depend on the event or phenomenon that affects the individual. But the individual also needs to be ready and open to this change at any time". T15 stated that "If there is a desire for change, development or improvement in the individual, even very small movements can activate the individual and cause explosions in the individual. In this way, the individual can achieve success. In schools, such individual changes can lead teachers and administrators to a more flexible understanding". According to T20, "The butterfly effect is when a small spark grows into a fire. Sometimes a simple event can create a huge impact, and sometimes it can prevent bigger problems that may occur. In education, it is the ability of a child to change himself or to achieve success by being affected by a small event. When the butterfly effect is considered in terms of education and holistically, creating chaos for students and revealing the dynamics within the students with the effect of these chaos will increase the success of the school. Therefore, sometimes just a small touch is enough for a student to achieve success in education".*

Table 4: According to the teachers, opinions on what to do/how to proceed when faced with a chaotic event at school and in the classroom

CATEGORY	CODE	PARTICIPANT	FREQ.
	Appreciating differing opinions	T1,T2,T3,T4,T5,T7,T8,T9,T10,T11,T12,T13,T15,T17,T18,T19,T20,T21,T22,T23	20

External Focus	Communicating with different people outside of school	T3,T4,T5,T7,T10,T11,T12,T13,T15,T17,T18,T20,T21,T22,T23	15
	Collaborate with administrators, teachers, and students	T1,T2,T5,T7,T10,T11,T12,T13,T15,T17,T18,T20,T21,T22	14
	Assigning everyone involved	T1,T3,T5,T7,T11,T12,T13,T17,T20,T22	10
	Getting help from those with experience	T1,T2,T8,T9,T11,T14,T17,T20	8
Internal Focus	Making independent decisions	T1,T3,T4,T5,T7,T9,T10,T11,T12,T13,T15,T17,T18,T19,T20,T21,T22,T23	18
	Analyzing the event	T1,T3,T6,T7,T10,T12,T13,T17,T18,T20,T22	11
	Being flexible in the face of the event	T3,T7,T11,T12,T18,T21	6

When table 4 is examined, it is seen that teachers' views on what to do/how to proceed when faced with a chaotic event at school or in the classroom are first grouped under two categories as *external focus* and *internal focus*, and then these categories are expressed in 8 different codes. The category of *external focus* was coded with I value different opinions 20, I communicate with different people outside the school 15, I cooperate with administrators, teachers and students 14, I assign tasks to anyone involved in the event 10, I get help from those with experience 8 codes, *internal focus* category was coded with I make independent decisions 18, I provide maximum diversity by analyzing the event 11, I increase sensitivity by acting flexibly in the face of the event 6 codes.

Some of the views of teachers on what to do/how to proceed when they encounter a chaotic event at school or in the classroom are as follows. According to T1, "I collect information about the incident I encountered, analyze the information and evaluate if there are different opinions on the subject. I make my decisions logically and flexibly but objectively, without being influenced, by benefiting from the opinions of those who have experience. But whatever the outcome, I try to resolve the case.". T3 stated, "When faced with a chaotic situation, the first thing I do is to stay calm and act calmly. Then I try to think rationally or act rationally. I try to handle the environment or situation. Before making my decisions regarding the incident, I request help from experienced people. I talk to the school administration, other teachers and students who know the situation. I do not take a strict attitude towards the event. I try to evaluate the event by analyzing it". T7 said, "First of all, I keep my cool in the face of the event and try to act rationally. I try to contact and get help from anyone who has previous experience with the event. I assign tasks related to the event to those who are involved in the event. I act serious about the event, but I also show the required flexibility when necessary". According to T11, "When I encounter an event involving chaos, I first check whether the event is seriously dangerous. If there is a dangerous situation in the event, I inform the school administration. I try to manage the situation until the necessary help arrives. However, if the event does not have a dangerous situation, I try to overcome it by solving the event. If it is a problem that can be resolved in a long time, I get help from people who have experience inside and outside the school". T17 stated, "When chaos occurs in the classroom, I try not to panic. I pay attention to the people involved. I try to understand and analyze the subject. I ask for help from the school administration. I ask for help from my teacher friends at school. I collect information about the event from students. During this whole process, I try to be more understanding by having a calm and moderate attitude". T22 said, "When faced with chaos in the classroom, the first thing I do is to stay calm. Then I identify the event and those who have an impact on the event. Afterwards, I give information to people related such as the school administration that I need to give information

about the event and then I try to control the event. If I have to solve the event or take it under control, I struggle to solve the event without any problems, by bringing the wisdom to the forefront and getting help from people I regard as experienced”.

Table 5: The effects of the butterfly effect on educational activities according to teachers

CATEGORY	CODE	PARTICIPANT	FREQ.
Academic Effect	Making unsuccessful students successful	T1,T2,T4,T6,T8,T9,T11,T12,T13,T14,T16,T17,T18,T19,T21,T22,T23	17
	Developing new methods and techniques in teaching	T1,T3,T4,T5,T8,T9,T11,T12,T13,T15,T16,T17,T18,T19,T21,T22	16
	Making learning more meaningful	T2,T4,T5,T8,T9,T12,T13,T15,T16,T18,T19,T22	12
	Ability to activate metacognitive thinking skills	T1,T3,T8,T9,T10,T14,T18,T19	8
Other Effects	Leading to leaps in every aspect of education	T1,T3,T4,T5,T6,T8,T9,T10,T11,T12,T13,T14,T16,T17,T18,T19,T21,T22,T23	19
	Increasing responsibility and cooperation skills	T1,T2,T4,T8,T9,T11,T15,T17,T18,T20	10
	Helping managers to gain different perspectives	T4,T9,T13,T16,T21	5

When table 5 is examined, it is seen that teachers' views on how the butterfly effect can affect education are first grouped under two categories, *academic effect* and *other effects*, and then these categories are expressed in 7 different codes. In the research, the category of *academic effect* was coded as making unsuccessful students successful 17, developing new methods and techniques in teaching 16, making learning more meaningful 12, ability to activate metacognitive thinking skills 8, the *other effects* category was coded as leading to leaps in every aspect of education 19, increasing responsibility and cooperation skills 10, helping managers to gain different perspectives 5.

Some of the teachers' views on how the butterfly effect can affect educational activities are as follows. T1 stated that “Butterfly effect can lead education into a dead end, but it can also lead to success in education. The important thing is to manage chaotic environments and turn even small problems into positive outcomes”. T3 said, “Success in education can be achieved by overcoming ambiguities or solving problems. When the student who encounters a chaotic situation learns to deal with the problems with chaos, so s/he can overcome the problems s/he encounters in education. Thus, s/he can be successful in all areas and stages of life”. T8 stated that “When some small problems or deadlocks in students are overcome by a mess or a chaos, this situation can cause huge leaps in the student. It can even develop positive results that are sometimes unpredictable”. According to T11, “Butterfly effect enables the individual to overcome the problems. Especially in schools, teachers or administrators can develop their own strategies or methods in order to overcome the problems or troubles they encounter, especially those who encounter chaotic situations in schools”. T17 said, “When the butterfly effect takes place in schools, school management and staff should take responsibility and cooperate in order to overcome this chaotic situation. They should develop some methods in order to be successful in the chaotic environments they may encounter later”. T18 stated “Learning can be more successful and more meaningful in environments where the butterfly effect is observed. Especially, students living in chaotic environments, with the effect of the troubles they experience, become more sensitive about both the struggle in life and the duties that fall on them. This increases the success of the individual in life. This is also the case in some schools. In some schools, there are a lot of problems, but

when the students of the school are examined, both the students and the school are very successful. What make the student and the school successful there is the butterfly effect in the school and the student's ability to find their way out of this chaos and the achievements that it brings."

4. Discussion and Conclusion

From the data obtained on the effect of chaos and butterfly effect on education and interviews with teachers, chaos is perceived as concepts such as fear, inconsistency, unpredictability, uncertainty, neglect, obscurity, darkness, surprise, bewilderment, inability to understand, confusion, ambiguity, irregularity, inconsistency, disorder, imbalance, disharmony, uncontrollable event or events, and disturbance. In the research, it was concluded from the interviews with the teachers that they had enough information about the concept of chaos, but that they did not have the expected effects on the chaos theory or the positive effect of chaos in education. In a study conducted by Hosokawa & Katsuri (2018), it was concluded that school administrators did not have enough knowledge in applying the chaos theory to education, so they found solutions to chaotic problems in intuitive ways.

The success of schools depends on the success of the students. Therefore, the success of all students in schools should be high. Students may have small problems and sometimes these problems can lead to student failure. In the research, it was concluded that being able to solve small problems or complexities can lead the student to unpredictable success. In their research, Hacicaferoglu, Hacicaferoglu & Secer (2015), it is seen that the students' anxiety due to the activities in the school environment affects their academic achievement. In a study conducted by Grant, Joen & Buettner (2019), it was concluded that chaotic classroom environments perceived by teachers negatively affect teachers' success and commitment to the profession. In a study conducted by Berger et al., (2017), it was concluded that chaotic situations in the classroom could weaken the communication between teachers and students. In a study conducted by Martin, Razza & Brooks-Gunn (2012), it was concluded that taking precautions against chaos in the family has positive effects on the development of the relationship between the parent and the child as well as the academic and behavioral development of the child.

Chaos also improves students' metacognitive skills by enabling students to develop different ideas in teaching. Students who solve chaotic situations by thinking can solve their problems more quickly by looking at problems from different points of views. In the research, it was concluded that the chaotic environments led the students to think and developed their ability to analyze events by looking at them from many different perspectives. In a study conducted by Hunter (1996), it was concluded that giving students the right to speak in chaotic environments prompted students to think and research.

According to teachers or administrators, chaos in education means a problematic situation. In the research, it was concluded that the problems encountered in education should be analyzed and resolved logically together with the students, and that determined, combative and successful students should be raised who can cope with the problems thanks to the struggle with chaos. It was concluded that chaos creates unexpected changes in students, allowing these students to exhibit unexpected performances and thus increasing their self-confidence.

The butterfly effect is that a small event in education can grow and unpredictably change the individual positively or help them to be successful. In the research, the butterfly effect was examined in terms of education and it was concluded that when the students experience chaos and the butterfly effect, it reveals the dynamics within the students and increase the student success, and as a result, the success of the school will increase. In a study conducted by Baker, (1995), it was concluded that the butterfly effect is always seen in school systems, and that especially school administrators should take decisions that can have huge effects on schools by using the butterfly effect theory.

In the research, it was concluded that teachers should be calm, think logically, act logically, try to manage the environment or situation when they encounter a chaotic environment in the classroom, get help from experienced people before making a decision about the event, communicate with the school administration, other teachers and students who know the event.

In the research, it was concluded that the most effective way to protect from chaos in education is to predict chaos may happen beforehand, to take responsibility for chaos and to see risks. According to Erturk (2012), the way to be protected from chaos is to work hard, to work selflessly, to see the future, to predict risks and to take responsibility. Schools are institutions intertwined with chaos. For this reason, school administrators and teachers may encounter chaos at school at any time. Therefore, employees should always be prepared for all kinds of surprises at the school. In a study conducted by Altun (2001), it was concluded that school administrators and teachers could encounter chaos in schools at any time, and therefore they should be ready to encounter chaos at any time.

4.1. Recommendations

Chaos can arise in educational environments at any time. Therefore, it is not known when the chaos will arise. For this reason, school staff, especially administrators and teachers, should receive training on how to behave in chaotic environments and how to manage chaotic environments.

Chaotic environments that may arise in schools should not be driven by intuition or emotions, but by creativity and chaos approaches. Managers should be more flexible in situations of chaos and have the understanding to maintain order.

Teachers should offer opportunities to unsuccessful students by considering that unsuccessful students in the classroom can be successful in the future or in time. Teachers should turn the seemingly negative situations into an advantage by turning them into opportunities thanks to the butterfly effect.

Seminars, symposiums or in-service trainings on chaos and its effects or chaos theories should be given to administrators, teachers and all other employees working in schools, and all employees should be educated on these issues. In addition, teacher candidates studying in education faculties of universities should be given courses on topics such as chaos, chaos theory and the butterfly effect, so that the candidates can cope with chaotic environments more easily when they start teaching.

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Students' Skills In Solving Non-Routine Mathematical Problems

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Abstract

Mental skills are required for individuals to think quickly and make correct decisions. It can be said that mental skills, which play an important role in the acquisition of thinking and questioning skills, are only possible with creative, critical, and other high-level thinking skills. In this regard, the PISA exam, which reveals the mathematics achievement levels of countries, is important. Due to the absence of such an exam in the Turkish Republic of Northern Cyprus (TRNC), the descriptive scanning method, one of the quantitative research methods, was used in order to determine the effects on students' abilities in solving non-routine mathematical problems with the methods applied in the mathematics course. Based on this research conducted to determine the skills of 9th-grade high school students in solving non-routine mathematical problems, the mathematics achievement levels of the schools that accept students with special exams in the TRNC have been revealed.

Keywords: Non-Routine Problems, Problem-Solving Skills, Thinking Ability

1. Introduction

The Northern Cyprus Education system, which is implemented based on the Turkish Education system, is carried out as 6+3+4 in accordance with both the European Union (EU) and Turkey, with the addition of the 9th-grade application.

In the curricula prepared by the TRNC Ministry of Education, it is stated that high-level thinking skills in mathematics are important in problem-solving. It has been stated that these skills emerge as a resource for creative and critical thinking skills and therefore play an important role in the mental process (MEB, 2013).

As Polya (1957) stated, one of the most important factors in solving a problem is determining the appropriate strategy. When the studies in the literature are examined, it is seen that the most common problem-solving strategies include prediction and control, systematic list, finding correlations, drawing diagrams, writing equality or inequality, benefiting from solutions for similar easy problems, retrospective work, and reasoning by making a table (Ersoy and Güner, 2014).

In problem-solving, attention is drawn to the necessity of addressing cognitive, affective and motor skills, determining the most appropriate strategy when dealing with the stages of the problem, and collecting information about that problem (Tüysüz, 2013; Stevens, 1998). In addition, cognitive field theorists refer to the importance of the concept and its meaning in problem-solving and reveal that permanent learning is possible by using a combination of operational and conceptual information (Baki, 1998).

However, studies reveal that only the first three steps of the cognitive domain can be implemented in lessons where teaching is provided using traditional methods. The studies point out that analysis, synthesis, and evaluation that require high-level thinking skills were not done (Aydm and Yılmaz, 2010).

It is seen that the cognitive domain taxonomy, which has an important role in educational practices in many countries and was developed by Bloom et al. in 1956, is predominantly involved in learned attainment and behavior (Ornstein and Hunkins, 2014). In this regard, Bloom's Taxonomy particularly assists teachers with posing questions that will improve their thinking skills (Turgut, 1992). The steps determined for this taxonomy are knowledge, comprehension, application, analysis, synthesis and evaluation.

As the first step, the level of knowledge is related to the students' remembering what they have learned as well as the relationship between the related terms (Aykaç, 2014). The second step of comprehension is important to interpret the learned information and establish a cause-effect relationship (Reigeluth and Moore, 1999). In the application step, it is essential to base the acquired knowledge and skills on practical methods (Sönmez, 2012). In the analysis step, the aim is to make the relationship between these elements clearer by dividing the whole into separate elements (Omar et al., 2012). Individuals who can understand the information learned up to the analysis stage understand the relationship between the elements and separate the elements that constitute the whole in order to create a unique whole in the synthesis stage. In the evaluation step, considered as the last step, it is expected that learners will make inferences based on the previously stated conditions and issues (Reigeluth and Moore, 1999). Therefore, it is the most appropriate field for the tendency to measure skills related to the cognitive field consisting of six categories, especially in problems requiring high-level thinking skills in mathematics lessons, and it is thought that Bloom's taxonomy plays an important role in terms of solving problems.

The literature concluded that teachers did not include non-routine problems that allow learners to analyse problems in the classroom, engage in reasoning, and generate alternative ways of solving the problems (Işık and Kar, 2011). In order to solve non-routine problems, it is of particular importance that individuals have high-level thinking skills. This is not just a situation specific to non-routine problems, as it is accepted as the metacognitive levels expected by students as one of the important factors in teaching all problem-solving skills. In the context of higher-order thinking skills, it can be said that the acquisition of analysis, synthesis and evaluation steps determined by Bloom's Taxonomy can only be achieved by critical thinking, questioning, analysing and creative thinking, which is necessary for the effective use of information through mental processes. (Krathwohl, 2002). In this context, in order to gain high-level thinking skills, teachers should prepare course content that will facilitate the thinking process. In this direction, high-level, creative and critical thinking skills are discussed according to the purpose of this study. Teachers are expected to act as guides in teaching creative thinking skills and guide students to form different ideas through collaborative learning. The aim should be to develop methods that will improve creating thinking skills rather than the techniques used by teachers in the past.

Given that studies have revealed that individuals who can think creatively can look critically, it is accepted that critical thinking aims to improve the ability to analyse, evaluate and make inferences (Emir, 2001; Emir and Bahar, 2003). At the same time, critical thinking skills can activate higher-order thinking skills and play an important role in adapting to complexities in the continually evolving modern era (Torres and Cano, 1995). In recent times in particular, individuals have been increasingly required to have the mental skills that allow them to think quickly and make correct decisions (Parmaksız, 2015). Considering that mental skills also require thinking and questioning skills, it can be said that these are only possible with creative, critical and other high-level thinking skills.

This research aimed to determine the non-routine mathematical problem-solving skills of 9th-grade high school students in the secondary education department of the Turkish Republic of Northern Cyprus (TRNC) Ministry of National Education and Culture (MEB). For this purpose, answers to the following questions were sought:

1. Is there a significant difference in the basic math knowledge and concept test scores, non-routine mathematical problem-solving skills test scores and math achievement scores of 9th-grade high school students according to demographic variables?
2. Is there a significant relationship between the mathematics basic knowledge and concept test scores of the 9th-grade high school students and the total scores of the non-routine mathematical problem-solving skills test?

In addition to problem-solving, it is important to develop creativity and express different solutions with different thoughts in terms of non-routine problems. For this reason, determining the success levels of 9th-grade students in non-routine problems increases the importance of the study in this respect.

It is thought that determining the extent to which students can solve non-routine problems will the mathematics programs to be revised by taking these results into consideration.

2. Methodology

Descriptive review studies, which aim to identify opinions by applying a survey to certain groups from the sample representing the universe, are used in methods that aim to determine what events are and how they occur (Karasar, 2015).

2.1. Working group

The research study group consisted of 176 students since the survey was applied to readily available classes in six schools for which sampling permission was obtained by using stratified purposive sampling, one of the non-random sampling methods. The schools selected with this sampling technique were determined in a way that would enable a comparison of the characteristics of certain subgroups in accordance with the purpose of the research, based on the assumption that they would better represent the universe (Büyüköztürk and et al., 2017). Sample selection was determined by the values considered with 0.05 sampling error between universe sizes of 10,000 and 25,000 universe sizes (Yazıcıoğlu and Erdoğan, 2004). Since the application planned to be conducted in one of the schools coincided with a period close to the exam week and the teachers were required to give lessons, the school administrator did not provide the necessary permission, which caused the school not to be included in the research group.

Table 1: Distribution of Students by School Type and Gender

		n	f
School	S1	31	17.6
	S2	30	17.0
	S3	30	17.0
	S4	34	19.3
	S5	23	13.1
	S6	28	15.9
	Total	176	100.0
Gender	Female	108	61.4
	Male	68	38.6
	Total	176	100.0

Table 2: Distribution of Teachers by School Type and Gender

		n	f
School	S1	3	17.6
	S2	2	11.8
	S3	3	17.6
	S4	2	11.8
	S5	4	23.5
	S6	3	17.6
	Total	17	100.0
Gender	Female	13	76.5
	Male	4	23.5
	Total	17	100.0

2.2. Data Collection Tools

The data were collected through the "mathematics achievement test" developed by the researcher, which is designed to reveal students' performance in terms of mathematical concepts, knowledge skills and non-routine mathematical problem-solving skills. Expert opinion was sought after the researchers prepared the "mathematics achievement test" question pool from open-ended questions. The test, which was presented to three experts in the field for their opinion and comprised a final total of 11 open-ended questions, consists of two parts and the part that includes demographic information. Care was taken to determine the questions forming the first part in such a way that they would measure the level of basic mathematical knowledge and concepts that students should have by the 9th grade. Attention was paid to the fact that the questions in the second part were arranged in such a way to determine whether students could find a solution in case of a problem, that they consisted of problems that are not frequently included in the textbooks, that were different from the usual exam types, and that they required the use of creative and probabilistic thinking that require high-level thinking skills. Particular attention was paid to the preparation of the problems used in this study, which were applied in the second half of the 9th grade, to ensure that they were in line with the relevant curriculum. In addition, the questions used in this test, which are organized according to the Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation steps of Bloom's Taxonomy, are arranged as follows.

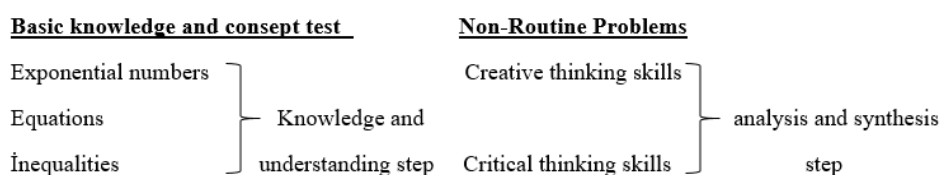


Figure: Relationship of math questions to bloom taxonomy digits

2.3. Data Collection

The data of the research were collected in the second half of the 2017-2018 academic year during a period of approximately 3 months.

2.4. Analysis and Analysis of Data

The quantitative data obtained as a result of the research were analysed using the SPSS 24.0 program. Since the data did not show normal distribution, non-parametric test techniques were used. The Mann-Whitney U test was used for two-factor variables, and the Kruskal-Wallis test was used for variables with more than two factors to determine significant differences between groups. Significance levels were accepted as $p < 0.05$.

The construct validity of the mathematics test was determined by taking expert opinions, while the reliability was determined based on the correlation between the raters. While the validity of the Mathematics Test was determined by taking the opinions of two experts in the field, the decision was made to evaluate its reliability among three different raters. The raters in the study comprised three mathematics teachers who had graduated from the department of mathematics teaching. The teachers evaluated their scores based on the rubric rating key given to them. Popham (1997) and Kan (2007) stated in their studies that when scoring such tests with a rubric graded answer key, the number of raters should be between three and five people in order to save time, effort, and cost. Before scoring, the researcher interviewed each teacher and gave information about how the scoring should be and what should be paid attention to.

3. Findings

3.1. Demographic Information on Students

In order to determine the distribution of the demographic information of the students, frequency analysis was performed and the results are given in table form below.

Table 3: Demographic data of the students

		n	%
School report card	3	5	2.8
	4	9	5.1
	5	21	11.9
	6	36	20.5
	7	25	14.2
	8	34	19.3
	9	29	16.5
	10	17	9.7
	Total	176	100.0
Level of liking	Least	17	9.7
	Less	17	9.7
	Medium	52	29.5
	More	49	27.8
	Most	41	23.3
	Total	176	100.0
Taking a course	Yes	84	47.7
	No	92	52.3
	Total	176	100.0
Level of understanding	Never	2	1.1
	2	5	2.8
	3	2	1.1
	4	16	9.1
	5	15	8.5
	6	21	11.9
	7	27	15.3
	8	40	22.7
	9	28	15.9
	A Lot	20	11.4
	Total	176	100.0

According to the examination pass regulation system determined by the Ministry of National Education, grades of 5 and 6 were determined to be moderate, 7 and 8 were determined to be good, and 9 and 10 were determined to be very good. In this context, it can be said that those who have a grade of 7 or higher (59.7%) from the report card grades in the distribution have a good or very good grade in mathematics. The fact that 80% of the students with very poor grades (3) take private lessons shows that these students most likely attend these courses with the aim of passing their classes. It is seen that only 22% of the students with a report card grade of 4 go to private lessons, and 78% of them do not attend a private course because they pass the class due to their average grade, even though the grade is 4 according to the passing system. However, it is thought that 22% of them go to private lessons because they have an average grade problem. The rate of attending the course is around 40% for those with report card grades of 5, 6, 7, and 8, and it is thought that the purpose of taking private lessons may have been to ensure that the grades do not decrease as well to increase them as much as possible. Students with a grade of 3 may have aimed to raise their grade, while students with a grade of 9 may have aimed to raise their grade further. Similarly, the fact that those with a grade of 10 have a very high rate of 65% is thought to indicate that students who get grades of both 9 and 10 do not take private lessons for the purpose of passing the course but are likely to improve their learning. In general, around 50% of students take private lessons, which highlights the deficiencies in the education system. This situation reveals that both students who are weak in the course and students who are more advanced cannot sufficiently develop themselves in line with their own goals in their schools.

Table 4: Demographic data of the students (continued)

		Course taking status			
		Yes		No	
School report card		n	%	n	%
	3	4	80.0%	1	20.0%
	4	2	22.2%	7	77.8%
	5	10	47.6%	11	52.4%
	6	15	41.7%	21	58.3%
	7	6	24.0%	19	76.0%
	8	14	41.2%	20	58.8%
	9	22	75.9%	7	24.1%
10	11	64.7%	6	35.3%	

When we look at the proportion of students taking a course was examined, it was concluded that 47.7% of the students took a special course for mathematics, and 52.3% did not. Suppose the distribution of students' level of understanding of the mathematics lesson is examined. In that case, the increase in the number of students as the level of comprehension increases shows that the students in the research group can adequately understand what is explained in the mathematics lesson. In this direction, students who do not have problems in understanding mathematics are generally expected to develop a solution strategy to deal with the possible types of questions.

3.2. Distribution of Mathematics Achievement Test Scores by Gender Variable

On the other hand, when the distribution of students' mathematics achievement scores according to gender variable was examined, it was seen that the mathematics achievement scores did not differ significantly by gender ($p > 0.05$). This situation shows that the mathematics achievement levels of male and female students are at the same level.

3.3. Distribution of Mathematics Achievement Scores by School Variable

Table 5: Distribution of Mathematics Achievement Test Scores by School Type Variable

		N	Average	Std. deviation	KW	p
Basic knowledge and conceptual skills	S1	31	12.4	2.5	47.509	0.000*
	S2	30	14.9	3.3		
	S3	30	11.0	2.5		
	S4	34	11.1	2.3		
	S5	23	12.2	3.5		
	S6	28	9.4	2.0		
	Total	176	11.8	3.1		
Non-routine	S1	31	12.7	2.1	15.423	0.009*
	S2	30	12.9	3.9		
	S3	30	12.6	2.4		
	S4	34	13.8	3.2		
	S5	23	13.4	2.5		
	S6	28	11.0	2.6		
	Total	176	12.8	3.0		
Total Points	S1	31	25.1	2.7	38.927	0.000*
	S2	30	27.8	5.4		
	S3	30	23.6	2.9		
	S4	34	24.9	4.5		
	S5	23	25.6	5.4		
	S6	28	20.4	3.5		
	Total	176	24.6	4.7		

*p<0.05

According to the results of the Kruskal-Wallis test, the basic knowledge and conceptual skills, non-routine and total scores differ significantly according to schools ($p < 0.05$). According to the pairwise comparisons made in order to determine from which group the differences originate; For non-routine problems, it was observed that the mean of the S6 school was significantly lower than the mean of all other schools, and there was no significant difference between the other schools. In this context, it can be said that the students who constitute the study group, including those attending the S6 school, do not have sufficient skills to solve non-routine problems. In non-routine problems, although students from the S4 school achieved the highest success, there was no significant difference between the achievements of other schools, except for the students from the S6 school, who had the lowest success. For the total score, it was observed that the mean of the S6 school was significantly lower than the mean of all other schools. There was no significant difference between the other schools. In addition, it was seen that the average of the S2 school was significantly higher than the average of the S1, S3, S4, and S6 schools, but there was no difference with the average of the S5 school. This situation reveals that S2 school students have a higher mathematics achievement level than students from the other schools. As mentioned above for the S5 school, as mentioned above, it can be accepted that it is an Anatolian High School type of school and that GCSE programs are included in these schools, thus increasing the school's success. It is seen that the achievement scores of S6 school students are significantly lower than all other school students, considering similar reasons as well as in basic knowledge and concept skills and in solving non-routine problems.

It is expected that basic knowledge and skills will be acquired in the second phase of primary and secondary school education. Therefore, considering that the S2 school accepts students based on the results of an exam, it is thought that the students who continue from the middle level to the last level of high school are trying to gain the

necessary knowledge and skills. However, it can be accepted that students from the S6 school, who have a different school culture and who are accepted with an exam at the high school level, do not gain sufficient basic knowledge and skills since they are educated with an exam-oriented system in order to enter these schools. The same can be considered valid for their performance in non-routine problems. It can be said that college students whose learning is not exam-oriented perform better because of their reasoning skills and the fact that they are educated through problems and GCSE-style interpretation questions.

3.4. Distribution of Mathematics Achievement Scores by Report Grade Variable

When the outcomes of the Kruskal-Wallis Test are examined for the distribution of mathematics achievement scores according to the report grade variable, it is seen that the relevant results are as follows:

Table 6: Distribution of Mathematics Achievement Test Scores by Report Grade Variable

	N	Average	Std. deviation	KW	p	
Basic knowledge and conceptual skills	3	5	9.0	2.1		
	4	9	11.0	3.5		
	5	21	10.1	2.3		
	6	36	10.4	2.2		
	7	25	11.7	2.4	41.563	0.000*
	8	34	12.1	3.0		
	9	29	13.2	2.7		
	10	17	15.6	3.6		
	Total	176	11.8	3.1		
	Non-routine	3	5	12.4	2.9	
4		9	11.2	1.9		
5		21	11.5	2.3		
6		36	12.3	3.0		
7		25	12.4	2.4	17.277	0.016*
8		34	13.4	3.4		
9		29	13.4	3.4		
10		17	14.2	2.4		
Total		176	12.8	3.0		
Total Points		3	5	21.4	2.7	
	4	9	22.2	4.8		
	5	21	21.6	3.4		
	6	36	22.8	3.5		
	7	25	24.2	3.3	43.437	0.000*
	8	34	25.4	4.4		
	9	29	26.6	5.0		
	10	17	29.8	4.6		
	Total	176	24.6	4.7		

* $p < 0.05$

As can be seen from the table above, basic knowledge and conceptual skills differ significantly according to the non-routine and total score ($p < 0.05$). The results of the pairwise comparisons (Mann-Whitney U test) conducted to determine from which the group difference originates are indicated in Table 6 below.

As can be seen from Table 5, when the total score is considered together with both basic knowledge and concept skills and non-routine scores, those with a grade of 10 are significantly different from the students with other grades; as previously explained, those with a grade of 10 are able to learn in greater depth about school lessons and on the same subjects. This differs significantly not only from those with grades 6, 5, 4, and 3, but also from grades 9, 8, and 7. It is also known that students with a grade of 10 are among the students who take the most courses after those with a grade of 3. Those with a grade of 9 differ from those with a grade of 3 in total points, those with a grade of 9 also engage in meaningful learning like those with a grade of 10, and those with a grade of 3 focus entirely on passing the class with private lessons. The fact that those with a grade of 9 were different from those with a grade of 7 may be due to the fact that those with a grade of 7 do not worry about failing in the classroom but are unlikely to increase their grades to 9 or 10, and those with a grade of 7 do not try to raise their position as they are not motivated to do so, meaning that they are comfortable instead of learning the subjects in greater depth. It is thought that those with a grade of 8 are not sufficiently different from those with grades of 7, 9, and 10, it is thought that those with 8 grades make an effort to increase their learning and are very close to those with grades of 7. However, there is no significant difference between those with a grade of 3, especially due to the high scores of basic knowledge and conceptual skills. Again, since those with a grade of 8 are in the middle, those with grades of 5 or 6 pass the grade, and those with a grade of 4 pass the grade probably due to their average grade, the total scores of these students based on their ability to solve non-routine problems of their basic knowledge and concept skills (grades 4, 5 and 6) differ significantly.

It has been previously stated why those with a grade of 7 did not differ from those with grades of 8, 9 and 10. However, it is seen that the students with a grade of 7 do not differ from those with grades of 3, 4 and 6, but only from students whose grades are at the limit (5) and who do not have a desire to increase their grade.

It can be accepted that these results show that students with higher grades increase their ability to solve non-routine problems as well as their basic knowledge and conceptual skills. It can be said that those who score high in basic knowledge and concept skills achieve higher scores in non-routine problem-solving skills.

3.5. Distribution of Mathematics Achievement Scores by Level of Liking

The changes in the mathematics achievement scores of the students according to the level of liking are shown in Table 6 below.

Table 7: Distribution of Mathematics Achievement Test Scores by the Variable of Level of Liking

		N	Average	Std. deviation	KW	p
Basic knowledge and conceptual skills	Less	17	10.0	1.9	18.441	0.001*
	2	17	11.5	2.9		
	3	52	11.0	3.0		
	4	49	12.2	3.0		
	More	41	13.3	3.3		
	Total	176	11.8	3.1		
Total Points	Less	17	20.9	2.9	21.191	0.000*
	2	17	23.9	3.9		
	3	52	23.8	4.5		
	4	49	25.2	4.8		
	More	41	26.7	4.6		
	Total	176	24.6	4.7		

*p<0.05

The basic knowledge and concept skills and the total score differ significantly according to the level of liking ($p < 0.05$). The results of the Paired comparisons (Mann-Whitney U test) conducted to determine from which group the difference originates are given in Table 7 below.

β

An examination of the table reveals that, for basic knowledge and concept skills, it is seen that the average of those who like maths at a very high level is significantly higher than the average of those who like it the least, and the average of those who like it the most is significantly higher than the average of those who like it least.

Therefore, this situation shows that the success of students in basic mathematical knowledge and concept skills changes in direct proportion to their level of liking.

There was no difference in the scores of non-routine problem-solving skills between students who liked and did not like mathematics, and in fact, there was not a very high rate of doing so since students were not trained according to non-routine problems in schools. (Because the information will be transferred, and moreover, the types of questions that enable individuals to be creative and make judgments and which they are not accustomed to are not included).

On the other hand, in terms of basic knowledge and conceptual skills, it is seen that the high level of liking is different from those at the lower levels. Because those who like maths at a very high level most probably have increased their school grades with the special courses they have taken, there may be a significant difference between basic knowledge and conceptual skills due to the low grades of those who do not like it.

As can be seen, there is no effect on the scores of non-routine problem-solving skills in the total score, it differs not only from the very high level but also from the medium and low levels. Additionally, the highest level of liking differs from the lower and middle-lower levels, except for the higher level of liking, which is very much. This situation indicates that liking mathematics increases total mathematics achievement levels.

Table 8: Distribution of Mathematics Achievement Test Scores by the Variable of Courses Taken

Course Enrolment Status		N	Average	Std. deviation	U	P
Basic knowledge and conceptual skills	Yes	84	12.06	3.25	-0.941	0.347
	No	92	11.63	3.06		
Non-routine	Yes	84	12.83	2.75	-0.13	0.897
	No	92	12.67	3.15		
Total Points	Yes	84	24.89	4.49	-0.872	0.383
	No	92	24.30	4.84		

It was observed that mathematics achievement scores did not differ significantly according to courses taken ($p > 0.05$). In other words, it can be said that the mathematics achievement levels of those who take the courses and those who do not are at the same level. This is because considering that the courses are school-oriented when the scale applied for research consists of questions that measure both basic knowledge and conceptual skills and non-routine problem skills, those taking these courses (such as 80% of those with a grade of 3) only did so to increase their grade. The fact that there are courses aimed at raising the school grade of students with a grade below 9 also shows that these private lessons do not develop the problem-solving skills targeted in mathematics programs.

3.6. Distribution of Students' Mathematics Achievement Scores by Understanding Levels

The distribution of students' mathematics achievement scores according to their understanding levels is shown in Table 8.

Table 9: Distribution of Mathematics Achievement Test Scores by Comprehension Level Variable

		N	Average	Std. Deviation	KW	p
Basic knowledge and conceptual skills	Never	2	8.00	1.41	5.828	0.000*
	2	5	9.20	2.17		
	3	2	10.00	1.41		
	4	16	10.50	2.58		
	5	15	11.47	3.29		
	6	21	10.14	1.82		
	7	27	11.78	3.33		
	8	40	11.43	2.66		
	9	28	13.50	2.69		
	More	20	14.75	3.37		
	Total	176	11.84	3.15		
Total points	8	40	13.13	2.41	5.076	0.000*
	9	28	13.21	3.49		
	More	20	13.20	3.04		
	Total	176	12.75	2.96		
	Never	2	17.50	0.71		
	2	5	21.40	2.51		
	3	2	19.50	3.54		
	4	16	22.56	3.92		
	5	15	22.67	4.10		
	6	21	22.19	3.60		
	7	27	25.56	4.80		
8	40	24.55	4.03			
9	28	26.71	4.85			
A lot	20	27.95	4.36			
Total	176	24.59	4.67			

*p<0.05

According to the Kruskal-Wallis analysis results shown in Table 9, the basic knowledge and concept skills and the total score differ significantly according to the level of comprehension ($p < 0.05$), while the non-routine sub-dimension does not differ significantly according to the level of comprehension ($p > 0.05$). The results of the Pairwise comparisons (Mann-Whitney U test) made in order to determine from which group the difference originates are indicated in Table 4.1.7.10 as follows.

As indicated in Table 4.1.7.10, it is thought that students who understand at the level of 7 for basic knowledge and concept skills are different from the intermediate students at levels 4 and 5, which are completely mediocre, because students who are at the lower level trying to raise themselves to the higher level. Those with grades of 9 and 10 are a group of students who virtually have a complete understanding, and it is thought that these students may have differed because they were also those who understood.

When we look at the non-routine problem-solving skill scores, it is seen that there is no significant difference between any level of understanding since school programs do not aim to develop problem-solving skills or to provide non-routine problem-solving skills, as mentioned above with regard to the level of liking. This, in turn, has an effect on the total scores and shows that the high-level understanding differs from the low-level understanding in total scores.

Those who understand at Level 10 differ from those who understand at Level 9 and 7. The fact that the students in this group (those with grades of 8) aim to increase their grades due to the course they have taken, as explained before, distinguishes them from the 9-10 group.

Students at level 9 are different from all others apart from those at level 10 and 7. Since 7 is the lowest level of understanding, it is thought that those who understand at this level try to improve themselves. Just as the 8 level is different from the 9 and 10 levels, it is seen that it differs only from those who do not understand at all and those who understand at 6 level. This is because while those who do not understand at all do not make a certain effort, it can be accepted that those who understand at level 6 are low due to the fact that they do not make any effort to maintain their position or to take it further. Level 7, on the other hand, does not differ from levels 8, 9 and 10 due to the aim of moving forward since it is at the lower limit of the upper comprehension level, and it is thought that those at level 3 differ from those at this level due to the courses they have taken even though they do not understand. However, it is seen that there is no difference among all levels other than this.

3.7. Relationships Between Math Scores

Correlation analysis was performed to determine the relationship between scores regarding mathematics scores, and the Spearman correlation coefficient was obtained.

Table 10: The Relationship Between Mathematics Test Achievement Scores

		Basic knowledge and conceptual skills	and non-routine	Total Points
Basic knowledge and conceptual skills	r	1	.156*	.744**
	p		.038	.000
Non-routine	r	.156*	1	.748**
	p	.038		.000
Total Points	r	.744**	.748**	1
	p	.000	.000	

As can be seen from Table 10, there is a positive relationship of 15.6% between basic knowledge and concept skills and non-routine, and a positive relationship of 74.4% between basic knowledge and concept skills and the total score. On the other hand, there is a significant positive correlation at the level of 74.8% between non-routine and total scores.

In this direction, it can be concluded that the scores of the students in basic mathematics knowledge and concept skills affect the scores they obtain from non-routine problems, and in the same way, the scores of basic mathematics knowledge and concept skills affect their total scores. On the other hand, it can be said that the scores obtained from non-routine problems also affect the total scores. In summary, it can be accepted that non-routine problems affect the total score, which reveals the mathematics achievement score.

Approaches and measurements applied by schools in mathematics education are arranged in such a way that they are mainly at the level of knowledge and comprehension. Non-routine problems are rarely given enough space. Therefore, the correlation result between success scores in basic knowledge and concept skills and success scores in solving non-routine problems is a very low value of 0.15, which is an expected result according to the education system applied. In fact, if basic knowledge and conceptual skills were really gained, not because of memorization or special courses, and if they were familiarized with the questions in Bloom's Taxonomy in schools, the relationship between students' non-routine problem skills would be expected to be high. But the result here is quite natural. In addition, the relationships between the basic knowledge and conceptual skills and total score as well as the non-routine problem-solving skills and the total score were almost the same (0.74 - 0.75), and it is thought that there is another reason why there is a relationship between their skills.

4. Conclusion And Recommendations

4.1. Conclusion

The PISA exam, which reveals the mathematics achievement levels of countries, is important. However, it is not applied in our country. For this reason, the non-routine problem-solving skill test developed for research also emphasizes the importance of the research in this respect, as it will take its place as a new test in the field of mathematics. Based on this research conducted in this context, the mathematics achievement levels of the schools in our country that accept students based on examinations were determined.

When the literature is examined, similar to the results above, studies on whether students' passion for mathematics affects their academic achievement in different fields, the factors affecting mathematics achievement and its effect on mathematics self-efficacy (Özdemir, Bulut, and Ünal, 2018; Ergin and Ergin, 2017; Adal and Yavuz, 2017) were considered.

When the mathematics achievement score results in the study were examined, it was seen that the girls and boys were at the same level, and the findings did not differ according to the variable of taking the course.

When the dimensions revealing the mathematics achievement score were examined, it was seen that there were significant differences between schools. In terms of basic knowledge and concept skills, it was seen that S2 school students achieved the highest level of success, while the lowest level was achieved by S6 school students. Based on the examination of the non-routine problems, which is another dimension, it was concluded that while the S6 school still obtained the lowest score, there was no significant difference between the other schools. Similarly, the students of S6 school achieved a lower score than the students in all other schools in the last dimension, the total score, and lagged behind other schools. It can be said that the students of S6 school, who were ranked last as they obtained lower scores than the other schools in the general scoring, who have different secondary school cultures and admit students with a special exam, are not able to gain sufficient basic knowledge and skills because they are placed in the school with lower scores compared to those who attend the S5 school. On the other hand, considering that the S2 school accepts students with a special exam, it is natural that students who start from the middle level and continue until the last level of high school have a higher level of basic knowledge and conceptual skills when it is considered that they are placed with the highest scores.

Considering the non-routine problem-solving skills, it is thought that the reasoning skills of the college students are improved due to the fact that they are trained on GCSE-style questions, and they, therefore, achieve higher scores. In the study conducted by Özaşkın and Bacanak (2016), it was revealed that the necessity to conduct a structured program prevents the implementation of flexible teaching during the education period and that the exam-oriented system negatively affects the development of creativity.

Clean and Çimen (2017), when examining the problem-solving skills of 5th grade students, revealed that this is the first time such students encounter non-routine problems and that those with poor academic success have problems understanding and solving questions.

One of the other important results obtained in the research is that there is a significant difference between the change in the students' grades and their mathematics achievement and that the students whose grades increase in the basic knowledge and concept skills, as well as their success levels in non-routine problems, also increase.

Similarly, in Öz and Işık's (2018) study conducted with 174 primary and secondary school mathematics teaching undergraduate students, it was determined that the students whose mathematical reasoning skills were examined developed logical arguments for solutions and the rate of answering correctly in the dimensions of solving non-routine problems increased.

According to the variable of students' love of mathematics, it was observed that the total score and the basic knowledge and concept skill scores differed. It has been observed that the basic knowledge and conceptual skills

of the students have changed in relation to the variable of liking mathematics, and the total mathematics achievement scores of those who love mathematics increased.

Bilgiç (2011) stated that students who develop a positive attitude towards the lesson ensure that they are suitable and prepared before coming to class, making them not only interested in the lesson, but also loving mathematics, whereas those who do not are less prepared and therefore less interested. For this reason, it has been revealed in the above-mentioned studies that students who prefer to sit in the back row will always require the help of others when trying to solve the problems that will arise in their lives, as emphasized in the studies above.

When the results obtained from the research are evaluated, it can be said that the fact that there is no difference in the non-routine problem-solving skill scores of the students who love and dislike mathematics is due to the fact that the students do not encounter such problems.

In this regard, Ulu, Tertemiz, and Peker's (2016) experimental studies on reading comprehension and problem-solving strategy education with control and experimental groups examined the effect on the non-routine problem-solving skills of 467 5th grade primary school students. By giving 6 non-routine problems, it was discussed whether the students applied the strategies to solve the problems. The results revealed that the increase in mathematics achievement could be achieved by the students using their reading comprehension and problem-solving strategies of together and only by subjecting them to this type of education from an early age.

The results obtained from this study are similar those of the study by Işık and Kar (2011) that examined the non-routine problem-solving skills of 6th, 7th and 8th grade high school students. It was observed that students experience a number of problems arising from getting used to solving routine problems instead of non-routine problems that require high-level thinking skills.

When the mathematics achievement was evaluated, it was observed that there was not much difference between the students who took a special course from mathematics and those who did not, while significant differences were observed in the basic knowledge and concept skill score dimension and the total score dimension of the students whose mathematics understanding levels were examined. This situation reveals that school programs are not sufficiently effective to develop both problem-solving and non-routine problem-solving skills.

Similarly, Han, Hoon, Singh, Nasir, and Rasid (2019) selected 128 university lecturers in their study, and in line with the results of various reports, revealed that graduate students' problem-solving and communication skills are not sufficient in their business life. It has been revealed that they do not have sufficient reasoning skills to educate mathematical thinkers. While the data obtained show that the achievements of the instructors are below the average level, it also revealed that in order for individuals to gain mathematical thinking skills, they should primarily have concept knowledge and problem-solving skills. This study indicates that it is important for teachers to try to increase their problem-solving skills by choosing problems that will improve them and to work with difficult questions if necessary.

When the mathematics achievement scores of the students were compared, it was concluded that the solution of non-routine problems affected the total score, which revealed the mathematics achievement score. This is actually an expected result since not enough non-routine problems are included in schools.

Similarly, Saygılı (2017), who discussed how high school students' ability to solve non-routine problems and the strategies they use affect their success levels, revealed that students' non-routine problem-solving skills are not sufficient. Therefore, it has been observed that students who do not have sufficient knowledge of these subjects cannot effectively solve non-routine problems since the problems in question require conceptual and operational skills.

This situation also shows that in terms of the characteristics determined by the Ministry of National Education, the students have difficulty in identifying the problem, and they cannot establish the relevant connection or relationship.

Due to the fact that our education system does not have a regulation system for determining student achievement at the national level regarding the determination of the quality of education, comprehensive data were obtained on the perception, love, and understanding levels of the students in the schools, as well as their mathematical problem-solving skills, which the Ministry approved of National Education. Our education system, which is implemented in parallel with the education programs in Turkey, has been ranked at the bottom in exams in which the levels of students in Turkey are evaluated for years, and they remain below the average level (Kastberg, Chan and Murray, 2016). It is thought that this situation is due to the fact that many teachers in the education system continue to adopt the old understanding. When the PISA results in Turkey, which provides education with a content-based teaching method, are examined, it is seen that the top countries have adopted the student-centered education approach, and it is thought that this situation will only be improved if students can learn to conduct research based on a curriculum that is reorganized with technological developments.

4.2. Recommendations

In this section, some suggestions are given based on the data obtained in line with the research results. It can be noted that the questions prepared are based on learning and interpretation. At the same time, this situation can prevent rote-oriented education and support learning based on experimentation and observation rather than formula-based learning. In support of this, it is thought that the administrators in each school should encourage the use of such questions by providing the opportunity to compare the types used among teachers. For example, strengthening international ties, exchanging ideas on education systems, and entering the accreditation process can provide an advantage in terms of enhancing the national level of education. In addition, a national level measurement-evaluation and development centre can be established that will reveal the extent to which the desired outputs have been achieved in the education system. A wide range of diversity can be achieved by increasing the non-routine problem types determined for the mathematics achievement test designed to reveal the mathematics achievement scores.

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Investigation of Teachers' Self-Efficacy of Educational Game-Playing

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Abstract

Educational games are activities that enable individuals of learning age to reinforce their knowledge by repeating what they have learned in an environment where they feel comfortable. Educational games contribute to the development of the individual in many areas as well as cognitive, affective, psycho-motor and social development. In this context, it is known that teachers have an undeniable importance in transferring educational games that have a direct effect on children's development. Therefore, this research was carried out to examine teachers' educational game playing self-efficacy. The research group consisted of a total of 300 teachers, including 100 physical education teachers, 100 preschool teachers and 100 classroom teachers. "Educational Game-Playing Self-Efficacy Scale" was used as a data collection tool in the research. In the analysis of the data, arithmetic mean and standard deviation techniques from descriptive statistics were used to determine the educational game playing self-efficacy of teachers. Then, the normality test of the data was carried out by applying the Kolmogorov-Smirnov technique and the Skewness-Kurtosis coefficients. In the study, t-test was used to determine whether teachers' educational game-playing self-efficacy differed in terms of gender, and one-way analysis of variance (Anova) technique was used to determine whether it differed in terms of branch. Tukey test was used to determine the source of variance. According to the results obtained in the study, while there was no significant difference in the level of educational game-playing self-efficacy of teachers in terms of gender, there was a significant difference in terms of branch. In the examination, it was concluded that the educational game self-efficacy of physical education teachers was higher than that of preschool and classroom teachers.

Keywords: Educational Game, Self-Efficacy and Teachers

1. Introduction

While the game is used as "play" and "game" in many western languages, the word play is generally used as a verb and the word game is used as a noun in English (Biricik & Atik, 2021). Although the game is generally practiced within certain rules and shaped individually or in groups according to the living conditions of each period, it has survived to the present day as the most important activities in terms of maintaining the existence of education, creativity, imagination, imitation and communication (Ayhan & Cavus, 2014; Demir & Cicioglu, 2020). When analyzed conceptually, it is very difficult to focus on a common definition of the game (Koka, 2018). However, when looking at its general lines, it is possible to express it as activities that give pleasure,

relax, entertain and develop (Gunes, Tugrul & Ozturk, 2020). The Turkish Language Association has defined the game as "Amusement that develops talent and intelligence, has certain rules and helps to have a good time" and "All kinds of competitions based on agility, which are held to develop physical and mental abilities." The game, which allows the child's inner world experiences and feelings to be reflected outside, is the whole of activities that allow the individual to learn by trying, without help, without any help, and without discrimination of language, religion, race, and gender (Yavuzer, 2012; Yildirim, 2015).

Huizinga (2010) defines the game as "an action that feels outside the ordinary life, is free and fictional, but still has the ability to completely absorb the player, and is performed in a certain time or place in order, in accordance with certain rules." French sociologist Roger Caillois (2001) explains the game using 6 terms: free-free, separate-independent, ambiguous, unproductive, normative and persuasive. While Salen & Zimmerman (2003) define a game as a system in which players enter into an artificial conflict defined by rules and achieve measurable results when it ends, psychologist Jesper Juul (2011) defines a game as a game in which different outcomes are given different values, players strive to influence the outcome, the outcome is He defined it as a rule-based system with a variable and measurable outcome where the outcome of the activity is optional and negotiable, to which he feels dependent. Piaget (1964), on the other hand, describes all the movements made by children who have just opened their eyes to the world as play, and defines it as the process of recognizing and exploring the child's environment. While the game is defined as the activities that individuals discover by themselves, learn by experimenting in their life and contribute to the development of the individual's abstract thinking skills, educational games are seen as the whole of activities that ensure the permanence of the information acquired by the game and reach the goals in line with the previously determined purposes (Kilic, 2020).

Avedon & Smith (1971) argue that educational games have an important place in the fact that the game has been shaped according to different conditions, has a long history and has reached the present day, with the appearance of the game from the first ages. In the activities carried out as educational games, it is seen that the child experiences different emotional states together in the game, learns to share with others and obey the determined rules, and at the same time reveals his hidden individual abilities (Basal, 2020). In addition to all these, educational games are expressed as a method that is frequently used in learning environments in order to increase the interaction of students with each other and to provide more efficient learning (MacKenzie, 2014).

Demirel (2010) explained educational games as activities that enable individuals of learning age to reinforce their knowledge by repeating what they have learned in an environment where they feel comfortable. It is the whole of planned, regular and purposeful activities created as a result of the acquisitions aimed at the individual in line with the predetermined goals (Cangir, 2008). Aksoy (2014) defined educational games as activities that can be played individually and in groups, enabling the learner to progress in an affective and cognitive sense and to transform the determined goals into behavior by considering the educational purposes. Educational games are extremely important activities in terms of helping the individual's cognitive, affective and psychomotor development as well as helping the development of behaviors such as creativity, problem-solving skills, self-confidence, self-expression, correct behavior habits, fairness, empathy and school/course belonging (Dede, 2020; Kaya, 2013; Kilic, 2020; Koc, 2020; Khudhur, 2016; Samur, 2016; Savas & Gulum, 2014).

Therefore, educational games are very important for children in terms of contributing to physical and mental development, enabling the emergence of hidden potentials, connecting them with the real world and enabling them to apply new information concretely (Biricik & Atik, 2021). It is known that learning while playing is important because of the experiences experienced through games and the reflection of these experiences in real life (Park, 2019; Yalcin, Demirdag, & Kazak, 2017). In addition, games contribute greatly to the individual's showing different developmental characteristics and learning to cooperate and starting to socialize (Biricik & Atik, 2021; Dede, 2020). The importance of games increases even more because children can think creatively, gain various skills and have a direct impact on their development areas (Karatas, 2021).

As can be seen from the explanations made, educational games are extremely important in terms of contributing to the development of cognitive, affective, physical and creativity characteristics of children, gaining an

enjoyable and effective learning skill throughout their education life, acquiring social skills, and changing wrong attitudes and behaviors (Celik & Sahin 2013; Kilic, 2020; Ozgun, Yasarturk, Ayhan & Bozkus, 2017). In this context, it is thought that teachers have an undeniable importance in transferring educational games that have a direct effect on children's development. Therefore, it is considered important to examine the competencies of teachers in this regard. For this reason, in this study, it is aimed to examine teachers' educational game playing self-efficacy.

2. Method

2.1 Research Model

The research was designed in the scanning model in order to examine the teachers' educational game playing self-efficacy. Karasar (2013) defined the scanning model as a model that aims to describe a situation that existed in the past or that is still ongoing, in terms of its existence.

2.2 Research Group

The research group consisted of a total of 300 teachers, 159 (53%) female and 141 (47%) male, working in schools in Aksaray, Turkey. When the distribution of the teachers participating in the research according to the branch was examined, it was seen that 100 (33.3%) worked as physical education teacher, 100 (33.3%) as pre-school teacher and 100 (33.3%) as classroom teacher. The distribution of teachers according to independent variables is shown in Table 1.

Table 1: Distribution of the Research Group According to Independent Variables

<i>Gender</i>	<i>f</i>	<i>%</i>
Female	159	53
Male	141	47
Total	300	100
<i>Branch</i>	<i>f</i>	<i>%</i>
Physical education teacher	100	33.3
Pre-school teacher	100	33.3
Classroom teacher	100	33.3
Total	300	100

2.3 Data Collection Tools

The personal information form developed by the researcher was used in collecting the data in order to determine the gender and branches of the teachers. In addition, "Educational Game-Playing Self-Efficacy Scale" was used as a data collection tool in the research.

2.3.1 Personal Information Form

Your gender and branch questions were asked in the personal information form, which includes the variables that are thought to affect the teachers' self-efficacy in playing educational games. In addition, the personal information form was created by the researcher in order to determine the characteristics such as gender and branch of the teachers in the research group.

2.3.2 Educational Game-Playing Self-Efficacy Scale

In the study, the Educational Playing Self-Efficacy Scale was used to determine the teachers' educational game playing self-efficacy. The scale was developed by Altinkok & Yilmaz (2018) and consists of 11 items. The scale in which I strongly disagree (1), disagree (2), undecided (3), agree (4) and strongly agree (5) is a 5-point Likert

type scale. In the study, the total Cronbach's alpha reliability coefficient for the scale was calculated as 0.86. High scores that can be obtained from the scale indicate that the person perceives herself/himself as highly competent, and low scores indicate that she/he perceives herself/himself as lowly sufficient.

2.4 Analysis of Data

First of all, the measurement tool used in the study was examined and the missing or incorrectly filled questionnaires were not included in the analysis. SPSS 21 package program was used in the analysis of the data and the significance level was accepted as 0.05. In order to test normality, Kolmogorov-Smirnov (*K-S*) test was used and Skewness-Kurtosis (*S-K*) coefficients were applied. Tabachnick & Fidell (2013) stated that if the *S-K* coefficients are between -1.5, +1.5, and George & Mallery (2010) are between -2,+2, it can be assumed that the data are normally distributed. As a result of the examinations, it was seen that the data were normally distributed ($p>0.05$), and it was determined that the *S-K* coefficients were within the specified ranges for the proficiency of playing educational games (1.113; 1.050). Arithmetic mean and standard deviation techniques from descriptive statistics were used to determine teachers' educational game playing self-efficacy. One-way analysis of variance (Anova) technique was used to determine whether teachers' educational game-playing self-efficacy differed significantly in terms of branch, and t-test was used to determine whether they differed in terms of gender. Tukey test was used to examine the source of variance.

3. Results

In this part of the study, the findings and the tables with the interpretations of these findings are included. The mean scores obtained by the teachers from the educational game-playing self-efficacy scale are shown in Table 2.

Table 2: Teachers' Educational Game-Playing Self-Efficacy Levels

		N	M	S*
Educational Game-Playing Self-Efficacy	Physical Education Teacher	100	52.09	2.609
	Pre-School Teacher	100	42.56	1.929
	Classroom Teacher	100	43.76	0.653
	Total	300	46.13	4.652

*Standard Deviation

In Table 2, the results of the teachers' educational game playing self-efficacy level are given. Accordingly, the self-efficacy levels of physical education teachers were calculated as $M=52.09\pm 2.60$, preschool teachers' $M=42.56\pm 1.92$, and classroom teachers' $M=43.76\pm 0.65$.

Table 3: Educational Game-Playing Self-Efficacy Levels of Teachers in Terms of Gender

E.G.P.S.E.*	Gender	N	M	S	t	sd	p
Physical Education Teacher	Female	43	52.32	2.52	0.783	98	0.436
	Male	57	51.91	2.68			
Pre-School Teacher	Female	56	42.92	1.78	2.196	98	0.302
	Male	44	42.09	2.02			
Classroom Teacher	Female	55	43.95	1.88	5.020	98	0.298
	Male	45	43.32	2.02			
General	Female	159	45.87	4.30	1.038	298	0.305
	Male	141	46.43	5.01			

*Educational Game-Playing Self-Efficacy

In Table 3, t-test was applied to examine whether there is a significant difference in educational game playing self-efficacy levels in terms of gender variable of the teachers in the research group. In the examination, it was

determined that there was no significant difference in the educational game self-efficacy levels of the teachers in terms of gender ($p>0.05$).

Table 4: Educational Game-Playing Self-Efficacy Levels of Teachers in Terms of Branch

	Branch	N	M	S	F	sd	p	Tukey
E.G.P.S.E.	Physical Education Teacher	100	52.09	2.609	737.43	297	0.005	
	Pre-School Teacher	100	42.56	1.929				
	Classroom Teacher	100	43.76	0.653				
	Total	300	46.13	4.652				

In Table 4, one-way analysis of variance (Anova) technique was applied in order to examine whether there is a significant difference in the educational game-playing self-efficacy levels of teachers in terms of branch. As a result of the examinations, it was observed that there was a significant difference in educational game playing self-efficacy levels in terms of branch ($p<0.05$). It was determined that physical education teachers' ($M=52.09\pm 2.60$) educational game play self-efficacy levels were higher than preschool ($M=42.56\pm 1.92$) and classroom teachers ($M=43.76\pm 0.65$) (Table 4).

4. Discussion and Conclusion

In the study, teachers' educational game playing self-efficacy levels were examined. In addition, the educational game playing self-efficacy levels of the teachers participating in the research were discussed according to the branch.

In the study, the teachers' self-efficacy levels in playing educational games were examined in terms of gender, and it was determined that there was no significant difference between men and women ($p>0.05$). Polatcan (2021) reached a similar conclusion in her/his research in which she/he examined the educational game-playing skills of physical education and sports teachers and stated that there was no difference between gender and educational game-playing skills of physical education and sports teachers. Yilmaz et al. (2019) also concluded that there was no significant difference in terms of gender in their study examining the self-efficacy of physical education and classroom teachers in playing educational games. According to the results obtained in the study, it was thought that the fact that women and men had similar education about educational games was effective in the absence of any difference in terms of gender in the levels of educational game playing self-efficacy of teachers.

In the study, educational game playing self-efficacy levels of the teachers were examined according to their branches, and it was observed that there was a significant difference between the branches ($p<0.05$). According to this result, it was determined that physical education teachers' educational game playing self-efficacy levels were higher than preschool teachers and classroom teachers. A similar result was seen in Cintesun's (2020) study in which physical education and sports teacher candidates examined educational game playing self-efficacy and it was concluded that physical education teacher candidates' educational game playing self-efficacy was high. Akcinar (2018) also found that physical education teachers' game teaching skills were at a very good level in her/his study in which she/he examined the educational game playing skills of physical education teachers. However, in another study, Yilmaz, Kirmiziloglu, & Yamanyurt (2019) obtained a different result and stated that classroom teachers had higher self-efficacy than physical education teachers in the planning sub-dimension of educational game playing self-efficacy scale. On the other hand, when the studies in the literature are examined, it is seen that the studies comparing the educational game playing self-efficacy levels of the teachers according to their branches are limited. In this context, it is thought that there is a need for more research findings on the game-playing self-efficacy of teachers in different branches.

As a result, this research was carried out to examine teachers' educational game playing self-efficacy levels. In the study, it was seen that physical education teachers had a high level of self-efficacy. From this point of view, it was concluded that physical education teachers are more competent than preschool and classroom teachers in

terms of playing educational games. It is recommended to support the development of preschool and classroom teachers, who have deficiencies in educational game playing self-efficacy, with in-service courses.

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Online Program to Empower Teacher Learning to Develop Students' Digital Literacy Skills

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Abstract

This study aims to employ Research and Development (R&D) Methodology to create an *"Online Program to Empower Teacher Learning to Develop Students' Digital Literacy Skills"* based on the notions of *"Knowledge and Action is Power"* and *"Students are the Ultimate Goal of Any Educational Management."* It consists of teacher learning development projects and a project where teachers use learning outcomes to help students progress. Six sets of teacher learning manuals and one workshop manual for instructors to apply learning outcomes to student development were created as a result of the R1&D1 to R4&D4 stages. According to the results of experimenting with manuals in the R5&D5 stage with 10 teachers and 60 students using one group pretest-posttest design experimental research in a school that is representative of educational opportunity expansion schools under the Office of the Basic Education Commission, it was found that the developed manuals were effective according to the research hypothesis: 1) teachers had test results of learning outcomes that met standard criteria 90/90, 2) the teachers' post-test results were significantly higher than the pre-test-results, and 3) the students' post-test results were significantly higher than the pre-test results. It demonstrates that the manuals for learning and implementation for teachers in the developed online program are effective and can be disseminated for the benefit of the population of educational opportunity expansion schools under the Office of the Basic Education Commission across the country.

Keywords: Digital Literacy Skills, Online Program, Empower Teacher Learning, Research and Development

1. Introduction

In today's world, we currently live in the era of digital technology. As a result of digital technology, the way we work has changed, and many industries are facing digital disruption. At present, technological advancements have caused a variety of changes. Every industry, therefore, must learn to adapt to the changing conditions, and the educational system is one of them. The role of digital technology has changed the ways through which people learn. For example, so-called online classrooms, as well as e-learning, have the potential to improve learning over the long term (Loveless, 2019). It is also essential for students to properly utilize the information and to express their opinions about fast-growing digital technology (Western Sydney University, 2018). Digital technology has the ability to offer a wide range of skills, which will be necessary for future employment. The students, who lack digital literacy skills, can be likened to those, who cannot read or write, and may find themselves at a disadvantage (Lynch, 2017). Therefore, the new generation of students should learn about digital technology and gain an understanding of it so that their skills can be up-to-date and can be applied to benefit them, society, and the country

in the future. The role of education is to equip students with the necessary skills and information. In regard to Thailand's current situation, this presents a challenge to the education system. The production and development of labor in the education sector remains in line with the potential and readiness of each educational institution and places focus on the quantity of learners rather than on the learners' quality. As a result, most graduates lack essential skills, such as English language skills and digital literacy skills (Office of the Education Council, 2017).

According to studies by Govconnection (n.d.), Living Medicareful (2018), National Library of New Zealand (n.d.), Purposeful Technology (n.d.), Speed Matters (n.d.), University of Southern California. (n.d.), and Victoria (2018), students with digital literacy skills have the ability to increase their learning efficiency, creativity, memory, and implementation. Teachers with digital literacy skills are able to inspire students to use technology and to expand their learning opportunities. Teachers can leverage digital literacy skills to encourage students to use the proper technologies in a variety of learning environments. Teachers with digital literacy abilities can also collaborate with co-workers to share technology and to increase student learning results, while also developing a more sophisticated teaching style. It also assists schools in reducing inequity, which can help to increase competition opportunities and equality.

Consequently, taking care of students and providing them with an up-to-date education, as well as with opportunities to enhance their skills in using the appropriate technology is essential in the digital era. Today, students represent a group of individuals, who have grown up in the digital age. Every child should be able to learn and to fluently use both the internet and communication technology. Therefore, preparing the skills to use in learning digital technology is important for becoming a good digital citizen (Wongyai, 2017), particularly in the context of rapidly changing information technology and in an era in which the Thai government is paying more attention to the digital environment. Therefore, digital learning is a critical issue since Thailand has not yet created a clear standard for digital learning technology that can be used as a norm for education and for teaching at various levels (Lenarat, 2017).

However, Thai students are increasingly using digital media, by which communication, education, entertainment, and other activities are facilitated. If users are illiterate or lack digital literacy abilities, it may result in social problems. Therefore, students in the digital era should be educated and their digital literacy skills should be strengthened (Khamcharoen & Phonnikornkit, 2018).

The Ministry of Education has policies and a focus on governmental organizations. They seek to have the organizations adhere to the framework of planning and allocating budgets so that quality education can be established in every dimension and so that funding can be wisely spent to make certain that learners of all ages have opportunities and equality in education in fiscal year of 2021. As a result, digital learning platforms and technology should be developed and utilized as learning resources for students. By using digital skills as a tool of management, education management policies can increase the country's competitiveness. Effective learning at all learning levels and educational services are measures for the application of digital technology that can encourage and support learners to develop their own learning methods in response to their needs and aptitudes, as well as to build a knowledge-based society in order to create continuous learning throughout life (Ministry of Education, 2020).

In accordance with the importance of using digital media with the students as mentioned above, the researchers were interested in developing an online program that could empower the teachers' learning and could assist them in developing their students' digital literacy skills by utilizing Research and Development (R&D) methodology. According to Sanrattana (2018), the innovations that have been developed through the R&D methodology are intended to be used to develop personnel and to improve the quality of the work. It is challenging today to set new expectations in agencies or to change the work paradigm from old to new in contexts where the personnel still lack knowledge and skills, and where many innovative principles, concepts, and theories in education are constantly emerging. Moreover, the educational personnel is expected to put the knowledge into action and to contribute the power to perform their duties more efficiently and effectively in accordance with the concepts of: *"Knowledge and Action are Power"* or the statements: *"Make Them Know What to Do, Then Encourage Them to Do What They Know"* or *"Link to On-the-Job Application."*

According to R&D methodology, the researchers believe that R&D methodology can support the importance of establishing digital literacy skills because R&D methodology has the ability to enhance the development of innovations for online learning in a digital society and to lead to more effective learning and implementation. Currently, digital literacy skills are very important and are new skills for teachers to learn and understand. Since they are one of the essential skill sets for 21st century education, the students' skills need to be further developed to meet the ultimate goal of providing more effective education in accordance with the concept of teacher professional development, for which developing benefits for the students must be considered as the ultimate goal (Gusky, 2000; Hoy & Miskel, 2001) and which is alignment with the statement: "*Student achievement should be the ultimate goal of any teacher professional development activities*" (Kampen, 2019).

The online program to empower the teachers' learning to develop students' digital literacy skills as a result of utilizing R&D methodology in schools was used in the experimental area at the Bannongwaengworawit School, which is an educational opportunity expansion school under the Office of the Basic Education Commission. The findings were disseminated for the benefit of the research population, which consist of the educational opportunity expansion schools under the Office of the Basic Education Commission across the country. These findings were in accordance with the R&D principle of placing the emerging innovation from the experiment in one of the experimental areas in which the characteristics were representative of the population. When the results from the experiments revealed that an innovation had been effective in accordance with the specified criteria, it was disseminated to benefit the referenced research population. In particular, it was an online program that had been developed in accordance with the new digital era, rather than a document-based program, which would have been used in the traditional printing era. This was beneficial in more efficiently and effectively disseminating the innovations, which had been developed for the benefit of the referenced population in the research.

2. Literature Review

From the perspective of academics or related organizations, the researchers investigated the ideas, concepts, and theories that were beneficial to the development of the students' digital literacy skills in six areas:

1. **The definition of digital literacy skills** was based on the viewpoints of: Common Sense Media (2020), Heck (n.d.), Loewus (2016), Loveless (n.d.), Lynch (2017), Renaissance (n.d.), and Western Sydney University (n.d.).
2. **The definition of digital literacy skills** was based on the viewpoints of: Govconnection (n.d.), Living Medicareful (2018), National Library of New Zealand (n.d.), Purposeful Technology (n.d.), Speed Matters (n.d.), University of Southern California. (n.d.), and Victoria (2018).
3. **The characteristics indicating digital literacy skills** were based on the perspectives of: British Columbia (n.d.), Heck (n.d.), Media Smarts (n.d.), Quizlet (n.d.), The University of British Columbia (2011), and Williams (2016).
4. **The guidelines for developing digital literacy skills** were based on the perspectives of: Applied Educational System (n.d.), Devaney (2016), National Library of New Zealand (n.d.), Pappas (2017), Ruesink (2014), Stenger (2018), Turnipseed (2020), Webwise (n.d.), and Williams (2016).
5. **The steps for developing digital literacy skills** were based on concepts from: Equip Team (2019), Killen, Beetham and Knight (2017), Murphy (2019), Roscorla (2010), and Spencer (2018).
6. **The assessment of digital literacy skills** was based on concepts from: Cote and Milliner (2018), Cote and Milliner (2017), Covello (2010), and Rodríguez-de-Dios, Igartua and González-Vázquez (2016).

According to the results of the literature review on the six issues, the researchers integrated the recommendations of the developmental guidelines, which were the principles, concepts, techniques, methods, and the activities, as inputs and established the recommendations of the developmental procedure as process. The expected characteristics of development were taken as an output to demonstrate a systematic approach to the academic alternative proposals, or as the expected theory after teacher development. On a constant and ongoing basis, teachers would choose those options, which were regarded appropriate and consistent with the student's context. Table 1 shows a conceptual framework for teachers' learning and implementation.

Table 1: The systematic approach of academic or theoretical alternative proposals for teachers' learning and implementation

Input Suggestions Principles / concepts / techniques / process / activities for developing digital literacy skills	Process Suggestions Procedures for developing digital literacy skills	Output Suggestions Characteristics or expected qualities of students with regard to digital literacy skills
<p>Applied Educational System (n.d.)</p> <ol style="list-style-type: none"> Digital literacy resource roundup from Edutopia Be internet awesome from google InCtrl is a website with lessons and activities that teach key concepts of digital literacy Common sense education Business & IT center21 from applied educational systems <p>Devaney (2016)</p> <ol style="list-style-type: none"> Engage in strategic implementations Focus on students as makers Build industry-education partnerships Develop smart collaborations: Governments <p>National Library of New Zealand (n.d.)</p> <ol style="list-style-type: none"> Digital content Curating content Copyright and creative commons <p>Pappas (2017)</p> <ol style="list-style-type: none"> Encourage self-exploration Create an online resource guide Set some ground rules Evaluate current e-learning strategy Include digital literacy simulations Encourage learner-generated e-learning content Host a live event <p>Ruesink (2014)</p> <ol style="list-style-type: none"> Basic computer skills Advanced computer/tech skills Online safety Content evaluation Online job search <p>Stenger (2018)</p> <ol style="list-style-type: none"> Emphasis the importance of critical thinking Use social media for learning and collaborating 	<p>Equip team (2019)</p> <ol style="list-style-type: none"> Refocus lab time on digital literacy Model digital literacy in the library Enhance core classes with digital literacy Better yet, think big picture <p>Killen, Beetham and Knight (2017)</p> <ol style="list-style-type: none"> Vision and intent Design and construct Explore and contextualize Support and consolidate <p>Murphy (2019)</p> <ol style="list-style-type: none"> Articulate the program's vision Build an implementation model Scope a framework for alignment Engage teachers throughout the program launch and beyond <p>Roscorla (2010)</p> <ol style="list-style-type: none"> Map existing community resources and offer small grants Support a national network of summer learning programs Create a digital and media literacy youth corps Build interdisciplinary bridges in higher education Create district level initiatives Partner with media and technology companies Develop online measures of media and digital literacy Start an entertainment education initiative Host a statewide, youth-produced public service announcement competition Support an annual conference and educator showcase competition <p>Spencer (2018)</p> <ol style="list-style-type: none"> Harness the power of whole-school software 	<p>British Columbia (n.d.)</p> <ol style="list-style-type: none"> Research and Information Literacy: apply digital tools to gather, evaluate, and use information Critical thinking, problem solving, and decision making Creativity and innovation Digital citizenship Communication and collaboration Technology operations and concepts <p>Heick (n.d.)</p> <ol style="list-style-type: none"> Comprehension Interdependence Social Factors <p>Curation</p> <p>Media Smarts (n.d.)</p> <ol style="list-style-type: none"> Use Understand Create Digital media are networked Digital media are persistent, searchable and shareable Digital media have unknown and unexpected audiences Digital media experiences are real, but don't always feel real How we respond and behave when using digital media is influenced by the architecture of the platforms, which reflects the biases and assumptions of their creators <p>Quizlet (n.d.)</p> <ol style="list-style-type: none"> Technology: It must work; it must be appropriate; learners must be able to use it Must be fast enough for the activity to work effectively The language used must be appropriate for the learners Use a teaching style that is supportive of a different

Input Suggestions	Process Suggestions	Output Suggestions
Principles / concepts / techniques / process / activities for developing digital literacy skills	Procedures for developing digital literacy skills	Characteristics or expected qualities of students with regard to digital literacy skills
3. Provide guidance on how to avoid plagiarism 4. Teach students to manage their online identity 5. Help students manage digital distractions 6. Provide authentic contexts for practice 7. Guide students out of their comfort zone Turnipseed (2020) 1. Stress the importance of coding and basic technology application skills 2. Encourage innovation by revising vs. reinventing the wheel. 3. Teach students how to determine the reasonability of an answer. 4. Prioritize student engagement over all else. 5. Push for access to technological resources and solutions in schools. Webwise (n.d.) 1. Critical thinking 2. Online safety skills 3. Digital culture 4. Collaboration and creativity 5. Finding information 6. Communication and netiquette 7. Functional skills Williams (2016) 1. Tutor knowledge 2. Advance planning and adaptability 3. Appropriate teaching style	2. Collaborate and share best practice online 3. Bring personal IT equipment to use 4. Reviewing Policies 5. Learning management integrates various disciplines such as Science (S), Technology (T), Engineering (E) and Mathematics (M): STEM Clubs 6. Updating the curriculum	learning environment. make the learning accessible 5. Timing 6. Knowledge and expertise - in digital literacy 7. Knowledge and expertise - in teaching 8. Know your learners The University of British Columbia (2011) 1. Reading and writing 2. Global reach Williams (2016) 1. Ability 2. Skills 3. Knowledge AND Please refer to the development assessment form on digital literacy skills of students from the appendix and from https://bit.ly/3usp607

3. Research questions

According to the on-line program, which is based on the notions of "Knowledge and Action are Power" and "Students are the Ultimate Goal of Any Educational Management" and which can empower teacher learning to assist in developing the students' digital literacy skills, there were two projects: 1) Teacher's Learning Development on Digital Literacy Skills Development; and 2) The Implementation of Learning Outcomes by the Teachers to Enhance Digital Literacy Skills of Students, the research questions were as follows: a) *What content does the manual contain for each project?*, b) *After the experiment, do the teachers' test results meet the standard 90/90 after applying each project manual in the field with the experimental research methodology?*, c) *Do the teachers have post-test results that are significantly higher than the pre-test results?*, and d) *Do the students have post-test scores on digital literacy skills that are significantly higher than the pre-test scores?*

4. The Research Hypothesis

The project manuals were created, checked for quality, and revised. The research tools were created for usage in the experimentation, while carrying out operations that were believed to yield quality research results, trials were conducted with the manuals in the field. Therefore, the research hypothesis was established. The online program, which would empower teacher learning to develop the digital literacy skills of students, would be determined to be effective in light of the following: 1) teacher's post-test scores would meet the standard of 90/90 and would be significantly higher than their pre-test scores, and 2) the students' post-test scores on digital literacy skills would be significantly higher than the pre-test scores.

5. Research Methodology

5.1. Concepts and Procedure

According to the concept of Sanrattana (2018) on the development of an online program to empower teacher learning to develop students' digital literacy skills through the Research and Development (R&D) methodology, innovations, which are developed through the R&D processes are intended to be used to develop personnel so that the quality of work could be improved. There were some phenomena or empirical data showing importance of having the innovations. At present, there are many principles, concepts, and theories in the field of education that are considered to be innovative. It is expected that if the personnel working in education have knowledge and if they are motivated to use the knowledge and to act upon it, then they will be empowered to perform their duties effectively under the notions of *“Knowledge and Action are Power”* or *“Make Them Know What to Do, Then Encourage Them to Do What They Know”* or *“Link to On-the-Job Application.”*

The concept of studying the relevant literature is an important starting point for R&D because it contributes to information that can be used to develop online programs of which the projects are essential elements. The learning manuals or practical manuals, which are designed as self-learning modules in each project, are considered to be important components. In this research, the procedures of R&D, therefore, started from the study of related literature as R1&D1..R2&D2..R3&D3..Ri&Di as follows:

R1&D1: The study of the relevant literature on “definitions, significance, characteristics, developmental guidelines, developmental stages, and digital literacy skills assessment” for the establishment of an online program to empower teachers' learning in order to develop students' digital literacy skills consisted of two projects. Firstly, The Teacher's Learning Development Project on Developing Digital Literacy Skills was composed of six learning manuals: (1) Teacher Learning Development on Digital Literacy Skills, (2) Learning on the Significance of Digital Literacy Skills, (3) Characteristics or Qualities Indicating Digital Literacy Skills, (4) Learning the Developmental Guidelines of Digital Literacy Skills, (5) Development Procedures on Digital Literacy Skills, and (6) Learning on Digital Literacy Skills Assessment. Secondly, the learning outcomes, which were implemented by the Teachers to Improve the Digital Literacy Skills of the Students, consisted of one practical manual.

R2&D2: The focus group discussion technique was used with 10 teachers in a non-experimental school, Bansarngpandonnaphaeng School, to check for defects in the manual in terms of clarity, the usefulness of the content, the appropriateness of the language usage, and the format for presenting the content, etc.

R3&D3: The focus group discussion technique was used with 7 teachers from a non-experimental school, Chumchon Banphai Yingyong-uthit School, and with 8 teachers from Bansuanmonkrainun Wanghin School. In total, 15 people checked for flaws in the manual in terms of clarity, the usefulness of the content, the appropriateness of the language usage, and the format for presenting the content, etc.

R4&D4: A study of the additional relevant literature on the concept of assessing digital literacy skills was utilized to create two research tools as follows: 1) the teacher's learning outcome test on the contents of the 6 manuals, and 2) the assessment form, which focused upon the digital literacy skills of students.

R5&D5: A manual trial was conducted through pre-experimental research with one experimental group with a one group pre-test/post-test design. The experimental area was Bannongwaengworawit School, which teaches kindergarten to junior high school level and is an educational opportunity extension school under the Office of the Basic Education Commission. The purposive sampling method was used to determine the experimental group, which consisted of 5 primary school teachers (Level 2) and 5 secondary school teachers, totaling 10 teachers. There were 45 primary school students, who were targeted for developing digital literacy skills (Level 2), as well as 15 secondary school students (Years 1-3), which totaled 60 students. The experiment was conducted in the Second Semester of the Academic Year of 2021. The experiment was divided into 2 phases as follows:

Phase 1: Teacher Development was conducted for those, who were in the experimental group, and was conducted in accordance with Project Manual 1 through the method of online self-learning modules with the following activities and periods of operation:

1. The teachers in the experimental group were given information on how the research was conducted, and then they were evaluated to assess their knowledge before the experiment (pre-test). This process took 2 days.
2. The teacher development took place online by using the principles of the self-learning modules, which had been based on the developed project manual. The manual could be downloaded by accessing the website that had been created. The learning was carried out for 1 month without intervention from the researchers or anyone else.
3. Teachers in the experimental group examined the manual for defects and then took the post-test. This process took 2 days.
4. The teachers' post-test results were analyzed and compared with the standard 90/90, and then the teachers' pre-test and post-test results were compared by using the t-test. This process took 2 days.

Phase 2: According to Project 2, the learning results were put into practice for the teachers, who were in the experimental group. It required the teachers to apply the learning results from the self-learning modules from Project 1 so that student development could be as effective as expected. The activities and the periods of operation are shown as follows:

1. The researchers met with the teachers in the experimental group to elaborate upon how the research was conducted and to assess the students' digital literacy skills before the experiment (pre-test).
2. The teachers in the experimental group brought the learning results to develop the digital literacy skills for students in accordance with the explanations in the practical manual in Project 2. The practice was carried out without intervention from the researchers or anyone else. This process took 2 months.
3. The teachers in the experimental group examined the manual for defects and assessed the digital literacy skills of the students. This process took 2 days.
4. The pre-test/post-test results were analyzed by using the t-test, and the process took 2 days.

5.2. Research tools

1. The teacher learning outcome test is multiple choice with 4 options. The purpose was to investigate the teachers' learning outcomes before and after the experiment according to Project 1. The objective was to determine whether or not the experimental group's learning outcomes had met the standard criteria of 90/90 and whether or not the post-test scores had been significantly higher than the pre-test. 1. The pre-test and the post-test were created according to content from the Project Manual 1, which consisted of definitions, significance, characteristics, developmental guidelines, developmental stages, and assessments. The test features were based on cognitive domain in accordance with Benjamin S. Bloom's concept, which categorizes behaviors into 6 levels, ranging from the lowest thinking skill to the most advanced thinking skill (i.e., remembering, understanding, applying, analyzing, evaluating, and creating) (Sanrattana, 2018). The test was an online Google form assessment in which the quality of the test had been verified in the following manner:

1.1 The content validity of the questions was verified using the Rovinelli and Hambleton method (1977), which is known as the Indices of Item-Objective Congruence (IOC) and which utilized 5 experts, who had expertise in

curriculum & teaching and in educational assessment & evaluation. The data analysis revealed that all questions had exhibited IOC values that had been higher than the specified threshold of 0.50, indicating that the content of the questions in the Pre-test/Post-test, utilized in this research, had been valid (content validity) and had met the objectives of the assessment (Chaichanawirote & Vantum, 2017).

1.2 The quality of the test was examined by using the test (the pilot) with 30 teachers in other schools, which were not in the experimental area, which included teachers from the Benjamitwittayakom School, Traikhamprachasan School, and the Banphaisaengthongprachasan School. The results of the experimental test showed the following: 1) all of the exams had achieved an index of difficulty, which was between 0.20 - 0.80 and a power of discrimination, which was from 0.20 to 1.00; 2) the reliability of the test, which was conducted by utilizing the Kuder-Richardson method, showed a KR coefficient of 20 of 0.905, which was higher than the specified criteria; but was equal to or higher than 0.70; and 3) the difficulty of the test was assessed by the mean scores of all samples, which were used as the criteria. If the average score were between 30-50% of the full score, it would be considered a test of reasonable difficulty. If the average score was lower than 30, then the test would be considered more difficult. Moreover, if the average score was higher than 50, then the test would be considered easier. From the results of the test, it was found that the average score for the teachers in the sample group had been 16.00 or 44.44 percent of the full score, indicating that the entire test had exhibited an appropriate level of difficulty.

2. The digital literacy skills assessment form had a rating scale of 5 levels (i.e., excellent, good, moderate, fair, and poor). It was created based on the results of a study, which had focused upon the characteristics or qualities of demonstrating digital literacy skills based upon the perspectives of: British Columbia (n.d.), Heick (n.d.), Media Smarts (n.d.), Quizlet (n.d.), The University of British Columbia (2011), and Williams (2016); and from studies, which examined the concept of evaluating digital literacy skills from the perspective of: Cote and Milliner (2017), Cote and Milliner (2018), Covello (2010), and Rodríguez-de-Dios, Igartua and González-Vázquez (2016). The assessment form was rated online by using Google form, in which the quality had been verified in the following ways:

2.1 Using the Rovinelli and Hambleton method, the content validity of the questions was verified by 5 experts, who had expertise in the fields of education administration, assessment, and evaluation. The data analysis revealed that all the questions had shown IOC values higher than the specified threshold of 0.50, which indicated that the content of the digital literacy skills assessment form used in this research had been valid (content validity) and had met the objectives of the assessment (Chaichanawirote & Vantum, 2017).

2.2 By using Cronbach's method, the alpha coefficient of confidence was examined by administering the digital literacy skills assessment test (the pilot) to 30 students in schools that were not in the experimental area. The students were selected from Banphaisaengthongprachasan School. The data analysis revealed that the alpha coefficient of confidence for the entire assessment form had been 0.978. Considering each aspect, the following information was found: 1) the digital technology skill had been 0.928, 2) the digital media access had been 0.809, 3) the manner in which the digital media was used had been 0.902, 4) the digital skills for searching for information technology had been 0.906, 5) the usage of the digital skills for becoming a digital citizen had been 0.898, and 6) the digital skills for digital protection and security had been 0.907. The alpha coefficient of confidence had been equivalent to or higher than the threshold of 0.70 (UCLA: Statistical Consulting Group, 2016). Therefore, it was shown that the digital literacy skills assessment form was able to be qualified and was deemed to be appropriate for usage with confidence.

5.3. Data Analysis

1. Data analysis was conducted to compare the teachers' learning outcomes after the experiment in accordance with the 90/90 standard and to measure the effectiveness of the manuals in the learning development project of the experimental group teachers. The first 90 refers to the percentage of the average teacher scores of the whole group from the test, and the last 90 refers to the percentage of teachers, who had been able to pass the test for all objectives (Yamkasikorn, 2008). The formula for calculating the first 90 was $\{(\sum X / N) \times 100\} / R$, in which $\sum X$ represented the total score of the correct test results for each teacher, N represented the total number of teachers in the experimental group, and R represented the total points in the test. The formula for calculating the last 90 was $(Y$

$\times 100) / N$, in which Y represented the number of teachers, who had been able to pass the test across all objectives, and N represented the total number of teachers in the experimental group.

2. By using the dependent t- test, data analysis was carried out to compare the results of the teacher learning test before and after the experiment in accordance with Project 1, and to compare the results of the digital literacy skills assessment of the students before and after the experiment in Project 2 (Kanchanawasee, Pitayanon, & Srisuko, 2008).

6. Research Results

Regarding the research results in the R1&D1 stage, an online program to empower the teachers' learning to assist in developing the students' digital literacy skills consisted of 2 projects, and each project had a manual as follows:

1. The Teacher Learning Development Project on the development of digital literacy skills consisted of 6 manuals with self-learning modules, each of which presented the perspectives of academics or of related organizations as follows:

1.1 The manual for learning the definitions of digital literacy skills, presented perspectives from: Common Sense Media (2020), Heick (n.d.), Loewus (2016), Loveless (n.d.), Lynch (2017), Renaissance (n.d.); and from Western Sydney University (n.d.).

1.2 The manual for learning the significance of digital literacy skills presented content based on the viewpoints of: Govconnection (n.d.), Living Medicareful (2018), National Library of New Zealand (n.d.), Purposeful Technology (n.d.), Speed Matters (n.d.), University of Southern California. (n.d.), and Victoria (2018).

1.3 The manual for learning the characteristics or qualities for digital literacy skills, presented content, which was based on the perspectives of: British Columbia (n.d.), Heick (n.d.), Media Smarts (n.d.), Quizlet (n.d.), The University of British Columbia (2011), and Williams (2016).

1.4 The manual for learning the digital literacy skills development guidelines, presented content, which was based on the perspectives of: Applied Educational System (n.d.), Devaney (2016), National Library of New Zealand (n.d.), Pappas (2017), Ruesink (2014), Stenger (2018), Turnipseed (2020), Webwise (n.d.), and Williams (2016).

1.5 The manual for learning the developmental stages of digital literacy skills, presented content based on the perspectives of: Equip Team (2019), Killen, Beetham and Knight (2017), Murphy (2019), Roscorla (2010), and Spencer (2018).

1.6 The manual for learning the digital literacy skills assessment, presented content based on the perspectives of: Cote and Milliner (2018), Cote and Milliner (2017), Covello (2010), and Rodríguez-de-Dios, Igartua and González-Vázquez (2016).

2. Regarding the implementation of the learning outcomes for teachers to enhance digital literacy skills for students, there is a practical manual for teachers to use as a guideline for developing the digital literacy skills of students. A summary of the key points can be presented as follows: 1) the characteristics or qualities of digital literacy skills that students are expected to have, 2) the guidelines for developing digital literacy skills, and 3) the stages for developing digital literacy skills. At the end of the manual, there is teacher self-assessment, which focuses on the implementation of recommendations and the developmental guidelines, and which also includes comments in the form of reflecting upon how to improve the manual.

Remarks:

1) Please refer to every manual at:

http://online.anyflip.com/lwhoe/ubqz/mobile/?fbclid=IwAR1SXOSeU7bhtdSQLrTarprDXAplJpbAVtUyJbnI-wazBUENEnEIZOry6_s

- 2) Please refer to the teacher practice level assessment form at: <https://bit.ly/3b3tzfC>
- 3) Please refer to the teacher's learning outcome test at: <https://bit.ly/3DWxt7d>
- 4) Please refer to the development assessment form on digital literacy skills of students at: <https://bit.ly/3usp607>

Considering the research results in the R2&D2 to R5&D5 stages, a manual consisting of self-learning modules as part of the teacher's learning development project and a practical manual for the implementation of learning outcomes to improve the digital literacy skills of students, were created. This also brought about the pre-tests/post-tests for the teachers and the digital literacy skills assessment form for the students, which contributed to the pre-experimental research. One experimental group, who received a one group pre-test/post-test design, was from Bannongwaengworawit School and was representative of the educational opportunity expansion schools under the Office of the Basic Education Commission. The experimental group consisted of 5 primary school teachers (Level 2) and 5 secondary school teachers, totaling 10 teachers. There were also 45-targeted primary school students (Level 2), and 15 students from Grades 1 to 3, making a total of 60 participants. The research findings were consistent with the research hypothesis: the online program to empower teachers' learning to develop students' digital literacy skills, consisting of 2 projects with a manual each, had been effective in the following ways:

1) The developed manual could be used to empower teachers to achieve learning in accordance with the 90/90 standard. Considering the first 90 standard criteria, the mean score for the post-test had been 33.9 out of a total of 36 points. The percentage was 94.17, which was higher than the specified threshold of 90 percent. Meanwhile, when considering the last 90 standard criteria for the 10 teachers, the percentage of teachers, who had been able to pass all the objectives of the test in the experimental group, was 98.33%, which was higher than the specified threshold of 90 percent.

2) The developed manual could be used to empower teachers to achieve higher learning outcomes given that the experiment showed a level of significance of 0.05 as shown in the t-test results in Table 2.

Table 2: The t-test results to compare the teachers' learning outcomes before and after the experiment

Testing	Sample sizes	Means	Standard Deviations	t
Before	10	29.00	2.357	12.043*
After	10	33.90	1.370	

* $p < 0.05$

3) The developed manual had enabled teachers to implement learning outcomes to develop students' digital literacy skills in accordance with the assessment results of the students after the experiment, which had been significantly higher than the pre-test at the 0.05 level, as shown in t-test in Table 3.

Table 3: The t-test results to compare the results of the students' digital literacy skills assessment before and after the experiment

Evaluations	Sample sizes	Means	Standard Deviations	t
Before	60	3.47	0.07	75.837*
After	60	4.48	0.07	

* $p < 0.05$

7. Discussion

The development of "Online Program to Empower Teacher Learning to Develop Students' Digital Literacy Skills" through Research and Development (R&D) methodology focused upon two concepts. The first was "Knowledge and Action are Power" because any developments in the past had often underscored that "Knowledge is Power," which means transmitting the idea that having and sharing knowledge is the cornerstone of reputation and influence, and is, therefore, power. (Azamfirei, 2016). However, at present, some people have proposed different ideas by stating that, in addition to giving importance to knowledge, importance should be also placed on action. Regarding this, the following statements have been made: "The great end of knowledge is not knowledge, but action" or "Knowledge is NOT power. Knowledge is only POTENTIAL power. Action is power." - Tony Robbins

and “*Knowledge Is Power, but Knowledge Without Action Is Useless*” (Ofpad, the School of Genius, n.d.). This is consistent with the concept of Knowledge Management (KM), in which there is a process of gathering knowledge that has been scattered among individuals or that can be found in documents in order that this knowledge can be developed into a system that everyone in the organization can have access to and can use for his/her own self-development so that he/she can become knowledgeable and work more effectively (Lenin, n.d.). Moreover, according to Demarest’s (1997) viewpoint on the KM process, KM consists of knowledge construction, knowledge embodiment, knowledge dissemination, and the use of knowledge. This is also consistent with a concept by Probst (1998), who stated that KM consists of knowledge identification, knowledge acquisition, knowledge development, knowledge transfer, knowledge storage, and knowledge utilization. It can be seen that the concepts of KM not only focus on the pursuit of knowledge and the acquisition of knowledge, but they also focus on putting knowledge into practice. Therefore, the development of this “*Online Program to Empower Teacher Learning to Develop Students' Digital Literacy Skills*” by utilizing R&D methodology, which was designed to focus on “*Knowledge and Action is Power,*” is an idea that should be encouraged, supported, and disseminated.

In addition, another concept that has been highlighted in this research is the concept of professional development for teachers, which considers that any development must take into account that providing benefits for the students is the ultimate goal (Gusky, 2000; Hoy & Miskel, 2001). This is consistent with the statement that “*Student achievement should be the ultimate goal of any teacher professional development activities*” (Kampen, 2019) and is also in line with the statement: “*Provide professional development that is comprehensive, ongoing, intensive and designed to improve the effectiveness of teachers and principals in raising student achievements.*” (Hervey, n.d.). Moreover, Holloway (2006) stated that “*The right kinds of professional development for both teachers and school leaders can directly contribute to improved student performance.*” Therefore, research that has been designed to focus on any activity of teacher professional development must acknowledge the benefit of students as the ultimate goal. This is also another idea that should be encouraged, supported, and disseminated.

The trial of the manual developed with the teachers and students in the schools that were in the experimental area took place during Semester 2 of the Academic Year of 2021 and during the time of the COVID-19 pandemic. This period was considered to be a catalyst for the project on teacher learning development and for the implementation of learning outcomes for teachers to more effectively assist in student development. In the education sector, the COVID-19 outbreak had accelerated the adoption of educational technology. Most educational institutions faced needs for online learning platform services. For some services, the institutions were able to develop them by themselves, while for others, they had to rely on a system developer, which contributed to the creation of more startups to meet the demand for distance learning services, such as Microsoft Teams, Google Classroom, Zoom, Coursera, EdX, Udemy, and MOOC, etc. In addition, there was an increase in learning through platforms, such as learning English or a third language directly from native speakers in the other countries via Voxy or Engoo, etc. (Chairatchaneeboon, 2020; Langworthy & Neufeld, 2017). Therefore, the COVID-19 outbreak has been considered a challenge of “*Turning crisis into opportunity.*” In order to achieve the expected results, teachers were required to learn how to develop digital literacy skills and how to implement learning outcomes for student development.

However, in terms of developing digital literacy skills, English language proficiency is a major concern. Because Thai people, including Thai teachers, still lack skills in using English effectively. According to the English proficiency ranking conducted in 2021, the annual English Proficiency Index, which was carried out by the global language-education company, EF Education First, ranked Thailand at 100 out of 112 territories, in which English is not the native language (Bangkok Herald reporters, 2021). As a result of this ranking, the presentation of the content, related to the development of digital literacy skills in the teacher's learning manual, was translated from English to Thai. This resulted in clarity, as well as in inaccurate language expressions for communication. Despite this fact, supplementary measures were taken for those people, who were proficient in English and who wished to learn from the English-language references using the websites linked in the manual.

8. Recommendations

According to the findings, the "Online Program to Empower Teacher Learning to Develop Students' Digital Literacy Skills" is effective in enabling teachers to learn in accordance with the specified criteria. Teachers can also use the learning outcomes to help students significantly improve their digital literacy skills. The findings showed that the Online Program could be disseminated so that teachers in other schools under the Office of the Basic Education Commission nationwide can gain benefit. During its implementation, the concepts of "Knowledge and Action are Power" and providing benefits for the students should be considered, which is the ultimate goal of any educational management. According to Holloway (2006), the following actions should be taken: 1) the teacher's knowledge of the content and his/her teaching skills should be focused upon; 2) in an evidence-based way, the students' learning goals and the training outcomes should be considered; 3) a supportive culture for a learning community should be created among all members of the community; 4) student data should be used to inform professional development planning and should be a part of the training itself; 5) the training should be embedded in the daily work of the teacher; 6) training should be sustained over time; and 7) feedback and coaching should be permitted.

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Appendix: The student's digital literacy skills assessment form used in the research

The characteristics or qualities indicating Digital Literacy Skills	Level of agreement of the students				
	5	4	3	2	1
Digital technology skills					
1. I enjoy using computers.					
2. I want to learn more about computers.					
3. I can create documents using basic Microsoft Word.					
4. I can log in, log out, and use programs.					
5. I can use a printer.					
6. I can connect the computer to the Internet.					
7. I can input the URL in the address bar.					
8. I can download and save files from the Internet.					
9. I can create an account, username, and password on any website I want, such as <i>Line</i> , <i>Gmail</i> , or <i>Facebook</i> .					
10. I understand the basic functionality of the parts of computer hardware.					
Digital media access and usage behaviors					
11. I use online social applications.					
12. I use a mobile phone to access online social networks.					
13. I play computer games.					
14. I download and install programs.					
15. I have online messages.					
16. I share files with others on social media.					
Behaviors and etiquette when using digital media					
17. I properly spend time when using digital media.					
18. I can assess and select the proper sources on websites.					
19. I can tell whether the information is right, wrong, or appropriate before sharing it with others.					
20. I can select polite and appropriate words, icons, signs, images, and symbols.					
21. I can appropriately select digital tools at the right time.					
22. I know the appropriateness of posting images, messages, or video clips on digital media.					
Digital skills for technology operations					
23. I have knowledge and can use technology appropriately.					
24. I can choose and practice using applications on digital devices effectively.					
25. I can search and edit information on digital devices correctly and appropriately.					
26. I know how to use technological devices correctly.					
Digital skills for communication, collaboration, creativity, and innovation					
27. I use digital media for communication, interaction, and for working and learning with others.					
28. I communicate with others using a variety of digital devices effectively.					
29. I can receive and send information through email or applications like <i>Line</i> and <i>Facebook</i> on digital devices.					
30. I am good at using my digital knowledge to create works through digital devices on social media.					
Digital skills used in searching for information					

The characteristics or qualities indicating Digital Literacy Skills	Level of agreement of the students				
	5	4	3	2	1
31. I use digital devices to look up, analyze, assess, and to synthesize information from a variety of appropriate sources.					
32. I can evaluate, compare, and select appropriate sources of information.					
33. I can compare information from a variety of sources before judging whether it is reliable or not.					
Digital skills for digital citizenship					
34. I understand digital citizenship and my rights on social media.					
35. I understand the effects of illegally downloading music and movies.					
36. I understand the actions that should be avoided to not infringe upon the rights of others.					
37. I am responsible for my personal rights when using digital technology on social media.					
38. I create or write messages on social media that are respectful of the rights of others, as well as copyright and intellectual property laws.					
Digital skills for protection and security on digital world					
39. I know how to use the location identification feature on applications like Facebook.					
40. I appropriately use social media sharing settings in order to choose what others can see.					
41. I know the proper disclosure of personal information for personal security on social media.					
42. I regularly install and update anti-virus programs.					



Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills

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Abstract

“Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills” is an expected result from the implementation of Research and Development under the following concept: “*It begins with teacher learning development. Teachers then incorporate the learning outcomes into student development.*” Firstly, as a result of implementing the R1&D1 to R4&D4 process, six sets of *Teacher Learning Manuals* and one *Teacher Workshop Manual for Implementing the Learning Outcomes in Student Development* were created. Secondly, in the R5&D5 phase, the manuals were evaluated with 157 teachers and 2,613 students using a one-group pre-test/post-test experimental model in schools affiliated with the Office of the Basic Education Commission. The experimental results revealed that the teachers' scores on the post-experimental test had met the standard of 90/90, and that the mean scores had been statistically significantly higher than the pre-experimental test. Furthermore, the findings in implementing the teacher's learning outcomes in student development illustrated that their post-experimental mean score in the *Information Literacy Skills* assessment had been statistically significantly higher than the pre-experimental score. Taken together, these findings confirmed that the developed online program had been proven to be effective according to the established research hypothesis. Moreover, the study results also demonstrated that the developed online program could be distributed to schools under the Office of the Basic Education Commission.

Keywords: Information Literacy Skills, Online Program, Self-Learning Module, Research and Development

1. Introduction

In the era of globalization, advances in communication, telecommunications and information technology have narrowed the world of today. People can communicate faster, and information can be disseminated, distributed, and transferred more conveniently. This progress affects people's cultures, their ways of life, beliefs, and even their thoughts. It also puts people at risk via the threats that come with technology. This kind of change is not easy to control and is even more challenging because it affects social management. Examples of various disasters that can occur are as follows: trans-national crime risk, the risk of terrorism and cyberattacks, negative impacts upon the quality of society; risks to the security and the quality of life of people, who cannot adjust to the changes; or the lack of knowledge and skills to keep up with the changing era. The most worrying thing is working with such rapid advancements even though many Thais still cannot adapt to the changes, the new rules, and the higher standards (Secretariat of the Cabinet, Thai Government, 2018).

Hassani (2015), Macauley (2001), Naik and Padmini (2014), Ranaweera (2008), Riedling (2006), and Scottish Information Literacy Project (n.d.) all believe that Information Literacy Skills are crucial because they are the skill sets that are essential to search for, retrieve, analyze, and to use information. This is a set of skills that allows individuals to solve problems and think critically, such as formulating questions, finding answers, researching information, expressing viewpoints, evaluating resources, and making decisions. In the 21st century, it is a skill set that will help students achieve a broader range of their goals through a student-centered learning approach and will enable students to achieve a more comprehensive range of purposes in the 21st century through student-centered learning strategies. Undeniably, Information Literacy Skills assist in more effective decision-making that can benefit society. They are essential skills for engaging in civic and social participation, creating new knowledge, and promoting successful lifelong learning.

Therefore, providing students with modern education, including enhancing skills in using the appropriate technology, is necessary for survival in the digital age. Unquestionably, students in the present era are people, who have grown up in and live in the digital age and who are keen to use the internet and communication technology. Therefore, it would be a great benefit if they could use these technological advances properly and wisely. Therefore, equipping them with the skills to learn digital technology is crucial in pursuing good digital citizenship (Wongyai, 2017). In particular, during the disruption of information technology, empowering students by sharing Information Literacy Skills is urgently needed because Thailand has not yet established a reasonable standard for digital technology learning and teaching in educational institutes (Lenarat, 2017).

The Core Curriculum of Basic Education (2008) identifies students' technology competencies as follows: "*Students should have the ability to select and use various technologies with technological process skills for personal and social development in communication learning and solving problem with creativity and integrity.*" Therefore, developing students' technology competencies is essential to learning in the 21st century because it causes students to become aware of the dramatic disruption of information in the current world situation. Altogether, Information Literacy Skills consist of the following: 1) gaining access to information resources that will open up the students' ideas and experiences, 2) developing the skills to use information technology that must be regularly acquired and self-developed, 3) analyzing and evaluating the information that arises, 4) organizing the processing of information with creative methods and formats, 5) applying data to be used in effective and constructive decision-making processes, and 6) summarizing references and effectively communicating information. The learners of the 21st are required to adopt these vital digital skills so that they can comprehend information ethics leading to worldwide information access and to lifelong learning (Ministry of Education, 2008).

Therefore, the concept of "Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills" attracted the attention of the research team. This research adopted Research and Development methodology according to the perspective of Sanrattana (2018), which points out that the educational innovations developed by this research methodology are related to the principle of *developing "people" to create "work"* via phenomena or empirical data. In other words, there is evidence for necessity. For example, there may be new expectations that challenge institutions or a change in the work paradigm where the personnel still lack the necessary knowledge and skills. At present, there are many new concepts and theories of educational innovation, and educators are expected to have the "knowledge" and be enthusiastic to conduct "actions," which generates the "power" that drives more effective work according to the concept of "Knowledge and Action are Power."

The concept of "*Developing "people" to develop "work"* leads to: "*It begins with teacher learning development. Teachers then incorporate the learning outcomes into student development.*" Professional development in teaching considers the student's benefit as the ultimate goal (Gusky, 2000; Hoy & Miskel, 2001). Moreover, it correlates with Kampen, 2019, who stated that "*Student achievement should be the ultimate goal of any teacher professional development activities.*" These are the reasons why the research team believes that "Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills" can achieve the goal of developing information literacy skills for students. Teachers need to be knowledgeable in information literacy skills and need to be able to empower their students in 21st-century education.

“Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills” is the product of R&D conducted at an experimental school (Lamplaimat School in the Lamplaimat District of Buriram Province), which is supervised by the Office of the Basic Education Commission. Therefore, the developed online program can contribute to the post-research target population or to those secondary schools, which are affiliated with the Office of the Basic Education Commission across the country. Furthermore, the research and development principles assert that if the results of the trials prove that developed innovations are practical according to specified criteria, then they can be distributed for the benefit of the target population. In addition, the online program, which was developed by the advanced digital technology, will definitely be significantly more beneficial to the target population than the traditional printed materials would be.

2. Literature Review

Literature review is an important starting step for research and development of online programs because it provides knowledge from the points of view of academics or academic agencies on developing *Teacher Learning Manuals* in six aspects as follows: 1) The definitions of information literacy skills from the perspectives of Association of College and Research Libraries (2000), Press (n.d.), The Library and Information Association (2018), Brantley (2015), Otterbein University (2021) and Virkus (2009); 2) The importance of information literacy skills from the perspectives of Hassani (2015), Macauley (2001), Naik and Padmini (2014), Ranaweera (2008), Riedling (2006), and Scottish Information Literacy Project (n.d.); 3) The characteristics of a person, who has information literacy skills from the perspectives of Karim, Shah, Khalid, Ahmad, and Din (2015), Bainton (2001), Willamette University (n.d.), and Thoughtful Learning (n.d.); 4) The development guidelines for information literacy skills from the perspectives of Bart (2009), Ferlazzo (2019) Bruff (2011), EBSCOpost (2017), Hong Kong Polytechnic University (n.d.), Proudman (n.d.), Reading Rockets (n.d.), and Xiao (2017); 5) The developmental steps of information literacy skills from the perspectives of LibGuide Team (2017), Loesche (2015), Cataldi-Roberts (2015), Scribed Company (2007), and Zook (2018); and 6) the assessment of information literacy skills from the perspectives of Caldwell (n.d.), Julien, Gross and Latham (2018), and Oakleaf (2006). Furthermore, the data from the literature review was also used in the instructions and summary for a set of *Teacher Workshop Manuals for Implementing the Learning Outcomes in Student's Information Literacy Skills Development*.

3. Research Objective

This research aimed at conducting research and development to produce “Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills” that would be effective according to the designated criteria. The developed online program consisted of two projects: the project on teacher's learning development and the implementation of teacher's learning outcomes to student's development. Each project had its own specific manual for self-learning modules.

4. Research Hypothesis

According to the R&D methodology and the information obtained from the literature review, the research aims, which were developed to examine “Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills,” focused upon two designated criteria: 1) The teachers' scores on the post-experimental test would meet the 90/90 standard, and the mean scores would be statistically significantly higher than the pre-experimental test, and 2) the student's post-experimental mean scores in the *Information Literacy Skills* assessment would be statistically significantly higher than their pre-experimental scores.

5. Research Methodology

5.1. Concepts and procedures

“Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills” was developed under the following concept: “*It begins with teacher learning development. Teachers then incorporate the learning outcomes into student development.*” This study adopted a Research and Development methodology that was in

alignment with the perspective of Sanrattana (2018), who pointed out that the educational innovations developed by this research methodology are related to the principle of *developing "people" to develop "work"* with phenomena or empirical data. In other words, there is evidence for necessity. For example, there are new expectations that challenge institutions or cause changes to the work paradigm, and in these institutions, the personnel still lack knowledge and skills. At present, there are many new concepts and theories of educational innovation, and educators are expected to have the "knowledge" and to be enthusiastic when taking "action," which generates the "power" that drives working more effectively in accordance with the concept of "Knowledge and Action are Power."

Moreover, the literature review is the most important step for starting research and development because it provides information on online program development, which focuses on projects as a significant component. Each project has its specific manual for self-learning modules. Therefore, the procedure of the study began with a literature review according to R1&D1, R2&D2, R3&D3, R4&D4 and R5&D5 patterns as described below:

R1&D1: A Review of the Literature A literature search was conducted related to information literacy skills on the following topics: definitions, importance, the characteristics of a person with information, the developmental guidelines, the developmental steps, and assessments. The information obtained from this step is used in creating a set of six manuals for the teacher's learning development project. The set consisted of: (1) a manual for learning about the definitions of information literacy skills; (2) a manual for learning about the importance of learning information literacy skills; and (3) a manual for learning about the characteristics of a person, who has information literacy skills learning; (4) a manual for learning about the developmental guidelines for information literacy skills; (5) a manual for learning about the development steps of information literacy skills; and (6) a manual for learning about the assessment of information literacy skills; and (7) a set of the *Teacher Workshop Manual for Implementing the Learning Outcomes in Student's Information Literacy Skills Development*.

R2&D2: Uncovering the Flaws: The First Step To make the initial improvements to the manual, the manual was scrutinized to find any flaws, which included examining for conciseness, usefulness, appropriate language, and appealing content presentation. The focus group discussions were conducted with 15 teachers in a non-experimental school known as Romburipittayakhom Rachamangklapisek.

R3 &D3: Uncovering the Flaws: The Second Step The manual was checked for flaws for a second time, including examining for conciseness, usefulness, appropriate language, and appealing content presentation. The focus group discussions were conducted at two non-experimental site schools: Bualuangwittayakhom School (with 15 teachers) and Thantongpittayakhom School (with 15 teachers).

R4 &D4: A Review of the Additional Literature Any additional literature on the topic of information literacy skills assessment was searched for to obtain information for the following two research tools: 1) the test for teacher's learning based on the content of six manuals and 2) the student's information literacy skills assessment.

R5&D5: Examining the Manuals in the Pre-experimental Research Step with a one group Pre-test/Post-test design The experimental area was Lamplaimat School located in the Lamplaimat District of Buriram Province. It is a secondary school under the Office of the Basic Education Commission that teaches Grades 7-12. This study adopted purposive sampling to select the experimental group. The target consisted of 157 teachers, 1,270 lower secondary school students, and 1,343 upper secondary school students (2,613 in total). The field experiment took place during the Second Semester of the Academic Year of 2021. The experimental course was divided into following two phases:

Phase 1: Teacher learning development using online self-learning modules The activities and the schedule in this phase consisted of the following steps:

1. The research team met with the target teacher group to explain the research details and conduct the teacher's pre-test. This step took two days.

2. To further develop the teachers using online manuals and self-learning modules, the teachers could download the manuals from the website that the research team had created. The learning had to be completed without intervention from the research team or anyone else. This step took one month.
3. Together, the target teacher group worked on checking for flaws to improve the manuals and took a post-test. This step took two days.
4. The research team analyzed the post-test results and compared them using the standard criteria of 90/90. A comparative analysis of the average scores of the pre-test and the post-test were made using the t-test dependent. This step took two days.

Phase 2: The Implementation of the Teacher's learning outcomes to develop the Students The activities and schedule in this phase included the following steps:

1. The research team met the target teacher group to explain the research details and to evaluate the information literacy skills of the students in the target group using the pre-test. This step took two days.
2. The target teacher group implemented the learning outcomes to develop the students' information literacy skills without any intervention from the research team or anyone else. This step took two months.
3. Together, the target teacher group worked to check for any flaws in order to improve the manuals and evaluated the students' information literacy skills using a post-test. This step took two days.
4. The research team conducted a comparative analysis of the average scores of the pre-test and the post-test using a t-test dependent. This step took two days.

5.2. Research Tools

1. The Teacher's Learning Outcomes Test consisted of multiple-choice questions with four answers. It was used to evaluate the teachers' knowledge as a pre-test and a post-test. The research team invented this test using the content from the teacher's learning manuals, which consisted of definitions; the important aspects; the characteristics of a person with information; the developmental guidelines; the developmental steps; and assessments. The test was an online form (Google Form). In addition, it was based on Benjamin S. Bloom's cognitive domain, which classifies thinking skills from low to high as follows: remembering, understanding, applying, analyzing, evaluating, and creating (Sanrattana, 2018). In addition, it was examined for validity as described below:

1.1 Five curriculum, teaching, and measurement experts examined the validity using Rovinelli and Hambleton's (1977) Indices of Item-Objective Congruence (IOC). The results demonstrated that every question had an IOC value of higher than 0.50 (Chaichanawirote & Vantum, 2017).

1.2 The pilot test was conducted with 30 teachers from a non-experimental site school: Burirampittayakhom School. The result analysis revealed the following: 1) the index of difficulty of questions had been between 0.20 - 0.80, and the power of discrimination had been between 0.20-1.00, which conformed to the specified criterion; 2) the reliability of the test was examined using Kuder – Richardson's method, and it had shown a KR - 20 coefficient of 0.889, which was greater than the specified criterion (equal to or greater than 0.70); and 3) regarding the test difficulty, the mean scores of all samples were employed as a criterion. If the average score was between 30 and 50 percent of the total score, it was considered fairly difficult. If the average score was lower than 30, the test was considered to be more complex. If the average score was higher than 50, the test was considered easier. Data analysis revealed that the average score from all samples had been 23.87, which was equal to 66.30 percent of the total score.

2. The Student's Information Literacy Skills Assessment Form It was an online form, Google form, with 5-level rating scales: the most, very, medium, less, and the least. The researcher created the form using the studies related to the characteristics of a person, who has information literacy skills based on the perspectives of: Karim et al (2015), Bainton (2001), Willamette University (n.d.), and Thoughtful Learning (n.d.), and from studies related to the information literacy skills assessment based on the perspectives of: Caldwell (n.d.), Julien et al (2018), and Oakleaf (2006). It was examined for validity as described below:

2.1 Five experts in curriculum, teaching, and measurements examined the validity using Rovinelli and Hambleton's (1977) Indices of Item-Objective Congruence (IOC). The results demonstrated that every question had shown an IOC value higher than 0.50 (Chaichanawirote & Vantum, 2017).

2.2 In order to analyze the alpha coefficient of reliability using Cronbach's method, an evaluation trial was conducted with 30 students at a non-experimental site school: Burirampittayakhom School. According to the results of the data analysis, the alpha coefficient of confidence for the entire questionnaire was 0.85. The examination of each feature revealed the following: 1) 'Having an awareness of the qualities of good information' had been 0.85, 2) 'The skills for accessing information' had been 0.87, 3) 'The skills for assessing the value of the information' had been 0.85, and 4) 'The skills of using the information' had been 0.84. The alpha coefficient of confidence had been higher than the specified criterion, which was equal to or higher than 0.70 (UCLA: Statistical Consulting Group, 2016).

5.3. Data Analysis

1. The 90/90 Standard was used to analyze the data and to compare the teachers' learning outcomes in the post-experiment. The first 90 represented the percentage of the mean scores obtained from the Knowledge test by the entire group of teachers. The last 90 represented the percentage of teachers, who had passed the test according to all objective criteria. (Yamkasikorn, 2008)

2. The t-test dependent statistic was used to analyze the data to compare the results of the teacher's learning outcomes and the student's information literacy skills assessment in the pre-experimental test and the post-experimental test.

6. Research Results

The results from the R1&D1 step produced "Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills," which consisted of two projects, in which each project had its specific manuals as described below:

1. The Teacher's Learning Development Project had a set of six manuals, which were created from the perspectives of academics and agencies, and which had been obtained from the literature review process. The followings are the detail of the six manuals.

- 1.1 The manual for learning the definitions of information literacy skills presented perspectives from Association of College and Research Libraries (ACRL) (2000), Press (n.d.), The Library and Information Association (2018), Brantley (2015), Otterbein University (2021) and Virkus (2009).
- 1.2 The manual for discovering the importance of information literacy skills learning presented perspectives from Coonan and Secker (2013), Macauley (2001), Naik and Padmini (2014), Ranaweera (2008), Riedling (2006), and Scottish Information Literacy Project (n.d.).
- 1.3 The manual for exploring the characteristics of a person with information literacy skills learning presented perspectives from Karim et al (2015), Bainton (2001), Willamette University (n.d.), and Thoughtful Learning (n.d.).
- 1.4 The manual for creating the developmental guidelines for information literacy skills presented perspectives from Bart (2009), Ferlazzo (2019), Bruff (2011), EBSCOpost (2017), Hong Kong Polytechnic University (n.d.), Proudman (n.d.), Reading Rockets (n.d.), and Xiao (2017).
- 1.5 The manual for investigating the developmental steps of information literacy skills presented perspectives from LibGuide Team (2017), Loesche (2015), Cataldi-Roberts (2015), Scribed Company (2007), and Zook (2018).
- 1.6 The manual for discovering the assessment of information literacy skills presented perspectives from Caldwell (n.d.), Julien et al (2018), and Oakleaf (2006).

2. Implementing the Learning Outcomes in the Student's Information Literacy Skills Development Project A workshop manual with instructions was implemented and can be summarized as follows: 1) the typical characteristics of information literacy skills for students, 2) the developmental guidelines for information literacy skills, and 3) the steps of information literacy skills development. The manual also included the teacher assessment form to assist in implementing the developmental guidelines and the developmental steps, feedback on the manual's strengths and weaknesses, and reflections about the work.

Remarks:

1. Please refer to every manual written in Thai at: <https://online.pubhtml5.com/avtq/noot/>

2. Please refer to the teacher practice level assessment form written in Thai at: <https://bit.ly/2QPTqRc>
3. Please refer to the teacher's learning outcome test written in Thai at: <https://bit.ly/37cFoRM>
4. Please refer to the development assessment form on information literacy skills of students written in Thai at: <https://bit.ly/3KMDC7E>

The results of R2&D2, R3&D3, R4&D4 and R5 &D5 produced the *Teacher Learning Manuals* and one *Teacher Workshop Manual for Implementing the Learning Outcomes, as well as the Teacher's learning test and the Student's assessment form*, which led to the experimental research in the field based on the pre-experimental research with a one group pre-test/post-test design. The experimental investigation was conducted at Lamplaimat School in the Lamplaimat District of Buriram Province, which is supervised by the Office of the Basic Education Commission. The experimental group consisted of 157 teachers, 1,270 lower secondary school students, and 1,343 upper secondary school students (2,613 in total). The research findings were based on the hypothesis that "Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills," which was comprised of two projects, each with its own manual, could be deemed as 'beneficial' based on the following criteria:

1) The post-test results in the teacher's learning outcome test were in line with the standard of 90/90. The first 90 represented a percentage of the mean post-test scores, which was 33.51 points out of 36. It demonstrated that the post-test scores had been higher than the specified criterion (90). The last 90 was the percentage of the teachers, who could complete all objectives. It revealed that 92.79% of 157 teachers had been able to pass all objectives on the exam. The number was higher than the specified criterion (90).

2) The results showed that the mean score of the pre-experimental test of 157 teachers had been 23.61, and the standard deviation had been 7.07, while the post-experimental test mean score had been 33.51 and the standard deviation had been 1.21. Therefore, when analyzing the data by t-test dependent, the mean score of the post-experimental test was statistically significantly higher than the mean score of the pre-experimental test at 0.05, which is shown in Table 2.

Table 2: The results from the t-test depended upon comparing the teachers' learning outcomes before and after the experiment

Testing	Sample sizes	Means	Standard Deviations	t
Before	157	23.61	7.07	20.187*
After	157	33.51	1.21	

*p < 0.05

3) Before the experiment, the assessment results from the information literacy skills with 2,613 students revealed that the mean had been 4.07 with a standard deviation of 0.79, while the results from the assessment after the experiment had shown a mean of 4.78 with a standard deviation of 0.42. Therefore, when analyzing the data by using a t-test dependent, the mean score of the post-experimental assessment had been statistically significantly higher than the mean score for the pre-experimental assessment at 0.05, which is shown in Table 3.

Table 3: The results of the t-test dependent when comparing the results of students' information literacy skills assessment before and after the experiment

Evaluations	Sample sizes	Means	Standard Deviations	t
Before	2,613	4.07	0.79	71.378*
After	2,613	4.78	0.42	

* p < 0.05

7. Discussion

The student's 21st-century skills have been highlighted in recent studies. Buckle (n.d.) defined these skills as: "the knowledge, life skills, career skills, habits, and traits (that are) critical to student success in today's world, particularly as students move on to college, the workforce, and adult life." 21st-century skills consist of the following: *Critical thinking, Communication skills, Creativity, Problem-solving, Perseverance, Collaboration,*

Information literacy, Technology skills & Digital literacy, Media literacy, Global awareness, Self-direction, Social skills, Literacy skills, Civic literacy, Social responsibility, Innovation skills, and Thinking skills. Information literacy skills are among those, as are digital literacy skills in Promrub and Sanrattana (2022) study “Online Program to Empower Teacher Learning to Develop Students' Digital Literacy Skills.” The dramatic disruption of technology resulted in 21st-century skills, and over time, will become more complicated. Duggal (2022) classified the Top-9 newest technology trends for 2022 as follows: 1) Artificial Intelligence and Machine Learning, 2) Robotic Process Automation (RPA), 3) Edge Computing, 4) Quantum Computing, 5) Virtual Reality & Augmented Reality, 6) Blockchain, 7) the Internet of Things (IoT), 8) 5G, and 9) Cyber Security.

One World International School, Singapore (2020) believes that “21st-century skills will continue to play a significant role in our lives, which is why we provide students with opportunities for hands-on learning to develop these unique and valuable skills.” Therefore, it is more challenging for teachers in their roles. *What should they do to develop the practical 21st-century skills?* In the 21st-century classroom, needs are quite different from the 20th-century ones. In the 21st-century classroom, teachers are facilitators of student learning and creators of productive classroom environments. Students can develop the skills they might need in the present or in the future. (Nola, 2022)

From the above perspective, the research team believes that the “Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills,” which was created using the R&D procedure, is an educational innovation that effectively enhances the teachers' roles in the development of information literacy skills for students. Information literacy skills are included in the desirable skills for the 21st century. The developed online program consists of numerous perspectives related to information literacy skills in the aspects of definitions; the important features; the characteristics of a person, who has information; developmental guidelines; developmental steps; and assessments. Therefore, the research team believes that teachers will naturally implement the skills with their students after obtaining the knowledge. This concept aligns with Gary Zukav's quote, “Knowledge is power, and for each level of knowledge, you are held responsible for how you use it.” In addition, John F. Kennedy stated: “In a time of turbulence and change, it is more true than ever that knowledge is power.”

8. Recommendations

“Online Program to Enhance Teacher Learning to Develop Students' Information Literacy Skills,” which is an educational innovation proved by the experimental group, is effective and meets the specified standard of the hypothesis. Therefore, the agencies involved in teacher professional development (i.e., the Ministry of Education, the Office of the Basic Education Commission, the Educational Service Area Offices, and the schools) should be aware of its merits and utility. Moreover, designated strategies from the responsible units are required to enable the widespread and effective use of this online program so that it can be employed as a tool for developing teachers in other affiliated schools.

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Appendix

The Student's Information Literacy Skills Assessment Form

The qualification and characteristics that reflect information literacy skills	Your Opinion Level				
	5	4	3	2	1
Having an awareness of the qualities of good information					
1. I realize that good information must come from a reliable source.					
2. I realize that good information must be current, recent, and up-to-date.					
3. I realize that good information must be flexible, must meet the needs, and can be examined.					
4. I realize that good information must be accurate, free from mistakes, clear, and unambiguous.					
5. I realize that good information must consist of complete and reliable facts.					
6. I realize that good information must be concise, straightforward, and not discursive.					
7. I realize that good information must be secured from unauthorized access.					
8. I realize that good information must be verifiable.					
9. I realize that good information goes through assessments, analyses, and synthesis to achieve the most accurate and efficient result.					
The skills for accessing Information					
10. I can access various information step by step.					
11. I can identify the required types and the scope of information.					
12. I can identify the information sources that meet the purpose of my search.					
13. I can use IT to search for information.					
14. I can use searching strategies to search for different information in order to make it more accurate.					
15. I can tell the differences between information sources: websites, magazines, or books.					
16. I can use various information sources to search for diverse types of information.					
17. I can learn new skills to enhance my information literacy skills.					
18. I can use library searches together with computer technology searches to obtain the desired information.					
19. I can search for additional information for comparison and analysis.					
20. I know how to choose the information sources to meet the needs for the completion, accuracy, and unity of required information.					
The skills for assessing the value of the information					
21. I can critically assess information and its sources.					
22. I can check on the qualifications and reliability of the author.					
23. I can check on the publisher's qualification and reliability.					
24. I can learn the techniques to assess the website's qualification and reliability.					
25. I can reasonably identify whether the information from various sources (i.e., websites, magazines, and books) is suitable for my objectives.					

The qualification and characteristics that reflect information literacy skills	Your Opinion Level				
	5	4	3	2	1
26. I can compare the perspectives found in the information source to other relevant sources.					
27. I use my intelligence to assess, analyze, and to synthesize information.					
28. I am attentive and pursue research in a fair-minded manner in order to effectively assess the information.					
The skills of using the information					
29. I understand the economic, social, cultural, and legal issues associated with using the information.					
30. I use information morally and ethically.					
31. I integrate information ethically and legally.					
32. I use the information correctly and do not infringe upon the copyrights of others.					
33. I can present and communicate information to other people.					
34. I can use information effectively to achieve specific objectives.					
35. I consider the impact that bias has upon the interpretation of data.					
36. I am aware of the disadvantages of bias, deceptions, or data manipulation.					
37. I am aware of the disadvantages of presenting only one point of view, one opinion, and/or one attitude.					



An Online Program to Empower Teachers' Knowledge to Develop Students' Collaborative Skills

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Abstract

This research aimed at developing and implementing an online program to empower teacher's knowledge regarding students' collaborative skills development by using Research and Development (R&D) methodology. It is based on the concept of *"Develop teacher's learning and implement the outcomes into student development."* It consisted of two projects as follows: 1) Collaborative skills learning for the teacher development project, and 2) Implementing the teacher's collaborative skills learning outcomes with student project. The first project was created along with a set of six-manuals for teacher development including definitions, important aspects, qualifications, developmental approaches, developmental processes, and the assessment of collaborative skills manuals. The second project included an action manual for implementing the teacher's learning outcomes for student development. The online program was examined at the Pariyattidhamma School, which had been selected as research site. The findings revealed that after completing the first teacher development project, the teachers had achieved learning outcomes in accordance with the 90/90 standard. In addition, the learning outcomes after development had been statistically significantly higher than attending the project. Moreover, after the second project, the students' collaborative skills assessment results were found to be statistically significantly higher than before. Therefore, the online program produced in this study is an educational innovation that provides effectiveness and should be beneficial for learning at other Pariyattidhamma schools.

Keywords: Collaborative skills, Online program, Teacher learning, Pariyattidhamma

1. Introduction

Segar (2021) provided several supportive ideas on the topic of developing students' 21st century skills. Specifically, in order to develop the 21st century skills for learners, educators should be concerned the following ideas: 1) in order to prepare for change, students should have adaptability, resourcefulness, creativity, problem-solving skills, be able to work well under pressure, and be open-minded; 2) to prepare for navigating information, students should have inquiry skills, resourcefulness, problem-solving abilities, research skills, information literacy, critical thinking, and tech literacy skills; 3) to build character, students should understand the essence of what it means to be collaborative and social beings, who have empathy, compassion, ethics, and integrity, and who can work well with others; 4) to stay competitive in the workplace, students should be creative, have problem-solving skills, be ready and willing to collaborate, and have critical thinking skills and communication skills; and 5) to promote innovation, students should be creative, have critical thinking skills, be ready and willing to collaborate, be intelligent risk-takers, pursue lifelong learning, have curiosity, have an inquiring mind, and have good problem-

solving skills . From these suggested skills, collaborative skills are one of the crucial skills for the 21st century education.

According to Indeed Editorial Team (2022) “*collaboration*’ means working together and takes place when one or more people work cooperatively to complete a project/task or to develop ideas or processes. In other words, collaboration occurs when two or more people work together towards a common goal that benefits either a team or a company.” Therefore, it is essential for students to develop collaborative skills because these skills assist in the areas of problem-solving, adaptability, open communication and participation, skill-sharing, goal alignment, and engagement. (Ribeiro, 2020)

Several studies have attempted to create strategies for the development of collaborative skills. Boogaard (n.d.) suggested six ways to develop collaborative skills, which included being an active listener, refining communication skills, developing emotional intelligence, seeking out different perspectives, recognizing others, and being accountable. Meanwhile, Smart (2021) suggested another seven ways: 1) practicing core collaboration skills, 2) clarifying how to want to collaborate, 3) identifying obstacles and co-creating solutions, 4) learning from others, 5) exploring other perspectives, 6) learning how to navigate knowledge gaps, and 7) playing collaborative games with a team. Overall, the findings from every study indicated that collaborative skills could form desirable qualities within the students, including less egoity, generosity, curiosity, appreciation, the ability to listen in order to understand, flexibility, the ability to connect the dots or to create the dots, the ability to be trustworthy and to expect trust, as well as the abilities to be self-disciplined, self-motivated, inspired and inspiring, and to be respectful. (Hymes, 2015).

Therefore, the researchers were inspired to investigate additional relevant perspectives and to analyze them in a systematic study to determine further benefits. The foundation concept is to “Develop teachers’ learning, and teachers implement the learning outcomes to develop students.” Overall, the product of the study was “An Online Program to Empower Teachers’ Knowledge to Develop Students’ Collaborative Skills” using Research and Development (R&D) methodology. Sanrattana (2018) indicated that this research methodology creates educational innovations that can be beneficial in improving the quality of teachers’ work. Recently, there have been numbers of ideas and theories related to educational innovations, which have highlighted the belief that teachers will apply their learning outcomes (Knowledge) to develop their students (Action), which will, in turn, lead to more effective work performance (Power). This process is based on the concept of “Knowledge + Action = Power. However, the past developments have placed emphasis on “Knowledge is Power” as defined by Azamfirei (2016), who stated: “*It is transmitting the idea that having and sharing knowledge is the cornerstone of reputation and influence, and (is), therefore, power.*” At present, academics believe that not only should knowledge be focused, but it should also be active. As we can see this from several quotes: “The great end of knowledge is not knowledge, but action,” “Knowledge is NOT power. Knowledge is only POTENTIAL power. Action is power.” - *Tony Robbins*, and “Knowledge Is Power, But Knowledge Without Action Is Useless” (Ofpad, the School of Genius, n.d.).

2. Literature Review

The researchers investigated the various perspectives on the topic of collaborative skills from academics or agencies, with an emphasis on educational resources from the Internet. The reviewed perspectives consisted of the following six aspects: 1) the Definition of Collaborative Skills by Aiim (n.d.), Catherine (2021), Conoway (2021), Doyle (2020), Indeed Editorial Team (2021), and Noramon (n.d.); 2) the Important Aspect of Collaborative Skills by Dobos (2017), Editorial Team (n.d.), Guest Contributor (2018), Kashyap (n.d.), Moseley (n.d.), Ribeiro (2020), Versalink (2018), and Yan (2019); 3) the Qualifications of Collaborative Skills by Cran (2017), Goman (2017), Meinert (2017), Samdahl (2017), and Sampson (2010); 4) the Developmental Approaches of Collaborative Skills by Bogler (2016), Campbell (2017), Campbell (2021), Emergenetics International (n.d.), Gale (2019), Kashyap (n.d.), Kelle (2019), Lucco (n.d.), Stapper (2018), and Weller (2016); 5) the Developmental Processes of Collaborative Skills by Collaborative Outcomes (n.d.), Linton (n.d.), Team (2017) and Madsen (2021); and 6) the Assessment of Collaborative Skills by Archibald, Trumpower and MacDonald (2014), Kellerman (2007), Ofstedal and Dahlberg (2009), and Turning Point (n.d.).

3. Research Objective

The purpose of this study was to conduct research using R&D methodology that could effectively enable “*An Online Program to Empower Teachers’ Knowledge to Develop Students’ Collaborative Skills*” in accordance with the specified criteria. The created online program consisted of two projects: 1) a project for developing collaborative skills learning for teachers, and 2) a project for students in which the learning outcomes from the teacher’s collaborative skills learning were implemented with the students. For each project, there were components consisting of learning manuals and an action manual with self-learning modules.

4. Research Hypotheses

In conducting the research, the researcher carried out research procedures in accordance with academic principles, research principles, and research ethics. The procedures included the following: 1) the process of creating the project manuals, 2) the two phases of quality inspection and revision, 3) the construction processes for the experimental instrument, and 4) the processes for the field experiment. All of these assured the quality of the study. Therefore, the created hypothesis of the study, “An Online Program to Empower Teachers’ Knowledge to Develop Students’ Collaborative Skills,” was deemed to be effective. The online program was examined in two areas. Firstly, after the first developmental project, the results of teachers’ learning outcome test had met the 90/90 standard, and the teachers’ learning outcomes score had been statistically significantly higher after the experiment than before the experiment. Secondly, after the second developmental project, the mean score of the students’ collaborative skills assessment was statistically significantly higher than before the experiment.

5. Research Methodology

5.1. Concepts and Stages

Research was conducted to produce “An Online Program to Enhance Teacher Learning to Develop Students’ Collaborative Skills”, which was based on the concept: “Develop teachers’ learning, and teachers will implement the learning outcomes to develop students.” Furthermore, Research and Development (R&D) methodology were employed. Sanrattana (2018) indicated that this research methodology creates educational innovations that can be beneficial in improving the quality of the teachers’ work. Recently, there have been numbers of ideas and theories that are related to educational innovations. These have focused upon the belief that teachers will apply their learning outcomes (Knowledge) to develop their students (Action), which will lead to more effective work performance (Power). In summary, it is based on the idea that “Knowledge and Action are Power.” Another essential stage was to review the literature related to collaborative skills, which was considered to be the vital beginning of knowledge collection for the purpose of creating the manuals for two projects: 1) the project for learning collaborative skills for teacher development, and 2) the project for implementing the teacher’s collaborative skills learning outcomes with the students. The literature review was conducted in a pattern of R1&D1...R2&D2...R3&D3...Ri&Di as follows.

R1&D1: A Study of the Related Literature The literature related to collaborative skills was used to compile the following six manuals for the teachers’ collaborative skills learning: (1) the Definition of Collaborative Skills, (2) the Important Aspect of Collaborative Skills, (3) the Qualifications of Collaborative Skills, (4) the Development Approaches of the Collaborative Skills, (5) the Developmental Processes of the Collaborative Skills, and 6) the Assessment of the Collaborative Skills. The data from literature review also assisted in the creation of the action manual for implementing the teacher’s learning outcomes for student development.

R2&D2: Detecting the Flaws: The First Step Making the initial improvements is a vital step in creating a quality product. Therefore, a thorough check for errors was conducted. During this process, reviewers closely examined the conciseness of language used, as well as its usefulness and appropriateness. Attention was also paid to how appealingly the content had been presented. Focus group discussions were conducted with 10 teachers in a non-experimental school known as Prapassornwittaya Wat Srinual School.

R3&D3: Detecting the Flaws: The Second Step To make further improvements to the manual, the manual was re-checked for any errors that were not found in the first step. Once again, the conciseness, usefulness, and appropriateness of language were scrutinized. Further examination explored whether the content of the presentation would be appealing to the target audience. The focus group discussions were conducted with 16 teachers in two non-experimental schools known as Pali Demonstration Wat Khe-Udom School (8 teachers) and Wat Bhodisomparn School (8 teachers).

R4&D4: Studying the Literature for Further Information Information, which was related to the collaborative skills assessment, was utilized for the study to create two research tools: 1) the Teachers' learning outcomes test and 2) the students' collaborative skills assessment form.

R5&D5: Examining the Manuals in the Pre-experimental Research Step with a one group Pre-test/Post-test design The experimental area consisted of the general education classes in the Pariyattidhamma Demonstration Pali School (Grades 7-12) under the Division of Buddhist Studies National Buddhism Office, which is located in the Mueang District of Nong Khai Province. This study adopted purposive sampling to select the experimental group. The target consisted of 11 teachers, 91 lower secondary school students, and 113 upper secondary school students (204 in total). The field experiment took place during the Second Semester of the Academic Year of 2021. The experimental course was divided into following two phases:

Phase 1: The development of the teachers' learning using an online self-learning module The activities and time used in this phase were as follows: Firstly, the researchers met with the target teacher group to explain the research details and to conduct the teacher's pre-test. This step took two days. Secondly, in order to further develop the teachers' skills, online manuals and self-learning modules were employed. The teachers were able to download them from the website that the research team had created. The learning had to be completed without intervention from the research team or anyone else. This step took one month. Thirdly, to improve the manuals, the target teacher group worked to check for flaws, and then they took a post-test. This step took two days. Finally, the researchers analyzed the post-test results and compared them using the standard criteria of 90/90. The researchers then made a comparative analysis of the average scores from the pre-test and the post-test using the t-test dependent. This step took two days.

Phase 2: Implementing the teacher's learning outcomes to develop the students The activities and schedule in this phase consisted of the following steps: 1) the researchers met the target teacher group to explain the research details and to evaluate the collaborative skills of the students in the target group by using the pre-test (This step took one day.); 2) the target teacher group implemented the learning outcomes to develop the students' collaborative skills without receiving any intervention from the research team or anyone else (This step took two months.); 3) in order to improve the manuals, the target teacher group worked to check for any flaws and evaluated the students' collaborative skills using a post-test (This step took two days.); and 4) the research team conducted a comparative analysis of the average scores from the pre-test and the post-test using a t-test dependent (This step took two days.).

5.2. Research Tools

1. **The Teacher's Learning Outcomes Test** consisted of multiple-choice questions with four answers. It was used to evaluate teachers' knowledge both as a pre-test and a post-test. The test was an online Google Form. The researchers created this test using the content in the teacher's learning manuals, which consisted of definitions, sets of important aspects, characteristics, developmental approaches, developmental procedures, and assessments. The test theory was drawn from cognitive domain by Benjamin S. Bloom, who classified thinking skills from low to high as follows: remembering, understanding, applying, analyzing, evaluating, and creating. (Sanrattana, 2018) Finally, its validity was examined by carrying out the following steps:

1.1 The test validity was examined by five experts in the fields of curriculum, teaching, and measurement using Rovinelli and Hambleton's (1977) Indices of Item-Objective Congruence (IOC). The results illustrated that every question had an IOC value higher than 0.50. (Chaichanawirote & Vantum, 2017)

1.2 The test was tried out with 30 teachers in three non-experimental schools: Phrathat Witthaya School, PhraPariyattidhamma School Wat Ban Bon, and Phra PhraPariyattidhamma School Wat Amphawan. The analysis of the results showed the following: 1) the index of difficulty of the questions was between 0.20 - 0.80, and the power of discrimination was between 0.20- 1.00, which conformed to the specified criterion; 2) the reliability of the test was examined using the Kuder – Richardson’s method, and it had a KR - 20 coefficient of 0.889, which was greater than the specified criterion (equal to or greater than 0.70); and 3) the test difficulty, the mean scores of all samples were employed as a criterion. It is considered fairly difficulty if the average score is between 30 and 50 per cent of the total score. If the lower average score is 30, the test is considered more complex. If the higher average score is 50, the test is considered easier. Data analysis revealed that the average score for all samples had been 17.73, which was equal to 49.25 percent of the total score. Therefore, the test had had an appropriate degree of difficulty.

2. The Student’s Collaborative Skills Assessment Form The form employed a 5-level rating scale: the most, very, medium, less, and the least. The researchers created the form using the studies related to the characteristics of a person, who demonstrates collaborative skills based on the perspectives of: Cran (2017), Goman (2017), Meinert (2017), Samdahl (2017), and Sampson (2010), and from studies related to collaborative skills assessment based on the perspectives of: Archibald, Trumpower, and MacDonald (2014), Kellerman (2007), Ofstedal and Dahlberg (2009), and Turning Point (n.d.). The assessment form was an online Google form. Finally, it was examined for validity by using the following steps.

2.1 The test validity was examined by five experts in the fields of curriculum, teaching, and measurement using Rovinelli and Hambleton's (1977) Indices of Item-Objective Congruence (IOC). The results illustrated that every question had had an IOC value of higher than 0.50. (Chaichanawirote & Vantum, 2017)

2.2 The Assessment Trial was conducted in a non-experimental school. At Prapassornwittaya Wat Srinual School, 30 students joined the assessment. In order to analyze the alpha coefficient of reliability using Cronbach's method. The results of the data analysis revealed that the alpha coefficient of confidence for the entire questionnaire had been 0.95. The examination of each feature illustrated the following: 1) ‘Having vision and action’ had been 0.75, 2) ‘Building trust’ had been 0.85, 3) ‘Sharing energy and motivating’ had been 0.76, and 4) ‘Building relationships’ had been 0.75, 5) ‘Self-reflection’ had been 0.75, and 6) ‘Making decisions’ had been 0.86. The alpha coefficient of confidence had been higher than the specified criterion, which was equal to or higher than 0.70. (UCLA: Statistical Consulting Group, 2016)

5.3. Data Analysis

1. The 90/90 Standard was employed to analyze the data and to compare the post-experiment of the teachers' learning outcomes. The first 90 represented the percentage of the mean scores, which had been obtained from the teachers' knowledge test. The second 90 represented the percentage of teachers, who had passed the test in accordance with all the objective criteria. (Yamkasikorn, 2008)

2. The t-test dependent statistic was employed to analyze the data and to compare the results from the teacher's learning outcomes and the student's collaborative skills assessment in the pre-experimental test and the post-experimental test.

6. Research Results

The results indicated that the R&D methodology had definitely and effectively assisted in the creation of “An Online Program to Empower Teachers’ Knowledge to Develop Students’ Collaborative Skills.” The created online program consisted of the following two projects:

1. The Teachers’ learning skills development project Data from the literature review was collected to create six teachers’ learning manuals, which were based on a variety of perspectives from academicians and from agencies as follows:

1.1 The Definition of the Collaborative Skills Manual presented perspectives of Aaim (n.d.), Catherine (2021), Conoway (2021), Doyle (2020), Indeed Editorial Team (2021), and Noramon (n.d.).

1.2 The Important Aspects of the Collaborative Skills Manual presented perspectives of Dobos (2017), Editorial Team (n.d.), Guest Contributor (2018), Kashyap (n.d.), Moseley (n.d.), Ribeiro (2020), Versalink (2018), and Yan (2019).

1.3 The Qualifications of the Collaborative Skills Manual presented perspectives of Cran (2017), Goman (2017), Meinert (2017), Samdahl (2017), and Sampson (2010).

1.4 The Developmental Approaches of Collaborative Skills Manual presented perspectives of Bogler (2016), Campbell (2017), Campbell (2021), Emergenetics International (n.d.), Gale (2019), Kashyap (n.d.), Kelle (2019), Lucco (n.d.), Stapper (2018), and Weller (2016).

1.5 The Developmental Processes of the Collaborative Skills Manual presented perspectives of Collaborative Outcomes (n.d.), Linton (n.d.), Team (2017), and Madsen (2021).

1.6 The Assessment of Collaborative Skills Manual presented perspectives of Archibald, Trumpower and MacDonald (2014), Kellerman (2007), Ofstedal and Dahlberg (2009), and Turning Point (n.d.).

2. Implementing the Teachers' collaborative skills learning outcomes for the students' development project There was an Action Manual with instructions, which focused on the following: 1) The Desirable Collaborative Skills Qualifications, 2) The Developmental Approaches for Collaborative Skills, and 3) The Developmental Procedures of Collaborative Skills. With the manual, teachers' self-assessment form was attached so that the teachers could assess the process of implementation and could reflect upon strengths and weakness of the manual.

The research, which had been conducted through the R2 & D2 to R5 & D5 steps, resulted in the following: 1) the creation of six teachers' learning manuals, 2) a manual implementing the teachers' learning outcomes to student development, 3) the teacher's learning outcome test, and 4) the students' collaborative skills assessment form, which can be found on the websites that follow.

- 1) The Self-Learning Module used in the online program was from:
<https://online.anyflip.com/okgwj/segl/mobile/>
- 2) The Teacher Practice Level Assessment Form was from:
https://docs.google.com/forms/d/e/1FAIpQLSfy46-ACC_vIr3hN3Lle86u1HsgTqeIF0MEbtoekhMW_c-0uw/viewform
- 3) The Teacher's Learning Outcome Test was from:
https://docs.google.com/forms/d/e/1FAIpQLSfqssQspTQyr5BMDV2iPEivk1cxj_TILhZotWJxliEftkRbhg/viewform
- 4) The Collaborative Skills Assessment Form of students was from:
https://docs.google.com/forms/d/e/1FAIpQLSfeB0oGSrI9JHzX14hWiuQ0Mgb7D_8sqn9y2MGIJbakks3jLw/viewform

The manuals, test, and assessment form, which had been created through the phases of R2&D2 to R5&D5, were examined in the field experiment using the pre-experimental research with a one group pre-test/post-test design. The experimental area was the general education section at the Pariyattidhamma Demonstration Pali School (Grades 7-12), which was under the Division of Buddhist Studies National Buddhism Office. The school is located in the Mueang District of Nong Khai Province. To select the experimental group, this study adopted purposive sampling. The target consisted of 11 teachers, 91 lower secondary school students, and 113 upper secondary school students (204 in total). The findings demonstrated that the results of the research had been in accordance with the set of assumptions because 'An Online Program to Enhance Teacher Learning to Develop Students' Collaborative Skills' with two projects and manuals proved to be effective according to the specific criteria. The detail of the findings is shown below.

1) The post-test results in the teacher's learning outcome test were in line with the standard of 90/90. The first 90 represented the percentage of the mean post-test scores, which was 33.27 points out of 36 (or 92.42 percent) and was higher than the specified criterion (90). The latter 90 was the percentage of the teachers, who had been able to complete all objectives. The result showed that 95.45% of 11 teachers had been able to pass all objectives on the exam. The number was higher than the specified criterion (90).

2) The results of the pre-experimental test mean score from the 11 teachers had been 27.09, and the standard deviation had been 3.50, while the post-experimental test mean score had been 33.27 and the standard deviation had been 2.05. Therefore, when analyzing the data by t-test dependent, the mean score of the post-experimental test was found to be statistically significantly higher than the mean score of the pre-experimental test at 0.05. This is shown in Table 1.

Table 1: The t-test dependent results upon comparing the teachers' learning outcomes before and after the experiment

Evaluations	Sample sizes	Means	Standard Deviations	t
Before	11	27.09	3.50	12.805*
After	11	33.27	2.05	

*p < 0.05

3) The assessment results from the collaborative skills with the 204 students before the experiment indicated that the mean had been 3.50 with a standard deviation of 0.09. Meanwhile, the results from the assessment after the experiment had shown a mean of 4.50 with a standard deviation of 0.08. Therefore, when analyzing the data by using a t-test dependent, the mean score from the post-experimental assessment had been statistically significantly higher than the mean score from the pre-experimental assessment at 0.05, which is shown in Table 2.

Table 2: The t-test dependent results when comparing the students' collaborative skills before and after the experiment assessments

Evaluations	Sample sizes	Means	Standard Deviations	t
Before	204	3.50	0.09	121.136*
After	204	4.50	0.08	

*p < 0.05

7. Discussion

According to the criteria of the research hypothesis, the findings showed that “An Online Program to Empower Teachers' Knowledge to Develop Students' Collaborative Skills” or the production of the R&D methodology had been effective. Therefore, it indicated that having knowledge about collaborative skills, which had been obtained from various Internet sources and had included academic articles and research studies, had been beneficial and worthwhile when employed in a systematic research study. This correlated with the concept of knowledge management which states that “*Knowledge must be improved, challenged, and increased, or knowledge will be lost.*” Prabhakaran (2022) pointed out that **explicit knowledge** is tangible and as such, it can be clearly documented, stored, straightforwardly expressed, and shared with others. Furthermore, this type of tangible knowledge (**explicit knowledge**) can empower and leave an impression upon **tacit knowledge**, which represents the internalized knowledge that an individual may not be consciously aware of. It is derived from learned experiences, personal wisdom, intuition, and from insights. This interaction has a strong impact upon learning.

Moreover, the findings exhibited how profitable the Internet can be in helping to instantly access the desired information. Both Aydemira, Benzerb, Karahanc, and Akmençed (2013) and Essential Education (2019) gave agreed that “*The Internet has become indispensable and (it can be) used for work, study, research, entertainment – the list is endless and the most important thing is unlimited access to information.*” This is the main advantage for both teachers and students since information about any subject, course, formula, date, and/or famous person can be accessed from verified and updated sources. However, with regard to the search engines, there is a suggestion from the researchers. Not only did the researchers rely on Google, but they also relied on other search engines, which assisted in their academic research. Some examples included Google Scholar, Microsoft Academic, Educational Resources Information Center, ResearchGate, Bielefeld Academic Search Engine, Connecting Repositories, and Semantic Scholar. (Post University, 2020)

If you are a teacher of English teaching in a country where English is the native language or if you are teaching in a former British colony where English is the official or second language, it may not be necessary to conduct the systematic and methodical application of the knowledge that is widely distributed on the Internet. Teachers in those countries can search for new knowledge directly from English language sources, and as a result, they are the teachers, who are constantly seeking new knowledge. The situation in Thailand is different because English is a foreign language, and most teachers in Thailand are not good at English (Promrub & Sanrattana, 2022). Thai teachers still have many problems that affect their pursuit of new knowledge. In particular, the teacher workload affects teachers and students because teachers are expected to be and do everything for the school. Thai teachers have to be responsible for other tasks in the school and are, therefore, unable to focus solely on teaching. (Nattatiti, 2021) Teachers have to spend enormous amounts of their time on completing documentation for assessment or quality assurance, on organizing projects and/or on activities for competitions. This type of burden requires exploring too much information, which is not relevant to the development of teaching and learning as it should be. (Kraichit, 2021) Therefore, the online program, which was created for this study, is a platform that can transfer English knowledge content that has been translated into Thai for teachers in schools. It is easy for teachers to use this knowledge in the manner of: *Anyplace, Anywhere, Anytime*. Furthermore, it is an online innovation that provides a lot of benefits, such as added flexibility and self-paced learning, better time management, demonstrated self-motivation, improved virtual communication and collaboration, a broader, global perspective, refined critical-thinking skills, and new technical skills. (Miller, 2019)

8. Recommendations

As mentioned at the beginning, the 21st century skills are essential for modern education in the digital era because they are tools that can be universally applied to enhance ways of thinking, learning, working, and living in the world. The 21st skills include critical thinking/reasoning, creativity/creative thinking, problem solving, metacognition, collaboration, communication and global citizenship, and literacies, such as reading literacy, writing literacy, numeracy, information literacy, ICT [information and communications technologies] literacy, digital literacy, and communication. (Vivekanandan, 2019) Moreover, the supportive reasons were as follows: 1) *explicit knowledge can empower the tacit knowledge of teachers*; 2) *Internet information is instantly accessible*; and 3) *for the Thai teachers, there was a limitation regarding their use of the English language*. All together, these reasons led the researchers to believe that research and development of an online program, which could focus on other skills, should be conducted. Attention could be placed upon one skill set per project, which could consist of research and development for 21st century skills learning of teachers and student development.

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Appendix

The Student's Collaborative Skills Self-Assessment Form

Collaborative Skills Qualifications	Levels of Opinion				
	5	4	3	2	1
Visionary and Action					
1) I support the effective process in seeking the motivation from the steak holders.					
2) I support jointed vision development by every steak holder.					
3) I create working framework using systematic thought.					
4) I encourage building a team of stakeholders to help each other develop an operational strategic plan and promote diversity					
5) 5) I create an action plan with time limits and duties assigned to meet the vision.					
Building Trust					
6) I am "truthful" means I do what I say.					
7) I protect the group from those who take advantage of others in working together.					
8) I create a reliable, collaborative process.					
9) I believe that partnerships arise from individuals and organizations from various sectors.					
10) I have the necessary knowledge and skills to work that attract others to work with me.					
11) I firmly believe that trust is the cornerstone of working effectively with others.					
Sharing Power and Influence					
12) I use my powers responsibly.					
13) I share the power to increase the power and knowledge sharing					
14) I share my strength with others whenever I can.					
15) When practicing leadership, I always rely on solving problems for friends.					
16) I show my confidence to others.					
17) The collaborators in each group have the appropriate level of knowledge, skill and decision-making authority.					
Building Relationships					
18) I believe that building trust in an organization and providing trust takes time.					
19) I believe that the people who work together show each other a great respect.					
20) I am committed to creating a sense of shared ownership among individuals participating in the organization.					
21) I have an open conversation. And different perspectives are what we value.					
22) I believe conflict is acceptable by making conflict a source of innovation.					
23) I can handle different ideas very well in a way that facilitates everyone's participation					
Self-Reflection					
24) I recognize the impact of emotions on work and the creation of "mental safety."					
25) I can tell you my strengths and weaknesses					
26) I work to understand the point of view of others.					
27) I understand the changes within the group.					
28) I create a safe environment for open communication.					
29) I take time for self-reflection and practice improvements.					
Decision-making					
30) All members of my team have a clear understanding of the scope of responsibilities and roles.					
31) My team members are eager to participate in making important decisions.					
32) My team meeting process is efficient.					
33) My team has a clear operational and decision-making process.					
34) My team members are flexible and compromise when decisions are made.					
35) My team fosters creativity, innovation and fosters risk tolerance.					



Analysis of Physical Activity Levels of Physical Education Teachers during the COVID-19 Pandemic

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Abstract

The coronavirus (COVID -19) pandemic has brought unprecedented restrictions to people's physical activities and routines. The COVID-19 pandemic may have reduced physical activity levels and increased inactivity for various reasons (e.g., closure of gyms, family time constraints, and reduced outdoor mobility). The aim of this study is to examine physical education teachers' physical activity levels during the COVID-19 pandemic period. 417 physical education teachers participated in the research, which was reached by convenience sampling. Personal information form and International Physical Activity Questionnaire (IPAQ) short form were used for data collection in the study. Mann Whitney U and Kruskal-Wallis and Spearman's correlation tests were used in the analysis of the data. When the distribution of physical education teachers participating in the study according to their physical activity (PA) levels was examined, it was found that 26.1% had low PA levels, 37.6% had medium and 36.2% had high. While 27.5% of men were in the low category, 35.3% were in the medium category and 37.3% were in the high category, it was found to be 24.9%, 39.9% and 35.2% in women, respectively. When the PA levels of the teachers were analysed according to age, years of service and body mass index (BMI) variables, there was a significant difference, but no significant difference was found in terms of gender. While there was a negative and significant correlation between total PA and years of service and age, a positive and significant correlation was found between experience and BMI and age. As a result, it can be concluded that physical education teachers continue their active lives despite the restrictions during the COVID-19 pandemic period.

Keywords: Physical Education, Teacher, Physical Activity, COVID -19

1. Introduction

Physical inactivity is a major risk factor for chronic diseases, including cardiovascular diseases, diabetes, obesity, osteoporosis, and some types of cancer (Goran et al., 2003; Haslam & James, 2005; Sowers, 2003). Lack of physical activity is also linked to premature death and shortened healthy lifespan (Katzmarzyk et al., 2003). Physical activity can be defined as all bodily movements made with skeletal muscles and expending more energy than at rest (Bouchard et al., 2012). In its simplest definition, it is the movement of the body to expend energy (Halk Sađlıđı Genel Müdürlüğü, 2019a). The American College of Sports Medicine (ACSM) and the

American Heart Association (AHA) recommend that healthy adults aged 18–65 do moderate-intensity 30 minutes of physical activity 5 days/week or vigorous-intensity 20 minutes 3 days/week, or a combination of both (Haskell et al., 2007). In highly industrialized countries, physical activity rates are decreasing rather than increasing (Brownson et al., 2005), and the emerging COVID-19 pandemic also plays a role in this. COVID-19, one of the most important epidemics in human history and the most widespread epidemic on a global scale, disrupted daily life for people living in the affected areas and affected almost every sector including health, education, workforce, transportation, finance, and cultural activities. The Covid-19 outbreak was declared a pandemic by the World Health Organization in March 2020. On March 15, 2022, 456.797.217 confirmed cases were diagnosed and 6.043.094 people died (World Health Organization, 2022). In Turkey, the total number of cases was reported as 14.565.234, and the total loss of life was 96.594 (T.C. Cumhurbaşkanlığı Dijital Dönüşüm Ofisi, 2022).

To minimize the transmission rate of COVID-19, some restrictions such as social distancing and curfew have been applied. In the first months of 2020, the COVID-19 pandemic reached its peak in many countries and almost all countries in the world implemented restrictions in March-April. Quarantine implementations have changed from country to country and city to city. In Turkey, the restrictions applied throughout the country on certain dates were later applied as weekend curfews in provinces with high number of cases. In Turkey, a 3-week full closure was implemented between 29.04 - 17.05.2021. These restrictions have affected individuals' work, education, travel, physical activity and sedentary behaviour levels (Hossain et al., 2020). Restrictions that may affect exercise behaviour include the closure of gyms and fitness clubs, as well as limited access to parks and open spaces. As a result, it has been reported that the restrictions applied with the COVID-19 pandemic seriously reduce the possibility of participating in physical activity, which may cause a decrease in the level of physical activity (Jacob et al., 2020; Schuch et al., 2020).

Physical education teaching is a special profession group with a heavy workload (Sandmark et al., 1999). It is among the occupations with optimal physical condition, especially aerobic capacity. It is also a profession that helps public health to reduce sedentary lifestyles (Webster et al., 2015). From this point of view, the aim of this study is to examine the physical activity levels of physical education teachers, who set an example for individuals and encourage physical activity participation, during the COVID-19 pandemic period.

2. Method

In this study, which aimed to evaluate the physical activity levels of physical education teachers in terms of various variables during the Covid-19 pandemic period, the screening model was used. 417 physical education teachers working in different regions participated in the research voluntarily. The data were collected through an online questionnaire. The questionnaire was distributed through social media groups (Facebook, WhatsApp). A link was sent to the participants who wanted to participate in the study. The data were collected between 15.06 - 20.06.2021. Permission was obtained from Karabük University Social and Human Sciences Research Ethics Committee for the research (E.121804).

2.1 Data Collection Tool

In the research, a data collection tool consisting of 2 parts, the personal information part and the "International Physical Activity Questionnaire," was used. In the personal information section of the data collection tool, questions about gender, age, professional experience, height and body weight were included. "International Physical Activity Questionnaire (IPAQ)" short form created by Craig et al (Craig et al., 2003) was used to determine the physical activity levels of teachers. A validity and reliability study was conducted in Turkey for both the short and long forms of the IPAQ (Öztürk, 2005; Saglam et al., 2010). The questionnaire provides information about the time spent sitting, walking, moderately vigorous activities, and in vigorous activities. Calculation of the total score includes the sum of time (minutes) and frequency (days) of walking, moderately vigorous activity, and vigorous activity. The sitting score (level of sedentary behaviour) is calculated separately. In the evaluation of all activities, the criterion is that each activity is done for at least 10 minutes at a time. A score is obtained as "MET-minutes/week" by multiplying the minutes, days and MET values. When calculating

the total score, 3.3 METs for walking, 4 METs for moderately vigorous activity, and 8 METs for vigorous activity are taken. Physical activity levels are categorized as “those who are not physically active” (<600 MET-min/week), “low physical activity level” (600-3000 MET-min/week), and “adequate physical activity level (beneficial for health)” (>3000 MET-minutes). min/week), (Craig et al., 2003).

The height and body weights of the participants were noted based on their own statements. Body Mass Indexes (BMI) were calculated and according to the criteria published by the World Health Organization, those with a BMI below 18.5 were considered underweight, between 18.5-24.99 normal, between 25-29.99 overweight, and 30 and over, obese (Halk Sağlığı Genel Müdürlüğü, 2019b; World Health Organization, 2019).

2.2 Analysis of Data

In the analysis of the data, descriptive statistics (arithmetic mean, percentage) and Mann Whitney U and Kruskal-Wallis tests were used. Due to the large standard deviations of the data obtained in the physical activity questionnaire applications, it is generally not possible to meet the parametric test assumptions and it is recommended to use non-parametric tests (Craig et al., 2003). In this study, non-parametric statistical methods were preferred both because the assumptions were not fulfilled and in line with the literature's recommendation. The Mann-Whitney U test was used to compare two independent groups. Kruskal Wallis test was used in the comparison of more than two independent groups. Pairwise comparisons were made with the Dwass-Steel-Critchlow-Fligner test to determine the differences between the groups. The Spearman-Rho Correlation Coefficient was used to examine the relationships between PA level, age, and experience. The Jamovi (R Core Team, 2021; The Jamovi Project, 2021) program was used to analyse the data. In statistical analysis, the level of significance was considered as 0.05.

3. Results

The gender, age, professional experience, and BMI values of the teachers participating in the research are presented in Table 1.

Table 1: Distribution of teachers according to gender, age, year experience and BMI

Gender	n	%
Female	213	51,1
Male	204	48,9
Age		
20-30	291	69,8
31-40	78	18,7
41+	48	11,5
Experience		
1-5 years	259	62,1
6-10 years	70	16,8
11-15 years	35	8,4
16 and above years	53	12,7
BMI		
Underweight	27	6,5
Normal	282	67,6
Overweight	95	22,8
Obese	13	3,1

When the PA levels of the teachers participating in the research were examined, it was found that 26.1% had low PA levels, 37.6% had medium and 36.2% had high PA levels. While 27.5% of men were in the low category, 35.3% were in the medium category and 37.3% were in the high category, it was found to be 24.9%, 39.9% and 35.2% in women, respectively. There was no significant correlation between the gender variable and the PA category $\chi^2(2) = 0,972, p = 0,615$.

Table 2: Comparison of teachers' physical activity scores according to their gender

	Gender	Mean	Median (Q1, Q3)	Test	p
Total PA (MET-min/week)	Male	2721	1584 (743, 3577)	21185	.660
	Female	2568	1686 (693, 3468)		
	General	2643	1653 (735, 3546)		
Vigorous PA (MET-min/week)	Male	1089	0 (0, 1440)	20812	.413
	Female	917	0 (0, 1200)		
	General	1001	0 (0, 1440)		
Moderate PA (MET-min/week)	Male	473	120 (0, 630)	20953	.508
	Female	519	180 (0, 720)		
	General	496	120 (0, 720)		
Walking (MET-min/week)	Male	1159	792 (396, 1386)	19853	.127
	Female	1132	693 (297, 1386)		
	General	1145	792 (346.5, 1386)		
Sitting time (min)	Male	307	300 (180, 480)	19333	.050
	Female	272	300 (0, 420)		
	General	289	300 (60, 480)		

The findings regarding the PA scores of the teachers are presented in Table 2. Total PA average of the teachers participating in the research is 2643 MET- min/week, Vigorous PA average 1001 MET- min/week, Moderate PA 496 MET- min/week, Walking 1145 MET- min/week, and Sitting time is 289 min. According to gender variable, when the teachers' Total PA ($U = 21185$, $p = .660$), Vigorous PA ($U = 20812$, $p = .413$), Moderate PA ($U = 20953$, $p = .508$), Walking ($U = 19853$, $p = .127$), Sitting ($U = 19333$, $p = .050$) were compared with the Mann Whitney U test, no statistically significant difference was found.

Table 3: Comparison of teachers' physical activity scores by age groups

	Age	Mean	Median (Q1, Q3)	Test	p	Significance
Total PA (MET-min/week)	20-30	3087	2232 (904.5, 4266)	26.39	.001	20-30 – 31-40 20-30 – 41+
	31-40	1691	990 (658.8, 2295)			
	41 and above	1494	792 (519.8, 1870.5)			
Vigorous PA (MET-min/week)	20-30	1226	360 (0, 1920)	25.66	.001	20-30 – 31-40 20-30 – 41+
	31-40	447	0 (0, 90)			
	41 and above	537	0 (0, 80)			
Moderate PA (MET-min/week)	20-30	602	240 (0, 760)	15.83	.001	20-30 – 41+
	31-40	307	0 (0, 480)			
	41 and above	165	0 (0, 240)			
Walking (MET-min/week)	20-30	1259	792 (330, 1980)	3.03	.220	
	31-40	937	693 (396, 990)			
	41 and above	793	693 (396, 990)			
Sitting time (min)	20-30	278	300 (30, 420)	8.06	.018	20-30 – 31-40

The findings regarding the PA scores of the teachers by age groups are presented in Table 3. As a result of the Kruskal-Wallis test, there was a significant difference in Total PA ($H = 26.39$, $p = .001$), Vigorous PA ($H = 25.66$, $p = .001$), Moderate PA ($H = 15.83$, $p = .001$), and Sitting ($H(2) = 8.06$, $p = .001$) dimension, while there was no significant difference in Walking ($H(2) = 3.03$, $p = .220$) dimension. As a result of pairwise comparisons, a significant difference was found between the 20-30 and 31-40 age groups and between the 20-30 and 41 years and over age groups in total PA level ($p < .001$). A significant difference in the Vigorous PA

level was found between the 20-30 and 31-40 age groups ($p < .001$) and between the 20-30 and 41 years and older groups ($p = 0.002$). A significant difference was found between the 20-30 and 41 years and older groups at the Moderate PA level ($p = 0.001$). A significant difference was found between the 20-30 and 31-40 age groups in terms of sitting time ($p = 0.016$).

Table 4: Comparison of teachers' physical activity scores by years of experience

	Experience	Mean	Median (Q1, Q3)	Test	p	Significance
Total PA (MET-min/week)	1-5 years	3105	2460 (921, 4266)	22.24	.001	1-5 – 6-10 1-5 – 16+
	6-10 years	1955	1128 (705, 2135)			
	11-15 years	2023	990 (627, 2826)			
	16 years & above	1701	876 (532, 2220)			
Vigorous PA (MET-min/week)	1-5 years	1192	200 (0, 1800)	11.10	.011	
	6-10 years	663	0 (0, 960)			
	11-15 years	814	0 (0, 440)			
	16 years & above	638	0 (0, 480)			
Moderate PA (MET-min/week)	1-5 years	601	240 (0, 760)	20.23	.001	1-5 – 16+
	6-10 years	465	0 (0, 480)			
	11-15 years	252	0 (0, 480)			
	16 years & above	188	0 (0, 240)			
Walking (MET-min/week)	1-5 years	1311	924 (346.5, 2030)	8.34	.040	
	6-10 years	827	594 (297, 990)			
	11-15 years	957	660 (470.3, 1089)			
	16 years & above	875	693 (396, 1155)			
Sitting (min)	1-5 years	277	300 (30, 420)	5.49	.139	
	6-10 years	286	300 (135, 420)			
	11-15 years	345	420 (210, 480)			
	16 years & above	315	360 (120, 480)			

The findings regarding the PA activity scores of the teachers according to the variables of the years of service are presented in Table 4. As a result of the Kruskal-Wallis test performed to examine the PA levels of teachers according to the variable of years of service, there was a statistically significant difference in Total PA ($H = 22.34$, $p = .001$), Vigorous PA ($H = 11.10$, $p = .011$), Moderate PA ($H = 20.23$, $p = .001$) and Walking ($H = 8.34$, $p = .040$), while there was no significant difference in Sitting ($H = 5.49$, $p = .139$). Significant differences were found between 1-5 years and 6-10 years ($p = 0.007$) and between 1-5 years and 16 years and above ($p = 0.001$) in total PA level. A significant difference was found between 1-5 years and 16 years and above ($p = 0.001$) and between 1-5 years and 11-15 years ($p = 0.047$) in moderate PA level. There is no difference between pairwise comparisons in Vigorous PA and Walking levels.

Table 5: Comparison of teachers' physical activity scores according to BMI groups

	BMI	Mean	Median (Q1, Q3)	Test	p	Significance
Total PA (MET-min/week)	Underweight	2439.6	1794 (890, 3616)	5.12	.163	
	Normal	2772.4	1698 (792, 3587)			
	Overweight	2513.8	1386 (644, 3411)			

	Obese	1190.7	990 (248, 2079)			
Vigorous PA (MET-min/week)	Underweight	795.6	0 (0, 960)	3.04	.385	
	Normal	1040.3	0 (0, 1440)			
	Overweight	1042.9	0 (0, 1360)			
	Obese	273.8	0 (0, 0)			
Moderate PA (MET-min/week)	Underweight	353.3	180 (0, 540)	11.47	.009	Normal – Obese
	Normal	568.9	240 (0, 720)			
	Overweight	379.8	0 (0, 480)			
	Obese	75.4	0 (0, 0)			
Walking (MET-min/week)	Underweight	1290.7	792 (264, 1683)	1.61	.657	
	Normal	1163.1	718 (396, 1386)			
	Overweight	1091.1	792 (421, 1386)			
	Obese	841.5	396 (132, 1386)			
Sitting (min)	Underweight	251.1	300 (0, 420)	1.55	.672	
	Normal	297.2	300 (120, 480)			
	Overweight	277.9	300 (0, 480)			
	Obese	276.9	240 (180, 360)			

The findings regarding the PA levels of the teachers according to the BMI variable are presented in Table 5. As a result of the Kruskal-Wallis test performed to compare the PA levels of the teachers according to the BMI variable, there was a statistically significant difference in the Moderate PA level ($H = 11.47$, $p = 0.009$), while there was no statistically significant difference in Total PA ($H = 5.12$, $p = 0.163$), Vigorous PA ($H = 0.009$, $p = 3.04$, $p = .0.85$), Walking ($H = 1.61$, $p = 0.657$) and Sitting ($H = 1.55$, $p = 0.672$) levels. A significant difference was found between the normal and obese groups in the moderate PA level ($p = 0.034$).

Table 6: Correlation between teachers' total PA levels, year experience, BMI and age

	Total PA		Experience		BMI		Age
Total PA	—						
Experience	-0.229	***	—				
BMI	-0.080		0.223	***	—		
Age	-0.252	***	0.765	***	0.235	***	—

*** $p < .001$

When Table 6 is examined, it is seen that there is a negative and significant relationship between Total PA and years of service, and between Total PA and age, and there is a positive and significant relationship between experience and BMI, and between BMI and Age.

4. Discussion

This study was conducted to examine whether PA levels of physical education teachers during the Covid-19 pandemic process differ according to gender, age, years of service, and BMI variables. When the distribution of physical education teachers participating in the study according to their physical activity (PA) levels was examined, it was found that 26.1% had low PA level, 37.6% had medium and 36.2% had high. In addition, it was determined that the PA scores of the teachers did not differ according to the gender variable, but differed according to the age, years of service and BMI variables.

In studies conducted in “normal life” before COVID-19, there are studies indicating that almost half of the population is not active (Al-Hazzaa, 2007; Hallal et al., 2012; Hallal et al., 2003). According to the United States of America Center for Disease Control and Prevention report, the prevalence of physical inactivity among adults in the United States is 25.3 (Center for Disease Control and Prevention, 2022). As a result of research conducted in Brazil, 41.1% of adults were found to be physically inactive (Hallal et al., 2003). In a study conducted with Saudi adults, the rate of physical inactivity was found to be 43% (Al-Hazzaa, 2007). As a result of the study examining the PA level of adults from 122 countries and adolescents from 105 countries, it was reported that 31% of adults worldwide were not physically active (Hallal et al., 2012). Another research shows, of the university students participating in the study, 46,5% were determined to be active at high level, 48,4% at moderate level, and 5,2% at low level (Arıkan & Revan, 2019). In a different study, it was seen that 27.8% of university students were not physically active, 38.2% had moderate physical activity level and 34% had adequate physical activity level (Yüksel et al., 2021). It has been found that 41% of the teachers and administrators working in different branches of primary and secondary education institutions in the city of Adana, Turkey are inactive, 46% are minimally active, and 13% are very active (Akyol, 2021). It was seen that 17.1% of the teachers in various branches were not physically active, 63.9% had low physical activity level and 19% had physical activity level sufficient to maintain their health (Şanlı & Atalay Güzel, 2009). In a different study on physical education teachers, it was stated that 41.6% of the participants were sedentary, 21.2% of male teachers and 20% of female teachers did not engage in physical activity, and the physical activity levels of teachers were insufficient (Arabacı & Çankaya, 2007).

Although it is well known that regular physical activity has a strong effect on the immune system and fights many of the chronic diseases that increase the risk of death from COVID-19 (Clemente-Suarez et al., 2022), restrictions imposed to prevent the spread of the virus, stay-at-home restrictions, parks, closure of gyms and fitness centres and public health recommendations have led to a decrease in daily physical activity (Kenyon, 2020). Studies report decreases in physical activity level during the COVID-19 pandemic among adults in the USA (Meyer et al., 2020; Yang & Koenigstorfer, 2020), Australian (Gallo et al., 2020), Italy (Franco et al., 2021; Galle et al., 2020; Luciano et al., 2021), Spain (Martinez-de-Quel et al., 2021), Israel (Dor-Haim et al., 2021), Türkiye (Girgin & Okudan, 2021; Tural, 2020), the UK (Hamrouni et al., 2021), Russia (Smirnova et al., 2021), Korea (Lee et al., 2021), Canada (Bertrand et al., 2021; Lesser & Nienhuis, 2020) and Iran (Amini et al., 2020). Walking activity times, high and moderate physical activity decreased for all participants in Korea after social distancing due to COVID-19, the pattern of change in physical activities differed according to spouses, education levels and economic activities (Lee et al., 2021). Similarly, while COVID-19 quarantine had a negative effect on vigorous PA level and walking, it was determined that it had no effect on moderate PA level. Additionally, daily time spent sitting during the COVID-19 quarantine increased by more than 12% (Franco et al., 2021). In the study, while total walking time decreased during the pandemic, the proportion of moderate-to-vigorous physical activity comprised of brisk walking remained consistent from 2018 to Summer 2020 (Rees-Punia et al., 2021). In the study examining the physical activity, stress, sleep and quality of life levels of university students during the COVID-19 pandemic period, it was determined that 95.2% of the participants had insufficient physical activity level (Timurtaş et al., 2022). In a study examining the PA levels of Mexican physical education teachers before and during the pandemic, it was found that during the restriction period, teachers' PA levels dropped significantly, and approximately 50% of the teachers participating in the study were in the low activity group. It has been stated that this inactivity during the COVID-19 epidemic is unacceptable, since physical education teachers are considered a professional group that contributes to public health by reducing the sedentary lifestyle in the society (Hall-López, 2020). It has been stated that despite the pandemic restrictions, physical inactivity rate of physical education teachers is below global levels, and that advice from scientists and experts can positively affect teachers' PA behaviour (Chen et al., 2020). In our current study, it was found that approximately 74% of the teachers were physically active and 26% were inactive. It can be deduced that this rate is high for physical education teachers and despite the restrictions, most of the teachers who participated in the study maintained their mobility.

While the amount of high-intensity physical activity decreased in all age groups after the epidemic, only adult and older men showed a statistically significant difference. Meanwhile, moderate-intensity physical activity was significantly reduced in all groups. On the other hand, while adult men and women did not show a significant

difference in walking activity, a significant decrease was found in walking activity in older men and a significant increase in elderly women (Lee et al., 2021). Despite different determinants of physical inactivity in adolescents during Covid-19 restrictions in Europe and Latin America, a high percentage of physical inactivity was observed in the population before and during the Covid-19 pandemic (Ruiz-Roso et al., 2020). According to research on young adults, the COVID-19 crisis and subsequent quarantine measures have resulted in reduced physical activity and increased sitting and sleeping time (Luciano et al., 2021). Similarly, in the pandemic setting, 80% of young adults do not have adequate levels of physical activity, and in many cases this is due to the restrictive measures of the COVID-19 pandemic (Ovdii et al., 2021). The level of PA in the elderly population has decreased during the quarantine period of COVID-19 worldwide. Increase in sitting time, decrease in MET amount and decrease in number of steps were important factors in decreasing PA levels (Oliveira et al., 2022). In a different study, in a Southern Italian population, COVID-19 quarantine changed PA behaviours, with a negative impact on both sexes, especially on young adults and adult groups (Franco et al., 2021). During the pandemic process, the physical activity levels of individuals between the ages of 18-65 do not differ significantly according to the age variable (Özdemir Görgü et al., 2021). In the current study, while teachers' total PA, vigorous PA, moderate PA and sitting scores differed according to age groups, there was no significant difference in walking scores according to age groups. It is observed that the total PA level decreases with increasing age.

In a study of Australian university students, only women had ~20% higher energy intake during the pandemic, and the frequency of snacking and the energy density of consumed snacks also increased compared to pre-pandemic. In addition, energy intake increased in female students and physical activity levels decreased in both male and female students compared to the previous two years (Gallo et al., 2020). Moderate and vigorous activity scores of male university students were significantly higher than female students. There was no significant difference between the genders in the walking score (Şahbaz Pirinçi et al., 2020). Yıldırım et al. (2019) found that the PA levels of healthcare workers were statistically significant according to gender, marital status, income level and BMI groups. In a different study conducted on healthy adults who were in home quarantine due to the COVID-19 pandemic, no significant difference was found in PA levels according to gender, but a significant difference was found according to age group and BMI value (Tural, 2020). In our study, no significant difference was found between teachers' PA scores and gender. While a significant difference was found between the teachers' years of service variables, total PA, vigorous PA, moderate PA and walking scores, no significant difference was found between sitting time. A significant difference was detected between the BMI variable of the teachers and only moderate PA. It is seen that there is a negative significant correlation between total PA and years of service and age groups, a positive significant correlation between years of service and BMI and age groups, and a positive significant correlation between BMI and age groups.

There are some limitations to this research. One of these limitations is that the data of teachers' physical activity levels before the COVID-19 pandemic period is not known. Another is that the data collection tool is a self-report questionnaire. Therefore, the subjective evaluations of the participants may affect the results. Lastly, the number of the sample group is relatively low.

As a result, it can be concluded that the majority of physical education teachers participating in the study continue their active lives despite the restrictions of the COVID-19 pandemic. In addition, it can be deduced that while some variables of physical activity scores differ according to age groups, years of service and BMI groups; it does not differ according to gender.

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Assessment on the Need for Study Program Curriculum Development: A Preparatory Study for International Accreditation

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Abstract

The current research aimed to investigate the need for study program to develop curriculum to meet the demands of international accreditation. CIPPO (Context, Input, Process, Product, Outcomes) evaluation model was applied through a mixed-method approach with sequential exploratory strategy: 1) collecting and analyzing qualitative data by presenting the needs of each scope of study from the stakeholder point of view and reviewing curriculum documents; 2) analyzing quantitative data from the questionnaires to measure the satisfaction level and fulfillment of the improvement needs. The result of the context evaluation suggested the need to review the curriculum documents, to adjust the learning load, and some of the contents of the semester learning plan. The input evaluation found that the availability and quality of the lecturers were good, and the learning facilities and resources were adequately provided, yet their utilization required improvement. The result of the process evaluation showed that the learning implementation was perceived to be good, so it necessitated the lecturer competence improvement in benefiting information technology media and learning modules based on researches. The result of the product evaluation suggested that the learning assessment given by the lecturers was good that the improvement demand lay in the assessment of attitude. The outcome evaluation showed that the satisfaction of alumni and alumni users was good, and it required continuous improvement in the contexts, input, processes and products as the main services of the study program.

Keywords: OBE, CIPPO, International Accreditation, Curriculum Development, Assessment on the Needs for Curriculum Development

1. Introduction

Accreditation plays a prominent role in improving the quality of graduates. It contributes greater during the initial accreditation process compared to re-accreditation. In addition, it provides the most important contribution

inherent to learning outcomes. It also contributes more to the improvement of learning processes and practices (Ulker & Bakioglu, 2019). Accreditation affects the intensity of student learning and hopes for success in the future (Nisa, 2018). A high accreditation value is perceived by students to support learning motivation because it gives better future opportunities. A high accreditation value can increase the number of students, student satisfaction, performance, and university reputation compared to that of the International Organization for Standardization (ISO) (Kartikasari et al., 2018).

Japan's experience in international accreditation reported that the internationalization currently required for higher education in Japan is divided into several elements as a gradual university improvement: (1) international applicability and compatibility, (2) openness, (3) flexibility, (4) connectivity, (5) mobility, and (6) diversity. If (1) can be achieved, it will lead to (2), and if (2) can be achieved, it will lead to (3). In this way, moving forward with (1) to (6) as a chain reaction will result in internationalization progress at the institutional level (Ota, 2018). Bold deregulation and broad expansion of university autonomy by the government are essential to facilitating this chain reaction internationalization model.

In the international context, accreditation is perceived as a tool to facilitate quality education; instruments for improving academic/non-academic services, system transparency, and accountability at the appropriate level. The importance of globally accepted standards/criteria has been emphasized by various well-known international institutions such as ISO, ANQAHE, ENQA, CHEA and INQAAHE, and others. A number of international alliances and agreements have been created around the world to establish shared best practices and standards such as treaties (WA, SA, DA) agreements (IPEA, IETA, AIET, APECEA), whose members are hundreds of countries. The accreditation process involves quality assurance, teaching-learning, quality research and innovation, reallocation of resources, development of some policy guidelines and their implementation, and others (Kumar et al., 2020).

In the context of higher education in Indonesia, government has encouraged existing universities to compete for international accreditation that university graduates can compete internationally. The Regulation of the Minister of Education and Culture, Number 5/2020 Article 9 states that: (1) study programs with an A accreditation have the opportunity to be accredited by an international accreditation board recommended by the Ministry of Education and Culture; and (2) the accreditation results from the International Agency are equivalent to Excellent Accreditation rating from the National Accreditation Board for Higher Education (BAN-PT).

The recognition by international accreditation equivalence with the Excellent Accreditation by BAN-PT is a distinctive motivation for study programs or universities to reach the accreditation. It is a great opportunity for the study programs which have previously been accredited A, and there is no need to apply for accreditation to BAN-PT, in addition to the great advantages and opportunities to collaborate with excellent universities in various parts of the world and become reference for the development of similar study programs in the country. It could be a motivating factor for universities to accredit their study programs.

Very few universities in Indonesia gain an international accreditation recognized by the government. There were 14,429 study programs from 3,171 higher education institutions under the Ministry of Education and Culture in 2018 (Kementerian Riset, Teknologi, dan Pendidikan Tinggi, 2018). The Head of the ITB Quality Assurance Unit noted that out of this number, only 396 (2.74%) study programs have been accredited, 61 percent of which are internationally accredited and 39 percent are by AUN-QA (ASEAN University Network-Quality Assurance) assessment (Arifin, 2018). For universities under the Ministry of Religious Affairs, there are approximately 3000 study programs widely spread in 58 State Islamic Religious Higher Education (PTKIN) and 763 Private Islamic Religious Higher Education (PTKIS) (Kementerian Agama, 2017). Only 4 (0.13%) of them are internationally accredited at two PTKIN (Kementerian Agama, 2020).

The acquisition of international accreditation proves the recognition of quality and interest of the prospective students, graduate users, and society. This is a motivating factor for the head of study programs to assess the curriculum development needs to fit the demands of international accreditation assessments. The result of this

assessment could be an important input for the study programs to improve and adjust the curriculum components to the international accreditation standards.

2. Research Method

2.1. Evaluation Framework

This study aimed to investigate the need for study programs to develop the curriculum for international accreditation, such as document preparation of curriculum, learning implementation, assessment, and outcomes of the study programs. The research sought to present the needs of each study scope from the perspective of stakeholders, who were students, alumni, lecturers, and graduate users, in addition to reviewing the curriculum documents. Sequential exploratory strategy in mixed methods approaches was employed, which was collecting and analyzing qualitative data in the first stage and collecting and analyzing quantitative data in the second stage based on the results of the first stage (Creswell, 2009).

The current research applied CIPP (Context, Input, Process, Product) evaluation model because it was perceived to fit with the needs of decision making and accountability, with four evaluation types covering context, input, process, and product (Stufflebeam, 1971). Furthermore, the Outcomes (O) component was added to complement the Outcome Based Education (OBE) in curriculum development for an international accreditation purpose. The conceptual framework for CIPPO model was used to evaluate the process of developing a study program curriculum by adopting a higher education curriculum cycle. The cycle included 5 stages, (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation (Kementerian Pendidikan dan Kebudayaan, 2020).

Context evaluation aimed to evaluate the analysis, design, and development stages; input evaluation to assess some stages of implementation (human resources, facilities, and supporting resources); process evaluation to assess other stages of implementation (conducting socialization/workshops/guidance for students and lecturers, learning activities); product evaluation to evaluate the product (learning assessment); outcome evaluation to evaluate the responses of alumni and alumni users. The evaluation procedure applied sequence of activities to identify criteria, to set a standard, to collect and synthesize data (Schroter, 2015). In detail, the procedures covered (1) identifying criteria by conducting a study program curriculum development study, (2) setting standards by referring to assessment instruments using Likert scale, (3) collecting data through FGDs, reviewing curriculum documents, and spreading questionnaires to students, and (4) synthesizing by profiling each criterion and drawing an evaluative conclusion.

2.2. Settings

The current research was conducted in the postgraduate program of education management located in East Java. This study program was the first masters' degree program on campus, actively operated in 1999. Currently, it has received an A from BAN-PT, and experienced in foreign student management. The study focused on the curriculum development activities, from the formulation of the study program's vision to the operational learning activities made by the head of the study program, the lecturers, and students, as well as the responses of the alumni and alumni users.

2.3. Participants

The research participants were: the head and secretary of the study program, 48 postgraduate lecturers at the beginning of the Postgraduate curriculum review workshop and 8 home-based lecturers from the study program during the follow-up FGD, and 71 students of semester 2 - 4. Before collecting the data, research instruments were developed by referring to and adopting the description of the higher education curriculum cycle by the Kementerian Pendidikan dan Kebudayaan (2020), and AQAS instruments especially those related to the student learning, teaching, and assessment [ESG 1.3] (AQAS, 2020). The instrument development began with an interview with the head of quality assurance unit of the university to understand the concepts and practices of each accreditation assessment item. After the interview, Forum Group Discussion (FGD) was conducted with the head

of the quality assurance unit (SPM) and the head of the international accreditation division of higher education in Bandung Indonesia, who had succeeded 28 study programs for international accreditation. The results of the FGD were used as the basis for the research instrument development.

2.4. Data Collection

The data were collected through interviews with the head of the study program, related to the formulation of the study program's vision, mission, and objectives. Then, the curriculum documents were examined to obtain an overview of the curriculum development process. After examining the document, an FGD with 48 postgraduate lecturers was made through curriculum review workshops, and followed by 8 home based lecturers, the head and secretary to obtain data on learning experiences and views on the next curriculum improvement. Student responses to the learning implementation were obtained by using a questionnaire through Google Form sent via Whatsapp group to the 2nd, 3rd, and 4th semester students. Besides, this study also reviewed the alumni tracer study report by university.

The research instrument signs followed CIPPO evaluation model, presented in table 1.

Table 1: The assessment signs of study program curriculum development for international accreditation preparation

No.	Component and Indicator
1.	Context evaluation: <ol style="list-style-type: none"> a. International ideals are reflected in the vision, mission, goals and strategies of the Study Program b. The Programme Learning Outcomes (PLO) of the study program is based on Outcome Based Education (OBE), Indonesian National Qualifications Framework (KKNI), and National Standard-Higher Education (SN-Dikti) c. PLO as a whole includes the component of attitudes, knowledge, general skills, and special skills d. The study materials and learning materials with the breadth and depth of the learning materials are reflected in the courses and the number of credits e. Course organization is reflected in the curriculum structure and is relevant to achieving PLO f. The learning tools completely include Semester Learning Plans (RPS), Task Plans, Evaluation plans, and assessment instruments g. The learning design applies IT technology and Blended Learning
2.	Input evaluation: <ol style="list-style-type: none"> a. Availability and quality of human resources (lecturers) b. Availability and quality of learning facilities c. Availability and quality of learning sources
3.	Process evaluation: <ol style="list-style-type: none"> a. The delivery of learning outcomes at the beginning of the lecture by the lecturer b. Encouragement for student activeness in learning c. Encouragement for students to do a research in doing assignments d. The use of modules/teaching materials by the lecturers e. Delivery of research experiences to enrich the materials by the lecturers
4.	Product Evaluation: <ol style="list-style-type: none"> a. The assessment instrument is relevant to the learning objectives/outcomes b. The score given reflects the mastery of learning achievement c. The assessment is given fairly and openly (there provided a room for complaints)
5.	Outcome evaluation: <ol style="list-style-type: none"> a. Alumni satisfaction b. User satisfaction

The test result of the questionnaire item validity by using Product Moment formula is presented in table 2.

Table 2: The validity of the questionnaire items

No.	Aspect	Correlations	Predicate
1.	The learning facilities are complete and adequate	0.799	valid
2.	The learning sources are adequate and accessible	0.737	valid
3.	The lecturer delivers the learning outcomes at the beginning of the lecture	0.801	valid
4.	Lecturer encourages students to be active	0.856	valid
5.	Lecturer encourage students to do research in doing assignments	0.759	valid
6.	Lecturer uses their self-written modules/teaching materials	0.808	valid
7.	Lecturer presents research experiences to enrich the material	0.738	valid
8.	The assessment instrument is relevant to the learning objectives/outcomes	0.860	valid
9.	The score given reflects the mastery of learning outcome	0.827	valid
10.	Assessment is given fairly and openly (there provided a room for complaints)	0.747	valid

All the statement items developed in the questionnaire are valid and reliable because they show a positive correlation coefficient score at a significance level below 0.05 with a Cronbach's Alpha coefficient score of 0.959, which means that the instrument is declared reliable.

2.5. Data Analysis

Qualitative data analysis from the results of direct interviews and FGDs was carried out through data condensation, data presentation, and drawing conclusions as well as verification that the data presented reflected the curriculum development pattern for the study program. The research finding validation was performed through triangulation of data collection techniques in the form of reviewing curriculum documents and using questionnaires for students, alumni and graduate users. The final conclusion of each component and indicator evaluated by using modified conclusion criteria of BAN-PT (2019) accreditation assessment in a percentage is presented in table 3.

Table 3: The conclusion criteria for the predicate of the level for improvement and satisfaction needs

No.	Accreditation Score	Percentage Conversion	Predicate Satisfaction Level	Predicate Level of Improvement Needs
1.	361 - 400	90.25 – 100.00	Very Good	Very Low
2.	301 - 360	75.25 – 90.24	Good	Low
3.	200 - 301	50.00 – 72.24	Pretty Good	High
4.	0 - 200	0.00 – 49.99	Poor	Very High

3. Results

3.1. Context Evaluation

The context evaluation suggests that the last sentence of the study program's vision reads international reputation, which indicated ambition to achieve an international recognition. The vision is derived from the formulation of the postgraduate and the university vision which explicitly includes the word “international” in the last sentence of the vision. The study program's vision has been well formulated into mission, curriculum foundation, and educational objectives, written in the curriculum document.

The profile in the curriculum document reads “producing masters who play as lecturers, researchers, consultants, and leaders of educational institutions. This profile is confirmed by the answers of 45 (63%) students from 71 students presented in table 4.

Table 4: The expected career of the study programme alumni

No.	Expected Career	Frequency	Percentage
1.	Lecturer	27	60.00
2.	Education Staffs	4	8.89
3.	Teacher	4	8.89
4.	Manager	3	6.67
5.	Others	3	6.67
6.	Researcher	2	4.44
7.	Education Consultants	2	4.44
8.	Entrepreneur	0	0.00

To achieve the graduate profile, KKNI-based PLO and SN-DIKTI have been arranged. Some of the expected abilities are divided into aspects of attitude and values with 7 sentence formulations, work field abilities with 4 sentence formulations, knowledge that must be mastered with 3-sentence formulations, and managerial abilities in 3 sentence formulations. Furthermore, CPL is developed into 32 formulations including the formulation of aspects of attitude and values as many as 11 sentence formulations, general skills as many as 9 sentence formulations, special skills aspects in 6 sentence formulations, and knowledge aspects in 6 sentence formulations.

The existing PLO is developed into 20 courses divided into 5 subject groups: (1) Basic Competency Course (MKD), (2) Methodological Competency Course (MKM), (3) Main Competency Course (MKU), (4) Supporting Competency Course (MKP), and (5) Final Study Assignment Course (TAS). With 15 required courses and 5 elective courses (minimum of 2 courses should be taken) with 52 credits in total. The depth and breadth of the study materials in the courses can be categorized good, as evidenced in the curriculum structure that has accommodated 5 courses determined by the National Study Program Association.

The organization of the courses in the curriculum structure is grouped into 5 subject groups which indicates that each course group has their own goal to achieve learning outcomes in each aspect of competency as formulated in the PLO. Every subject group aims to provide different competencies while still referring to the students' achievement on graduate learning outcomes. This is to ensure that each formulation of aspects of attitudes and values, work competency, knowledge, managerial skills can be achieved through the courses offered.

Before being implemented in the classroom, each subject in the curriculum structure has developed learning tools in the form of a syllabus or also known as Semester Learning Plan (RPS). Broadly speaking, the syllabus contains the formulation of course learning outcomes (CLO), course objectives (CO), study materials/subject, learning experiences, learning resources, learning assessments and references. However, the formats presented are varied, and the assessment weight has not been included. The learning experience also does not show any formulation of optimal use of information technology-based learning and use of blended learning.

3.2. Input Evaluation

The results of the input evaluation show that the availability of permanent lecturers who hold courses from semesters 1 - 4 are very adequate with very good quality. 36 lecturers with Doctoral education qualifications, with details of 7 professors, 24 head lecturers, and 5 lecturers. The availability of learning facilities and resources is also very adequate with very good quality. Very good and conducive classrooms, discussion rooms, and library are adequately provided, which is supported by the fact that the university, study program, and library are accredited A.

The input evaluation in terms of the availability and quality of learning resources that can be accessed by the students is very good as students can freely access the facilities both offline and online. The learning resources provided are from reputable international publishers, such as: Taylor and Francis, Link Springer, Emerald Insight, ProQuest, in addition to the research repository, e-theses. They are all freely accessible to the academic community through student or lecturer account.

The results of the student satisfaction survey on the availability and access to utilize learning facilities and resources are presented in table 5.

Table 5: The level of student satisfaction with the learning facilities and resources

No.	Statement	Average	Percentage (%)	Predicate
1.	The learning facilities are complete and adequate	3.69	73.80	Good
2.	The learning resources are easily accessible and very adequate	3.93	78.60	Good
Average		3.81	76.20	Good

3.3. Process Evaluation

The process evaluation found that the socialization activities with lecturers were made through coordination meetings at the beginning of the semester before the lecture program, and student orientation for new students was carried out at the beginning of lectures. Several activities that support the student's learning process are technical guidance on writing scientific papers, national and international seminars, training on the use of library services, and providing opportunities to participate in scientific work presentations at both national and international levels.

The results of the student satisfaction survey on the teaching and learning process and co-curricular activities are presented in table 6.

Table 6: The level of student satisfaction on the lecturer performance during learning

No.	Statement	Average	Percentage (%)	Predicate
1.	The lecturer conveys learning outcomes at the beginning of the lecture	3.75	75.00	Good
2.	The lecturers encourage students to be active	4.09	81.80	Good
3.	The lecturers encourage students to do a research in doing assignments	3.93	78.60	Good
4.	The lecturers use their own modules/teaching materials	3.69	73.80	Good
5.	The Lecturers present research experiences to enrich the material	3.96	79.20	Good
Average		3.88	77.68	Good

3.4. Product Evaluation

The results of the student satisfaction survey on the implementation of the learning evaluation are presented in table 7.

Table 7: The level of student satisfaction with the learning assessment by the lecturer

No.	Statement	Average	Percentage (%)	Predicate
1.	The assessment instrument is relevant to the learning objectives/outcomes	3.96	79.20	Good
2.	The score given reflects the fulfilment of learning outcomes	3.96	79.20	Good
3.	The assessment is given fairly and openly (there provided a room for complaints)	3.64	72.80	Good
Rata-rata		3.85	77.07	Good

3.5. Outcome Evaluation

The results of tracer study on 30 alumni of the study program in 2020 are presented in table 8.

Table 8: The information on the condition of the study program alumni

No.	Component	Result
1.	Average waiting period to get a job	2.5 month
2.	Alumni satisfaction with current job	Satisfied
3.	The institution in which the alumni work	Educational institution
4.	Profession	Educator

The description of the satisfaction level of alumni users with the indicators developed by BAN-PT is presented in table 9.

Table 9: User Satisfaction Level on the Alumni Performance

No.	Satisfaction Indicator	Score		Predicate
		Scale 5	Percentage	
1.	Ethical & Moral Integrity	4.30	86.00	Good
2.	Competence	4.50	90.00	Good
3.	Foreign Language Competence	4.30	86.00	Good
4.	Use of Technology	4.30	86.00	Good
5.	Communication Competence	4.60	92.00	Very Good
6.	Teamwork	4.50	90.00	Good
7.	Personal Development	4.50	90.00	Good
8.	Leadership	4.50	90.00	Good
9.	Scientific Insight	4.50	90.00	Good
	Average	4.44	88.80	Good

4. Discussion

4.1. Context Evaluation

The results of the context evaluation show that the vision of the study program has been well described because it refers to the formulation of the postgraduate and university vision, by including the word international in the vision. The vision of the study program is outlined in the mission, curriculum foundation, educational objectives, and in the curriculum document. Therefore, there has been a desire or intention of the study program to standardize internationally. It is fundamental as the vision becomes the direction for the operationalization practices of the program. It strengthens the research findings that the promotion strategy to gain international trust is to formulate a strong vision, international accreditation for the study program (Rosyidah et al., 2020). Organizational performance is strongly determined by a strategy that includes the vision, mission and goals of the organization (AIDhaheeri et al., 2020). Higher education's commitment towards internationalization can be seen from the formulation of vision and mission because they are the spirit of universities in the activities (Nulhaqim et al., 2016.)

A vision is a brief articulation of what the college strives for and what its ultimate goal is. It refers to the wishes or aspirations of the college in the future (Qadir et al., 2020). The word "international" in the university vision as a declaration of higher education orientation to be a world-class university (Binangkit and Siregar, 2020). The university vision and mission and the commitment of the rector/college leader to make it happen are prerequisites (Wahidmurni et al., 2019). The international vision implies for the study program's efforts to produce graduates equipped with international competitiveness.

The profiles of the study program graduates are lecturers, consultants, researchers and institutional leaders, confirmed by the results of a survey towards students that most of them aspire to become lecturers. To achieve the graduate profile, KKNI and SN-DIKTI -based PLO has been formulated, accommodating OBE as the first step in the curriculum planning. It is evidenced by the formulation of competencies expected to be mastered by graduates, which include aspect of attitudes and values, aspect of competence in the workplace, and aspect of management.

The four competency aspects are the basis for the development of the next curriculum. It is relevant to the findings of previous research that in the OBE system, learning outcomes are firstly set, then the learning methods and learning evaluations were adjusted (Davis, 2003). According to OBE paradigm, instructional practices and assessments are explicitly designed to ensure the achievement of predetermined learning outcomes.

PLO has been developed in groups of subjects with a good depth and breadth of study materials, even the study program has accommodated all courses that have been determined by the study program association. However, the number of credits of the learning load exceeds the minimum standard of learning load by the National Higher Education Standards for Masters' degree programs, which is 36 credits (Kementerian Pendidikan dan Kebudayaan, 2020). Therefore, the learning load exceeds by 16 credits. For this reason, it is necessary to review the curriculum to adjust the learning load that no more overload of credit. Or, even an excess of learning load is unavoidable, at least it is in small number. This is relevant to the recommendation in the FGD with the lecturers, who perceive to provide too many credits, so it needs a review to ensure that overlapping in teaching materials does not occur anymore.

The Head of the Quality Assurance Unit and the Head of the International Accreditation Division of State Universities in Bandung-Indonesia suggests that PLO formulation should be simplified to around 10-11 formula, mainly on the aspects of knowledge/skills/and competencies. Besides, PLO formulation must be linked to the evaluation including the questions used as well as the learning module. For PLO, the attitude aspect becomes added value/human-ethic value. The number of PLO formulations is related to the number of formulations that must be included in the study material, and it implies on the measurement certainty when the learning evaluation is made. This is relevant to the findings of a previous study which emphasizes that CLO-PLO mapping and achievement quantification are integral parts of OBE, and they help in continuous quality improvement, which serves as feedback for the OBE loop (Reddy et al., 2021).

Curriculum planning is an important first step to implement OBE. It involves (1) writing CLO, (2) mapping CLO to PLO, and (3) planning assessment to measure performance in CLO. Curriculum planners also need to design strategies to collect CLO performance data and use it to measure performance at the PLO level (Qadir, et al. 2020). The OBE curriculum requires determining the LO of learning outcomes before teaching, and it emphasizes the introduction of control flows across course content, instructional strategies, learning experiences, and evaluation methods (Gurukkal, 2020). Writing CLO for courses is important in OBE. It is related to the competencies that must be achieved by successful graduates. There must be a proper correlation between CLO and PLO or student learning outcomes. Therefore the CLO statement and its mapping with PLO should be checked. The survey results show that 53% respondents can write CLO and map it with PLO perfectly. The rest can do so moderately and sometimes need a support (Jadhav et al., 2020).

Each course has developed a set of RPS, yet the format has not been standardized in the sense that it is written in different forms. However, the minimum components in the RPS, which are CLO, CO formulations, guidelines for implementing learning activities, and learning assessments are available and complete. The weakness lies in the problem of weighting each CO to measure the level of mastery of each CLO during the mid-semester and end-semester examination. In preparing RPS, the learning experience should focus on the student learning outcomes, considering: what students should understand or do at the end of the lesson; what activities they should perform in the learning activities; and how the lecturers ensure that they have mastered the learning objectives. For this reason, there must be a harmony between learning outcomes, teaching and learning activities, and assessment (Tam, 2014).

The formulation of learning implementation is still designed conventionally, by utilizing IT in a simple way without blended learning. Therefore, it needs to increase the use of IT in learning and to design blended learning in the following semesters. Covid-19 pandemic teaches the importance of online learning. It is a good capital to make improvements in the next learning activity. The internationalization of universities or study programs requires university support in developing WEB and ICT programs to support online learning needs, so bilingual WEB must be managed by professionals with a very adequate size (Mutiarin, et al., 2019).

4.2. *Input Evaluation*

The input evaluation in terms of availability and quality of human resources, especially lecturers, is going very adequate. In terms of quantity and quality, it is appropriate even better in terms of requirements. According to BAN-PT assessment, it is very good with a score of 4. If the number of permanent lecturers with respective areas of expertise in accordance with the core competencies of the study program accredited by more than 6 people (BAN PT, 2019). The quality of excellent lecturers is an important factor for the quality dimension of higher education. It is relevant to the finding of Simangunsong (2019) that lecturer quality is one of the quality dimensions of higher education from the perspective of stakeholders.

The Input evaluation in terms of availability and quality of learning facilities and learning resources belongs to very good. The accreditation scores of the study program, institution, and library are all A (very good). Because in terms of physic and quality, the learning facilities are very good, and the quality of the available learning resources is also very good with very adequate number. However, the survey results show that student satisfaction with the availability and accessibility of the learning facilities is only good/satisfactory, which means the need for service improvement and accessibility to the learning facilities by students. The adoption of e-learning facilities by students is determined by technology-related factors, such as: ease of use, speed, and service delivery, in addition to organizational-related factors (training support and diversity), environmental-related factors (user attitudes) and impact-related factors (learning experience, skills development, academic performance, and level of engagement) (Eze et al., 2020). Thus, further analysis on which service factors need to be improved is needed to increase the student satisfaction.

In addition, the level of student satisfaction in the use and access to the learning resources is also in the good category that improvement is needed. Regarding the use of learning resources, Mei (2020) suggests that the implementation of learning in OBE curriculum does not only emphasize on blended learning environment, through integration of online and offline activity and flipped classrooms, but also needs to expand learning channels, stimulate interest in learning, and provide many learning resources for students based on the curriculum content to support autonomous learning. OBE is out-and-out learner-centric, in the sense that it helps students conduct self-assessments simultaneously to determine their progress in achieving the postulated results. The appropriate learning resource to facilitate students to know their learning progress is module (Gurukkal, 2020).

Module as a learning feature in OBE curriculum, which needs to be developed by the lecturers to be a learning source for students. Lecturers cannot maximally develop research-based learning modules for learning resources. Module should be developed based on the results of research based on the expertise of the lecturer. (Mei, 2020). Universities that are committed to the internationalization of campuses place research as an important factor because the main product of scientific development is a research, and the quality of universities is also determined through their research products. Therefore, the study program is suggested to develop the learning modules based on research results to prepare for international accreditation (Nulhaqim et al., 2016).

4.3. *Process Evaluation*

The evaluation process in terms of the performance the lecturers during the learning process is perceived to be good, so the level of need for performance improvement is low. The performance improvement is related to pedagogic aspects with the use of information technology in learning, the preparation of research-based learning modules which are very much needed in OBE-based learning. According to Mutiarin et al. (2019), improving the lecturer quality is very much needed for an international accreditation. Lecturers' competencies need to be constantly updated to adapt with the evolving learning theory and practices.

The survey result on the learning performance is prominent for the improvement of continuous learning programs, especially when the study program wants to always improve in providing educational services. It is also related to the assessment by both national and international accreditation agencies. Regarding international accreditation, a research by Qadir et al. (2020) voices that OBE movement, as a whole, helps to improve educational standards and outcomes by ensuring proper curriculum planning and assessment, and there found alignment of program

objectives and desired outcomes. Therefore, performance assessment on the learning implementation is important to do to ensure appropriate execution according to the learning objectives.

In terms of learning methods, education under OBE requires a diversification of learning methods. With technical characteristics of "Internet +" era, it has facilitated education in an open classroom, which is conducive to the openness of time, space and content. Student learning time is not only limited in the classroom; learning content is not limited to teaching materials. Rich extra-curricular additional knowledge allows students to consolidate knowledge in the classroom while helping to foster independent learning competence (Mei, 2020). Such conditions could run well if the lecturer always up-to-date in pedagogical competence.

4.4. Product Evaluation

The student satisfaction with the teaching performance of the lecturers in the learning assessment activities is in a good category. Therefore, the improvement for the learning assessment aspect towards international accreditation is low, especially in terms of giving loads to each CO of assessment instrument. The development of learning evaluation materials to identify student and graduate competencies is the most problematic issue in the assessment of educational activities in international accreditation (Efremova & Tabishev, 2020). Improvements to the assessment system must involve the management of faculties and study programs because the effective learning assessment in OBE employs an automated system. The system begins by entering class schedules, teaching plans, assessment rubrics and assessment surveys, so the study program and faculty management can monitor the effectiveness of learning (Gnanapriya & Savitha, 2018).

Learning evaluation in OBE uses multi-dimensional evaluation system to continuously monitor, evaluate, and provide feedback to students. Thus, it requires the involvement of the faculty management to monitor the learning evaluation (Mei, 2020). In order for the learning evaluation to run effectively minimum overhead cost, the CLO into PEO mapping should be maximum of three places, even (if possible) one place in PEO (Qadir et al., 2020).

In practice, learning assessment still focuses on the cognitive and psychomotor domains. This is also reflected in the assessment format in the campus academic system. It is in line with the previous finding that lecturers focus on assessing the aspect of performance, so assessment on the aspect of attitudes/values is suggested (Domino & Eva, 2019). Each domain of learning outcomes is the focus of attention in international accreditation, which causes OBE to be the basis. According to Qadir et al. (2020), to ensure that all domains of learning outcomes are assessed, when developing performance indicators which are the most critical part in developing an assessment instrument, two important things must be considered: the content of the subject and action verbs, such as list, analyze, apply; the writing of these action verbs must be commensurate with the planned level of outcome. This is relevant to the analysis that the question for learning assessment when the curriculum is practiced under OBE often fails to achieve the desired balance even at the level of course objectives. Therefore, an lecturer competence improvement program for OBE-based learning assessment is highly recommended (Gupta & Dutta, 2020). The improvement supports the results of a survey on OBE-based learning assessment that there is a need for improvement in assessment and evaluation strategies because most respondents do not know various assessment instruments that can be used for assessing the students' learning outcomes (Jadhav et al., 2020).

4.5. Outcomes Evaluation

The evaluation results show that the average waiting period for alumni to get a job is 2.5 months, which indicates a very good predicate because it is less than 3 months (BAN-PT, 2019). Most of the alumni work in educational institutions as educators, which is relevant to the graduate profile released by the study program. Alumni satisfaction with the work they are currently engaged in is perceived to be good, so there are still several aspects that need to be improved in the development of the study program curriculum that their satisfaction at work improves to be very good. Satisfaction is one of the determining variables to explain alumni loyalty to higher education (Pedro & Andraz, 2021). User loyalty can grow through an increase in user satisfaction (Twum et al., 2020).

The ability of universities to develop student career capabilities through knowledge enrichment is a determining variable of alumni satisfaction and loyalty (Rafik & Priyono, 2018). The key attributes that influence alumni satisfaction in educational programs are subject attributes, system attributes, interactive attributes and teacher/lecturer attributes. The attribute of the teacher/lecturer becomes the attribute that has the highest influence, followed by the attribute of the course (Daultani et al., 2021). Therefore, it needs for improvement in the input, process and product components.

The user satisfaction with the performance of alumni shows a good/satisfactory level. Of the nine indicators of user satisfaction, eight indicators of perceived satisfaction are good, and only one indicator of perceived performance satisfaction is very good. Thus, the study program needs to develop programs that can equip alumni to have the required competencies because the satisfaction of alumni users is the determining factor of the study program success. The level of end-user satisfaction is an undeniable prerequisite for developers to redesign devices to meet the emerging needs of their users (Pillai et al., 2021).

Graduate user satisfaction can increase through information quality improvement which is relevant, accurate, timely, and trustworthy. The information provided is related to the graduate qualifications and competencies (Karoba et al., 2020). The results of the tracer study show that the things considered in curriculum reconstruction activities are alignment of study and work fields, learning activities that are relevant to the work needs, assessment of learning, condition of facilities and infrastructure, and courses that are relevant to the user demand (Heriyadi et al., 2021). Thus, the result of the tracer study becomes very important as a feedback to improve the education system and sustainable learning, especially in the development of students' hard skills, soft skills, and life skills.

5. Conclusion

Context evaluation showed that the study program curriculum documents had been developed according to OBE curriculum development pattern, making learning outcomes as the starting point. It is relevant to the vision of the study program which explicitly includes the word international, outlining the ideals of international recognition. One of the ways is to carry out international accreditation which has made OBE the basis for curriculum development. The aspects of learning outcomes are attitudes, knowledge, and skills described coherently from PLO, CLO, CO developed under the graduate profiles. Such conditions make it very possible for study programs to take a part in international accreditation programs by making adjustments in several fields, for example reviewing study materials from each course and ensuring that the domain of learning outcomes is assessed thoroughly along with valid assessment instruments and rubrics.

The input evaluation denoted that the availability and quality of lecturers were very good, and the availability of learning facilities and resources was very adequate. Only their utilization needed improvement. The adoption of online learning facilities and resources could be improved by providing easy accessibility, speed and service delivery, and increasing skills in accessing learning resources. In addition, it needed to expand learning channels, stimulate interest in learning, and provide many learning resources based on the curriculum content to encourage independent learning.

The process evaluation showed that the learning implementation of the lecturers was perceived to be good, so the need for improving lecturer performance only lay in the use of information technology media and the preparation of research-based learning modules. Several components of OBE learning needs to be prepared and performed related to the use of various learning resources, especially lecturer research-based learning modules, the use of a blended learning environment through an integration of online and offline activity designs, and implementation of flipped classrooms. It requires improving the pedagogic competence of lecturers to develop OBE-based learning.

Product evaluation proved that the learning assessment given by the lecturer was good, so it only needed for improving the assessment performance in the aspect of attitude. The components which need to be adjusted are giving load to each CO on the assessment instrument for all courses, ensuring PLO for the attitude aspect in the assessment process using the attitude assessment rubric, such as involving postgraduate management to monitor the assessments made by the lecturer by using an online application.

The outcome evaluation suggested that the satisfaction level of alumni and users was in a good category, so an increase in their satisfaction was needed because maximum satisfaction would induce alumni and users to be highly loyal to the study program institution. The increase in satisfaction could be brought in through continuous improvement in context, inputs, processes, and products as the main services of the study program.

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An Online Program to Develop Teachers to Enhance the Innovation Skills of Students

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Abstract

This research focused upon the development of “An Online Program to Develop Teachers to Enhance the Innovation Skills of Students” by gathering teacher learning manuals and a practice manual for teachers to assist in developing students. Moreover, this study adopted the Research and Development (R&D) methodology. As a result of the implementation of R1&D1 to R4&D4, 6 sets of teacher learning manuals and 1 practice manual could be compiled. Additionally, the study employed a one group pre-test/post-test experimental paradigm. Based on the discovered outcomes from employing the manuals in the R5&D5 stage with 11 teachers and 204 students in a school that had been randomly chosen to represent the Division of Buddhist Studies of the National Buddhism Office, it was determined that the research findings had been consistent with the assumptions that had been made. The results demonstrated that the developed online program had been effective given that the post-developmental test for teachers had met the standard of 90/90, and the mean scores had been statistically significantly higher than prior to the development. Moreover, regarding the innovation skills assessment after the development, the results of the students’ mean score had been statistically significantly higher than before. The results proved that the designed online program had been effective and that it could be distributed to the additional Prapariyattidhamma Schools so that they could receive benefits.

Keywords: 21st-Century Skills, Innovation Skills, Online Program, Self-Learning

1. Introduction

Teaching and learning in the 21st century require a unified vision for learning in order to ensure that students are successful in a world where there are constant changes and where the process of learning never stops. The 21st-century skills that learners should develop have been categorized into three areas: 1) learning & innovation skills, consisting of creativity and innovation, critical thinking & problem solving, communication, and collaboration; 2) information, media and technology skills, which are comprised of information literacy, media literacy, and ICT (information, communications, and technology) literacy; and 3) life and career skills, for which flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility are important aspects (Battelle for Kids, 2019).

Innovation skills are included in what are considered as ‘essential skills.’ In academic studies, innovation skills are usually accompanied by creative skills because innovation skills lead to the creation of new or different ideas

or methods. Innovation occurs when creative ideas and methods are applied in order to better products that have previously been created (JAE's Team, n.d.). Innovation and creativity have been highlighted as essential skills for the 21st century. This is especially true given that both skills can promote human potential by eliciting the positive aspects of the individual (Nakano & Wechsler, 2018). Innovation and creativity blossom into skills that will lead to success in all fields of development. In order to find suitable solutions, Problem Management requires innovation skills, which can help to develop any existing concepts, while also encouraging new ideas. People with innovative concepts can do their work with full confidence and are willing to take risks in order to achieve their goals (Henderson, 2018).

Vikas, The Concept School (n.d.) remarked on innovation in education by stating that it encourages students and teachers to carry out research, to explore, and to use all the tools to uncover something new. Innovation involves finding different ways to look at problems and to solve them. It also improves education because it compels students to engage in a higher level of thinking so that they can solve complex problems. Innovation does not just mean the use of technology or new inventions, even though these can contribute to innovation. Innovation involves a new way of thinking, and thereby helps students to develop their creativity and problem-solving skills. Furthermore, Northwest Missouri State University (2018) suggested that innovations in education encourage both teachers and students to explore, conduct research, and to use all the tools to uncover something new. It is concerned with a different way of looking at problems and solving them. The thought processes that go into it will help students to develop their creativity, as well as to hone their problem-solving skills.

Due to the significance of innovation skills in 21st-century society and the fact that teachers must focus on developing students' innovation skills in order for them to succeed in work and life, the research team was interested in developing the educational innovation called *"An Online Program to Develop Teachers to Enhance the Innovation Skills of Students."* Research and Development (R&D) methodology was used in this study based on the concept of *"Develop teacher, and teacher will (then) develop students."* R&D aims to produce innovations that can develop "people" so that the "work" can be developed (The teacher's work is to develop students.). According to Sanrattana (2018), this research methodology generates educational innovations that can help instructors to enhance the quality of their work more greatly. Recently, there have been numerous thoughts and theories about educational innovations, which have focused on the belief that instructors would use their learning outcomes (Knowledge) to enhance their learners (Action), and that this would lead to more beneficial work performance (Power). Concisely, it is based on the concept that *"Knowledge and Action are Power."*

2. Research Objective

The purpose of this research was to conduct research with Research and Development (R&D) methodology that would enable the establishment of an effective "An Online Program to Develop Teachers to Enhance the Innovation Skills of Students" in accordance with the specified criteria. The developed online program consisted of a teacher's learning development project and the utilization of teachers learning outcomes in the student developmental project. There were module-based learning manuals for self-learning, and a student development practice manual for the teachers.

3. Research Assumption

In order to compile materials for the manuals, the researcher studied the relevant literature from various perspectives. After that, the manuals were examined and improved to assure the validity of each of the research tools. The experiments were conducted in the target school under the principles of R&D methodology, which are believed to yield effective educational innovations. Therefore, the assumption of the study was that the created project, "An Online Program to Develop Teachers to Enhance Innovation Skills of Students," would be effective in accordance with the following specific criteria: 1) the post-development test for teachers would meet the standard of 90/90, and the mean score would be statistically significantly higher than before the development, and 2) the students' mean score on innovation skills assessment after the development would be statistically significantly higher than before the development.

4. Research Methodology

4.1. Concept and Processes

This study employed Research and Development (R&D) methodology based upon the concept of: “*Develop the teacher, and the teacher will develop students*” because R&D focuses upon the idea of generating the innovation that develops the “people” to develop the “work” (The Teacher’s work is to develop students). According to Sanrattana (2018), this research methodology results in the creation of educational innovations that can assist instructors to enhance the quality of their performance. Lately, a variety of thoughts and theories about educational innovations have been published, which highlight the belief that instructors will bring their learning outcomes (Knowledge) to enhance their learners (Action), which will lead to more beneficial work performance (Power). Briefly, it is based on the concept that “*Knowledge and Action are Power.*” In addition, conducting a literature review is a vital beginning for R&D because it brings the researcher knowledge about the topic of online program development. The developed online program consists of projects, learning manuals, and a practice manual. Therefore, the first stage of R&D in this study was conducting a literature review in the pattern of R1&D1...R2&D2...R3&D3...Ri&Di as described below:

R1&D1: The Review of the Literature Related to Innovative Skills When the literature related to innovation skills was reviewed, the following features were found definitions, significant aspects, qualifications, developmental guidelines, developmental processes, and assessments. The knowledge, which was obtained and compiled from the review, was used to create six manuals for teachers’ learning as follows: (1) the Definition of Innovation Skills, (2) the Significance of Innovation Skills, (3) the Qualifications of Innovation Skills, (4) the Developmental Guidelines of Innovation Skills, (5) the Developmental Processes of Innovation Skills, and (6) the Assessment of Innovation Skills. The data, which was collected from the literature review, was also utilized to compile a practice manual to apply the teacher’s learning outcomes for student development.

R2&D2: Eliminating the Flaws: The First Step To make the first revisions to improve the manual, it was checked for flaws. The aspects, which were examined, were conciseness, usefulness, appropriate language, and the presentation of appealing content. A Focus group discussion was conducted with 10 teachers in a non-experimental school known as Prapassornwittaya Wat Srinual School.

R3&D3: Eliminating the Flaws: The Second Step To make even further improvements to the manual, the manual was checked for flaws a second time, which included examining the manual for conciseness, usefulness, appropriate language, and for the presentation of appealing content. The focus group discussions were conducted in two non-experimental schools: Pali Demonstration Wat Khe-Udom School (7 teachers) and Wat Bhdissompan School (8 teachers).

R4&D4: A Study of the Additional Literature Additional literature on the topic of innovation skills assessment was explored to create two research tools: 1) the Teachers’ learning outcomes test, and 2) the student innovation skills assessment form.

R5&D5: Examining the Manuals in the Pre-experimental Research Step with a one group Pre-test/Post-test design The experimental area was the general education classes at the Pariyattidhamma Demonstration Pali School of Mahachulalongkornrajavidyalaya University, Wat Si Sa Ket (Grades 7-12), which is under the Division of Buddhist Studies National Buddhism Office. It is located in the Mueang District of Nong Khai Province. This study used purposive sampling to select the experimental group. The target consisted of 11 teachers and 204 students. The field experiment took place during the Second Semester of the Academic Year of 2021, and the experimental course was divided into two phases as described below:

Phase 1: The Development of the Teachers’ learning using an online self-learning program The activities and durations of this phase were as follows:

- 1) A meeting was conducted to explain the details of the information to the experimental group of teachers and to apply the teachers’ pre-test. This phase took two days.

- 2) The teachers' development began by using the online manuals and the self-learning modules, which could be downloaded from the website that the researchers had created. The requirement was that the learning had to be completed without intervention from the research team or from anyone else. This step took one month.
- 3) The target teacher group eliminated the mistakes in order to improve the manuals and took a post-test. This step took two days.
- 4) The researchers analyzed the post-test results and compared them using the standard criteria of 90/90. The researchers also made a comparative analysis of the average scores of the pre-test and the post-test using the t-test dependent. This step took two days.

Phase 2: Applying the Teacher's learning outcomes to develop the students The activities and durations of this phase are included the following steps:

- 1) The researchers met with the target teacher group to explain the research details and to evaluate the innovation skills of the students in the target group using the pre-test. This step took two days.
- 2) Without any intervention from the research team or from anyone else, the target teacher group implemented the learning outcomes to develop the students' innovation skills. This step took two months.
- 3) The target teacher group worked to find any and all errors so that the manuals could be improved and then evaluated the students' innovation skills using a post-test. This step took two days.
- 4) A comparative analysis of the average scores of the pre-test and the post-test was completed using a t-test dependent. This step took two days.

4.2. Research Tools

1. The Teacher's Learning Outcomes Test was a set of multiple-choice questions with four answers. The purpose of the test was to evaluate the teachers' knowledge in the pre-experimental and post-experimental stages. The test was an online form (Google Form) and was written using the content from the teacher's learning manuals. Its details were comprised of the following: definitions, significant aspects, characteristics, developmental guidelines, developmental processes, and an assessment of the innovative skills. The cognitive domain of the test was drawn from Benjamin S. Bloom's concept, which ranks thinking skills from low to high as follows: remembering, understanding, applying, analyzing, evaluating, and creating (Armstrong, 2010). After that, the test was examined for validity as outlined in the following steps.

- 1.1 The test validity was scrutinized by five experts in the fields of curriculum, teaching, and measurement using Rovinelli and Hambleton's (1977) Indices of Item-Objective Congruence (IOC). The results indicated that every question had had an IOC value of higher than 0.50 (Chaichanawirote & Vantum, 2017).
- 1.2 The trial of the test was applied with 30 teachers at three non-experimental schools (Ban Bon Wittaya School, PhraPariyattidhamma School Wat Amphawan, and Wat Phrathat Witthaya School). The analysis of the results of the test trial showed the following: 1) the index of difficulty of questions had been between 0.20 - 0.80, and the power of discrimination had been between 0.20-1.00, which conformed to the specified criterion; 2) the reliability of the test had a KR-20 coefficient of 0.95, which was greater than the specified criterion (equal to or greater than 0.70); and 3) the difficulty of the test was determined to be 45.83, which is considered to be an appropriate level of difficulty.

2. The Student's Innovative Skills Self-Assessment Form The form used a 5-level rating scale: the most, very, medium, less, and the least. The researcher created the form, which was based on studies related to the characteristics of innovation skills from the perspectives of Inusual (2018), Premuzic (2013), and Zenger (2015), and on studies based on innovation skills assessment from Bukidnon State Bukidnon State University. (2018), Butter and Beest (n.d.), Chell and Athayde (2009), and the Research and Extension Unit of the Food and Agriculture Organization of the United Nations (2017). The assessment form was an online, Google Form, which was examined for its validity by using the following steps:

- 2.1 The validity of the content was established by five experts, who were well-versed in the areas of curriculum, teaching, and measurement by using Rovinelli and Hambleton's (1977) Indices of Item-

Objective Congruence (IOC). The results identified that every question had an IOC value higher than 0.50 (Chaichanawirote & Vantum, 2017).

- 2.2 The Assessment Trial was conducted with 30 students in a non-experimental school, Prapassornwittaya Wat Srinual School, in order to analyze the alpha coefficient of reliability by using Cronbach's method. The analysis illustrated that the alpha coefficient of confidence for the entire questionnaire had been 0.94. The analysis of each area indicated the following: 'Energy' had been 0.88, 'Self-efficacy' had been 0.84, 'Creativity & Independence' had been 0.95, the 'Capacity to Navigate Complexity' had been 0.89, and the Risk-propensity had been 0.83. The alpha coefficient of confidence had been higher than the specified criterion, which was equal to or higher than 0.70 (UCLA: Statistical Consulting Group, 2016).

4.3. Data Analysis

1. The 90/90 Standard was employed to analyze the data and to compare the post-experiment of teachers' learning outcomes. The first 90 represented the percentage of the mean scores, which had been obtained from the teachers' knowledge test. The latter 90 represented the percentage of teachers, who had passed the test in accordance with all of the objective criteria (Yamkasikorn, 2008).

2. To analyze the data and to compare the results of the teacher's learning outcomes and the student's innovation skills assessment in the pre-experimental test and the post-experimental test, the t-test dependent statistic was employed.

5. Research Results

The R1&D1 phase produced "An Online Program to Develop Teachers to Enhance Innovation Skills," which included two projects and their manuals as follows:

- 1. The teachers' learning development project** Based on the following literature review, the six teachers' self-learning manuals, which were based on a variety of perspectives from academics and agencies, were created:

- 1.1 The Definition of Innovation Skills** was based on perspectives from Albuquerque (2013), Bellevue College (n.d.), Business (2021), Center for Management and Organization Effectiveness (n.d.), Dwyer (n.d.), Skills You Need (n.d.), Toolshero (n.d.), and Vocabulary.com (n.d.).

- 1.2 The Significance of Innovation Skills** was based on perspectives from Boundless Management (n.d.), Cleverism (n.d.), Henderson (2017), Kappe (n.d.), Kylliäinen (2019), Nolan (2016), and Sokolova (2015).

- 1.3 The Characteristics of Innovation Skills** were based on perspectives from Inusual (2018), Premuzic (2013), and Zenger (2015).

- 1.4 The Guidelines for Innovation Skills Development** were based on perspectives from Baiya (2018), Cherry (2019), Francisco (n.d.), Hengsberger (2018), Jonathan (2014), Kaye (2018), Kim (2015), Kylliäinen (2018), Sloane (2009), and Stack (2013).

- 1.5 The Steps of Innovation Skills Development** were based on perspectives from Boutelle (n.d.), Landry (2017), Magazine Spring (2007), Molloy (2019), and Pisano (2020).

- 1.6 The Assessment of Innovation Skills** was based on perspectives from Bukidnon State University (2018), Butter and Beest (n.d.), Chell and Athayde (2009), and Research and Extension Unit, Food and Agriculture Organization of the United Nations (2017).

- 2. The utilization of the Teachers learning outcomes in the students' innovation skills development project** For this project, a practice manual was generated with instructions and details on important issues: 1) the Anticipated Characteristics of Innovation Skills in students, 2) the Guidelines for Innovation Skills Development, and 3) the Steps for Innovation Skills Development. In the manual, teachers' self-assessment form for utilizing the learning outcomes and for reflecting on strengths and weaknesses was attached.

The research, which had been carried out through the R2&D2 to R5&D5 steps, resulted in the development of six teachers' learning manuals, a manual that implemented the teachers' learning outcomes for student development,

the teacher's learning outcome test, and an innovation skills assessment form for the students, which can be found the original in Thai on the following websites:

- 1) The Self-Learning Module: http://www.mbuisc.ac.th/phd/A_R&D%20Modules/KerkKiet.pdf
- 2) The Teacher Practice Level Assessment Form:
https://docs.google.com/forms/d/e/1FAIpQLSf6AGmhFa7togy_AloYncOe6ieJUPiHS_mxJO2HawwkEzeNVg/viewform
- 3) The Teacher's Learning Outcomes Test from:
https://docs.google.com/forms/d/e/1FAIpQLScvIl8QF6bbT8cCMx9PFrUR_-RV-01p7k6MLUB3hUuCeKpgLA/formResponse
- 4) The Innovation Skills Assessment Form of students:
https://docs.google.com/forms/d/e/1FAIpQLScovGBMjbLmAtHMK7kWIELJ83_Akn7zw9ZQlBh05GUnrDP5UQ/viewform

The manuals, test, and assessment form, which had been created through the phases of R2&D2 to R5&D5, were examined in the field experiment using the pre-experimental research with a one group pre-test/post-test design. The experimental area was the general education classes at the Pariyattidhamma Demonstration Pali School Mahachulalongkornrajavidyalaya University at Wat Si Sa Ket (Grades 7-12), which is under the Division of Buddhist Studies National Buddhism Office. It is located in the Mueang District of Nong Khai Province. This study adopted purposive sampling to select the experimental group. The 11 teachers and 204 students were included in the target groups. The findings demonstrated that the results of the research had been in accordance with the assumptions based on the specific criteria of "An Online Program to Develop Teachers to Enhance Innovation Skills" with two projects and manuals and that it had been proven effective. The details of the findings are shown below:

1) The post-test results from the teacher's learning outcome test correlated with the standard of 90/90. The first 90 represented a percentage of the mean post-test scores, which was 33.09 points out of 36 (91.92 percent) and was higher than the specified criterion (90). The latter 90 was the percentage of the teachers, who had been able to complete all objectives. The result indicated that 92.42% of 11 teachers had been able to pass all objectives on the exam. The number was, therefore, higher than the specified criterion (90).

2) The results of the pre-experimental test mean score of the 11 teachers had been 27.72, and the standard deviation had been 2.76. Meanwhile, the post-experimental test mean score had been 33.09 and the standard deviation had been 2.07. After the data had been analyzed by using the t-test dependent, the mean score of the post-experimental test was found to be statistically significantly higher than the mean score of the pre-experimental test at 0.05, which is shown in Table 1.

Table 1: The t-test dependent results from comparing the teachers' learning outcomes before and after the experiment

Testing	Sample sizes	Means	Standard Deviations	t
Before	11	27.72	2.76	14.750*
After	11	33.09	2.07	

*p < 0.05

3) The assessment results from the innovation skills before the experiment with the 204 students indicated that the mean had been 3.49 with a standard deviation of 0.19. Meanwhile, the results from the assessment after the experiment had shown a mean of 4.00 with a standard deviation of 0.15. Therefore, after the data had been analyzed by using a t-test dependent, the mean score of the post-experimental assessment had been statistically significantly higher than the mean score for the pre-experimental assessment at 0.05, which is shown in Table 2.

Table 2: The t-test dependent results when comparing the students' innovation skills before and after the experimental assessments

Assessments	Sample sizes	Means	Standard Deviations	t
Before	204	3.49	0.19	28.73*
After	204	4.00	0.15	

* p < 0.05

6. Discussion

The R&D study of “An Online Program to Develop Teachers to Enhance the Innovation Skills of Students” values the relevant perspectives of academics, from which the complete knowledge of insight was constructed for this search. The results of this study were consistent with their assumptions and the following concepts were applied. **The first concept** prioritized the awareness of the development of the 21st century skills for students because these skills are now more important to students than ever before. Not only do they provide a framework for successful learning in the classroom, but they also ensure that students can thrive in our modern and highly technological world, in which learning can never stop and changes are taking constantly place. Furthermore, these skills are also tremendously important to the well-being of the nation (Ross, 2017; Rooptam & Sanrattana, 2021). **The second concept** placed emphasis upon international knowledge, which is spread throughout the Internet. This is especially true for the verified knowledge that allows the Internet audience to inspect the qualifications of the author and the validity of his/her content. Furthermore, the knowledge from the Internet is dynamic and is constantly being updated. A large number of online websites and data archives are able to receive real-time updates. This allows users to download up-to-date information, which has been verified and is ready for distribution (ACT Bengaluru, 2021). **The third concept** is associated with the concept and benefit of conducting the development of teachers with the hope that teachers will, in turn, make use of their learning outcomes in order to develop their students. This teacher professional development concept is based on the following statements: “Successful Teachers, Successful Students.” (Evans & Beteille, 2019), and “The most effective professional development engages teams of teachers to focus on the needs of their students. They learn and problem solve together in order to ensure all students achieve success.” (Mizell, 2010). This concept and benefits as Promrub and Sanrattana (2022) commented in the research on “Online Program to Empower Teacher Learning to Develop Students' Digital Literacy Skills” that “research that has been designed to focus on any activity of teacher professional development must acknowledge the benefit of students as the ultimate goal should be encouraged, supported, and disseminated”. **The fourth concept** is based on the idea that knowledge and action are power which means transmitting the idea that having and sharing knowledge is the cornerstone of reputation and influence, and is, therefore, power (Azamfirei, 2016). As in John F. Kennedy's quote: “Knowledge is not power; knowledge plus action equals power.” (Lovel, 2017), and on the statement: “Knowledge is power, but without action is useless.” (Ofpad, the school of Genius, n.d.). **The fifth concept** is concerned with disseminating the innovations from results of the research to the target population so that members of the population can put them to practical use. R&D methodology aims at investigating the body of knowledge from a variety of concepts and perspectives so that a manual for teacher development can be created. The knowledge, which had been acquired, was examined for its quality. An experiment was carried out with one of the Phrapariyattidhamma Schools, which was an experimental site, and the results led to an effective invention. After that, the innovation was disseminated to benefit the target population, which consists of the other Phrapariyattidhamma Schools across the country. **The sixth concept** aimed at disseminating research innovations via the Internet due to the rapid growth of the Internet given its definite advantages over traditional forms of communication. Its flexibility, speed, and accessibility make it a clear path for disseminating research (Duffy, 2000). **The seventh concept's** focal point is having an awareness of the limitations of the target audience's English language skills when needing to examine the innovative research results. Therefore, the obtained knowledge was translated into Thai. The online manuals were also written in Thai because in Thailand, the English language is still considered a foreign language. Thai people do not use English as an official language or as a second language as in the former British colony countries. However, when considering those individuals, who were fluent in English and who wished to study from the source language, the links to the original webpages were also included in the manuals. **The eighth concept** focused upon self-learning and was based on the concept of: Anyplace, Anywhere, Anytime. The many benefits for teachers and students, associated with using the concept of self-learning, consist of the following: 1) learning at their own pace, 2)

developing ownership of their learning, 3) gaining better insights into their learning, 4) having the freedom to use various modes of learning, 5) having the most engaging learning experiences when learning through mobile devices, 6) demonstrating greater learner awareness, 7) being willing to try out new things and learn new skills, 8) becoming an expert, 9) prompting more effective learning for the learners, 10) boosting the learners' levels of self-esteem and self-reflection, 11) creating a stress-free learning process, and 12) allowing the learning to become more meaningful (Suvin, 2021).

7. Recommendations

It is the belief of the research team that encouraging teachers is essential to realizing the importance of accelerating the development of all the 21st century skills. The skills are covered in three areas: 1) learning & innovation skills, which are comprised of creativity & innovation, critical thinking & problem solving, communication, and collaboration; 2) information, media, and technology skills, which are composed of information literacy, media literacy, and ICT (information, communications, and technology) literacy; and 3) life and career skills, which consist of flexibility & adaptability, initiative & self-direction, social & cross-cultural skills, productivity & accountability, and leadership & responsibility (Battelle for Kids, 2019). However, given that most Thai people, including Thai teachers, do not possess adequate English skills, the lessons, which have been learned from this research, illustrate the need to prioritize the development of “*English skills*” in Thailand. Furthermore, as a global language, English is important and represents the best way to bridge the gap between people from diverse backgrounds. The Internet has content that is primarily in English. Therefore, having the ability to utilize the power of English is important in our modern-day world. Hence, to use the internet, one must have at least a basic level of English.

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Appendix

The student's Innovation Skills Self-Assessment Form.

Innovation Skills Qualifications	Self-assessment levels				
	5	4	3	2	1
Energy					
1) I always set goal for my work					
2) I have got a lot of energy to work everyday					
3) I am actively studying my chosen subject.					
4) I enjoy assisting people.					
5) I am excited and encouraged when I create something that no one else has been able to do.					
Self-efficacy					
6) I seek for alternative activities outside of school that I can control and that do not give me any trouble.					
7) In the future I would like to do challenging work that interests me.					
8) I am confident that if I start doing something, I can accomplish it.					
9) I will participate part in activities that I am interested in. It barely matters whether or not my best friend joins.					
10) I have faith in my own ideas. I'll do what I believe to be the best course of action.					
11) I believe that students should provide feedback on the school's policies and procedures.					
Creativity and Independence					
12) I enjoy coming up with fresh ideas for projects.					
13) I enjoy coming up with fresh ideas. in their own unique manner					
14) I enjoy thinking about how I might improve my job.					
15) I believe that hidden challenges exist in complicated issues.					
16) I enjoy experimenting with new techniques. Let us address the issues that we are confronted with.					
17) I can combine fresh ideas with current ones.					
18) In my duties, I feel free to try new things.					
19) I am a person that is constantly open to new experiences.					
20) I believe I am capable of doing a good job on my own.					
21) I am a person who is capable of handling day-to-day activities.					
22) I want to study with creative activities.					
23) I prefer studying with activities more than just sitting at my desk.					
Capacity To Navigate Complexity					
24) I am skillful in comprehending and resolving challenges.					
25) I am skillful in making decision in a group.					
26) I am skillful in strategy planning.					
27) I like seeking for work improvement.					
28) I listen to what people say when they come up with a new idea.					
29) I concentrate on improving what I am in charge of. as well as discovering new opportunities					
Risk-propensity					
30) I am willing to take risks in my job.					
31) I enjoy a good challenge. Despite the fact that the challenge may have forced me to take risks.					
32) I am willing to take the risk to create an innovation.					
33) Colleagues find me to be a thought-provoking person.					
34) I believe it is pointless to exert strict control over work.					
35) I am aware that not every project involved will be successful.					



Evaluation of Teaching Practice Course According to The Opinions of Teaching Staff, Practice Teachers and Pre-Service Teachers*

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Abstract

The aim of this study is to evaluate the teaching practice course according to the views of the teaching staff, practice teachers and physical education teacher candidates who took the teaching practice course. As the program evaluation model, Stufflebeam's Context, Input, Process and Product Evaluation Model (CIPP) was used. Mixed research method, in which quantitative and qualitative research methods are used together, was used in the research. The quantitative data collection group of the research consists of physical education teacher candidates (n:63) who took the Teaching Practice course at Hatay Mustafa Kemal University Physical Education and Sports School in the 2021-2022 academic year. The qualitative data consisted of 7 instructors and 7 practice teachers who provided consultancy to the pre-service teachers participating in the study. The data collection tools of the research are the Teaching Practice Evaluation Questionnaire and Semi-Structured Interview Form developed by Aslan and Sağlam (2017). In the study, data were collected in two stages: In the first stage, quantitative data were collected and in the second stage, semi-structured interviews were conducted to explain the quantitative data in more detail. The SPSS package program was used in the analysis of the quantitative data obtained in the study, and the mean and standard deviation values for each item were included. In the analysis of qualitative data, descriptive analysis technique was used. As a result of the study, while there were some failing points in the context, input and process dimensions, the findings obtained in the product dimension indicated that the physical education teacher candidates considered the teaching practice to be effective at a sufficient level. When the data obtained from the interviews were examined, it was observed that all three stakeholders of the course made the same or similar statements on some issues, and while it was observed that their views were compatible with each other, the statements of the stakeholders were different from each other in some items. Depending on the results, suggestions can be made such as providing the necessary conditions in the practice schools, providing the necessary materials to the teacher candidates in order for the teaching practice to be efficient, and regularly giving the two-hour seminar courses given at the school by the practice instructors.

Keywords: Teaching Practice, Physical Education Teacher Candidate, Practice Teacher, Practice Instructor

* This study was presented orally at the 8th International Science, Culture and Sports Congress (17-20 May 2022).

1. Introduction

1.1 Introduce the Problem

Teaching Practice course is a course designed to enable pre-service teachers to get to know teachers and students based on observations and interviews in schools where they practice. Upon completion of this course, students; will be able to learn about the organizational structure and management of the school, its operation, the classroom environment, the teaching of the lessons and the methods used. This course is one day a week for one semester. Among the responsibilities of teacher candidates; planning, examining a student, observing the lessons (Demirtaş & Güneş, 2004).

Teaching practice is a process that includes the activities carried out at the practice school in order to improve the skills gained during the undergraduate education of the pre-service teacher. In order for this process to function in accordance with its purpose, it is necessary for the relevant parties to fulfill their duties and responsibilities (Zehir-Topkaya, Yavuz, Erdem, 2008). Teacher candidates are required to experience a serious observation process during the internship period. However, internship periods in teacher training institutions in our country are passed in an extremely traditional and inefficient way, where the instructors and students are disconnected from each other and do not follow the developments in the world. Instructors should systematically observe teacher candidates and teacher candidates should systematically observe teachers at school. Good and Brophy (1994) stated that teachers could not perceive many events in the classroom. This is because the teachers are not well trained. Many teacher training programs have been insufficient in terms of teachers' ability to analyze classroom behaviors and specific teaching techniques (Selçuk, 2000).

Thanks to the cooperation between the practice school and teacher training institutions, pre-service teachers have the chance to gain their professional qualifications in teaching. Thus, teacher candidates can apply their professional and field knowledge efficiently. This process is of great importance in terms of ensuring a healthy communication and cooperation between the teaching staff assigned by teacher training institutions, the sharing of duties and responsibilities between the practice teacher in practice schools and the teacher candidate. This course, which consists of 2 hours of theoretical information given by the practical instructor and 6 hours of practice per week, is a joint study between schools affiliated to the Ministry of National Education and teacher training institutions. Achieving the high efficiency expected from school applications depends on the correct presentation of the mutual expectations of the parties involved in this process. In this context, in the theoretical part of the teaching practice, it would be appropriate for the practice instructor to determine the expectations of the prospective teachers and guide them. The support of practice teachers is the basis for the success of teacher training programs. The practice teacher is the closest educator to the teacher candidate. The application instructor is responsible for informing the candidates about the qualifications that are the most important part of the application process. In addition to the opportunity to observe the practice teacher while teaching, it also provides opportunities for teacher candidates to increase their own teaching experience. While performing their experiences, pre-service teachers see the classroom/field/gym/garden environment, they have the opportunity to make inferences from these experiences and to evaluate themselves. The practice experiences of the candidates should be observed by the teaching staff and practice teachers, and observation and evaluation forms should be used. After the application, the teacher candidates should be given feedback according to the information in these forms (Zehir-Topkaya, Yavuz, Erdem, 2008).

Since teaching is a profession of love, humanistic qualities should be sought in teacher candidates. Whether the student is prone to teaching should be determined by developing special assessment tools. Institutions that train teachers should train instructors in line with their needs. Instructors should set an example for teacher candidates by focusing on educational problems and protecting scientific ethics and human rights (Akçabol, 2005). A teacher is a person who has information about a program and its field. There is also a student group opposite. The teacher should not only give the necessary knowledge and skills to his students, but also influence the students with his character. The programs of teacher training institutions should be realistic, applicable and valid (Küçükahmet, et al., 2004).

The new concept that has appeared with the onset of information age affects both teaching and teachers as it does almost all domains. The present roles of the teachers are different from their roles in the past. Today, teachers are supposed to provide the information that is available but they are also required to have the ability to generate information and use it in a critical way. This new concept makes it essential that teaching and the education of teachers should be redesigned thoroughly. Turkish teacher education programs have a long history. With a long history that starts with the Ottoman Empire, our teacher education programs are to be redesigned in line with the new concept. As a matter of fact, it has been made clear in multiple studies that there are great many problems with the capabilities of the newly qualified teachers and the pre-service teacher education they receive in education faculties (Aslan & Sağlam, 2018).

1.2 Explore Importance of the Problem

It is the joint responsibility of teacher training institutions and schools affiliated with the Ministry of National Education to provide an implementation process that will contribute to revealing the subject area education and general teaching competencies of teacher candidates, whom we will give the responsibility of raising individuals who will shape our future. Based on this idea, it is aimed to evaluate the Teaching Practice course taken by the final year students of Hatay Mustafa Kemal University, Physical Education and Sports School, Department of Physical Education and Sports in the fall semester of the 2021-2022 academic year, according to the views of the teachers, teacher candidates and instructors in the practice schools.

State why the problem deserves new research. For basic research, the statement about importance might involve the need to resolve any inconsistency in results of past work and/or extend the reach of a theoretical formulation. For applied research, this might involve the need to solve a social problem or treat a psychological disorder. When research is driven by the desire to resolve controversial issues, all sides in the debate should be represented in balanced measure in the introduction. Avoid animosity and ad hominem arguments in presenting the controversy. Conclude the statement of the problem in the introduction with a brief but formal statement of the purpose of the research that summarizes the material preceding it. For literature reviews as well as theoretical and methodological articles, also clearly state the reasons that the reported content is important and how the article fits into the cumulative understanding of the field.

2. Method

2.1. Model of the Research

In the research, mixed research method was used to benefit from the advantages of quantitative and qualitative research methods. Mixed methods require combining or integrating qualitative and quantitative research and their data in a study (Creswell, 2013). In the study, Stufflebeam's Context Input Process and Product Evaluation Model was used as the program evaluation model, which provides the opportunity for comprehensive and systematic evaluation.

2.2. Statement of Research and Publication Ethics

In this study, ethics committee permission was obtained from Hatay Mustafa Kemal University Social and Human Sciences Scientific Research and Publication Ethics Committee with 13 meeting numbers and 03 decision number on 06.12.2021.

2.3. Research Population and Sample

The universe of the research consists of physical education teacher candidates who took the Teaching Practice course in the 2021-2022 academic fall semester, practice teachers working in schools affiliated to the Ministry of National Education and practice instructors. The sample of the study consisted of 4th grade students who took the teaching practice course at Hatay Mustafa Kemal University School of Physical Education and Sports, the practice teachers of these students and their advisors. Since there is no generalization concern in qualitative data, a working

group was formed during the data collection process. The teaching staff (n:7) and the practice teachers (n:7) were selected to make the study group suitable for maximum diversity sampling. The purpose of maximum diversity sampling is to create a relatively small sample and to reflect the diversity of individuals who may be a party to the problem studied in this sample at the maximum level (Yıldırım & Şimşek, 2013).

2.4. Data Collection Tools

The data collection tools of the research are the Teaching Practice Evaluation Questionnaire and Semi-Structured Interview Form developed by Aslan and Sağlam (2017). The semi-structured interview form was prepared by the researcher as a secondary data collection tool used in the study. It is stated that the questionnaire has high reliability (Cr Alpha=.975). The most powerful feature of interviews used in qualitative research is that they provide an opportunity to obtain information about what we cannot see and to make alternative explanations about what we see (Glesne, 2013). In the development of the form, the literature on teaching practice was reviewed and the results obtained from the quantitative data were taken into account. Expert opinion on the draft form prepared in this direction was sought.

2.5. Data Collection and Analysis

In the study, data were collected in two stages: In the first stage, quantitative data were collected first, and in the second stage, semi-structured interviews were conducted with 7 practice teachers and 7 instructors in order to explain the quantitative data in more detail. The SPSS package program was used in the analysis of the quantitative data obtained in the study, and the mean and standard deviation values for each item were included. The following value ranges are based on the interpretation of the obtained arithmetic means: 1.00-1.80 = Strongly Disagree, 1.81-2.60 = Mostly Disagree, 2.61-3.40 = Moderately Agree, 3.41-4.20 = Mostly Agree, 4.21-5.00 = Strongly Agree. In the analysis of qualitative data, descriptive analysis technique was used. Direct quotations are included in order to ensure the validity and reliability of the qualitative data. In descriptive analysis, data is described, explained, interpreted according to predetermined themes, and some results are reached by establishing cause-effect relationships (Yıldırım & Şimşek, 2013).

3. Results

While presenting the findings, firstly, quantitative data related to each dimension were included. After this, qualitative data that will explain the quantitative data are included.

Table 1: Demographic characteristics of teacher candidates constituting the quantitative sample of the study

		n	Percentage (%)
Gender	Male	22	34.9
	Female	41	65.1
Age	20	2	3.2
	21	25	39.7
	22	16	25.4
	23	12	19.0
	24	4	6.3
	25	2	3.2
	27	1	1.6
	39	1	1.6
Practice Schools	Sports High School	8	12.7
	B.K. Anatolian High School	6	9.5
	E.B. Vocational and Technical A.H.S.	7	11.1
	H.Ö. Anatolian High School	9	14.3
	Y.S.M. Vocational and Technical A.H.S.	7	11.1
	A.H.S.	6	9.5
	P.R. Vocational and Technical A.H.S.	2	3.2

O. Middle School	9	14.3
A. Middle School	9	14.3
N. Middle School		
Total	63	100.0

Table 2: Descriptive values regarding the scores given by the teacher candidates to the items in the context dimension

Items	n	X	Ss
1. TPC is a must have course in all teacher education programs.	63	4.77	.58
2. TPC is a course that supports the theoretical courses in the field of teaching profession.	63	4.65	.69
3. TPC is a course that gives pre-service teachers the opportunity to apply what they have learned in the school environment.	63	4.85	.47
4. TPC is an important course for pre-service teachers to develop their skills related to the teaching-learning process.	63	4.87	.38
5. TPC has an important place in teacher training policy.	63	4.69	.63
6. It is the right choice to give TPC in the last year of teacher education..	63	3.31	1.38
7. The total time allocated for the TPC is sufficient to achieve the objectives of the course.	63	3.46	1.35
8. TPC has a solid philosophical foundation.	63	3.63	1.18
9. The roles and responsibilities of TPC's faculty and school cooperation stakeholders (school administration, responsible practice teacher, responsible lecturer, teacher candidate) are defined in detail.	63	3.93	1.24
10. The principles of conducting the teaching-learning process of the TPC are clearly defined.	63	3.92	1.22
11. There is sufficient explanation of the evaluation process of the TPC.	63	3.69	1.21
12. The skills (lesson planning, classroom management, etc.) intended to be developed in the TPC program are well balanced	63	4.07	.90
13. There are necessary conditions in practice schools for TPC to be effective.	63	3.20	1.34

(TPC: Teaching Practice Course, PT: Practice teacher, L: Lecturer)

In Table 2, the arithmetic mean of the physical education teacher candidates' views on the items related to the Context dimension varies between 3.20 and 4.85. The items on which physical education teacher candidates expressed the most negative opinion in terms of context, there are necessary conditions in practice schools for the 13- TPC to be effective ($X=3.20$ - Moderately Agree). Giving 6- TPC in the last year of teacher education is the right choice ($x=3.31$ - Moderately Agree). Physical education teacher candidates expressed opinions on the items other than these items at the level of Mostly Agree and Totally Agree. The opinions of the practice teachers and instructors regarding the survey data are as follows:

PT (n:1)/ L (n:1): I think that TPC does not have a very important place in teacher training policy. PT: TPC should not be given in the last year of teacher education. If today's education system focuses on learning by doing, I believe that the application of this course should be as important (n:2). L: The total time allocated for the TPC is not sufficient to achieve the objectives of the course (n:3). PT (n:2)/L (n:4): Necessary conditions are not very available in practice schools for TPC to be effective. Some of them have a hall, and some of them even have insufficient open spaces.

The items that physical education teacher candidates gave the most negative opinion in the questionnaire about teaching practice were related to the starting time of the practice, the total duration of the practice and the necessary conditions in the practice schools. It was observed that this situation was also observed in the qualitative data, and some of the practice teachers and instructors were of the opinion that the teaching practice should be extended over a longer period of time and the conditions in the practice schools were insufficient.

Table 3: Descriptive values regarding the scores given by the teacher candidates to the items in the input dimension

Items	n	X	Ss
1.The objectives/benefits of the TPC are clearly and comprehensibly defined.	63	4.19	.83
2.The aims/achievements of the TPC respond to the training needs of teacher candidates.	63	4.20	.74
3. The aims/benefits of the TPC are of a nature that can be translated into behavior.	63	4.20	.82
4.The content of the TPC has been prepared in accordance with the purposes.	63	3.98	1.12
5. The content of the TPC is sufficient to meet the needs of teacher candidates.	63	3.57	1.08
6. The activities to be carried out within the scope of the TPC are described in detail.	63	3.60	1.18
7.The activities planned in the TPC are consistent with the objectives of the course.	63	4.12	.97
8.In TPC, assessment and evaluation studies were determined in accordance with the objectives of the course.	63	3.98	1.25
9. The instructors conducting the TPC have the necessary qualifications.	63	4.04	1.24
10.TPC's practice teachers have the necessary qualifications.	63	4.26	1.00
11.The administrators of the schools selected for TPC have the features to support the process.	63	3.84	1.31
12.Pre-service teachers start the TPC with the necessary prior knowledge.	63	3.95	1.24
13.The number of pre-service teachers a teacher is responsible for is appropriate in the TPC.	63	4.28	1.00
14.The number of teacher candidates for which an instructor is responsible is appropriate in the TPC.	63	4.28	1.12
15.The conditions (physical, teaching staff, equipment, etc.) of the schools selected for the TPC meet the needs.	63	3.61	1.22
16.At the beginning of the TPC, the necessary material is given to the teacher candidates.	63	3.26	1.22
17.The information/explanations in the materials prepared for the TPC are sufficient.	63	3.50	1.35

In Table 3, the arithmetic mean of the physical education teacher candidates' views on the items in the Input dimension varies between 3.26 and 4.28. The item that physical education teacher candidates expressed the most negative opinion in this dimension, the necessary material is given to the teacher candidates at the beginning of 16-TPC ($X=3.26$ -Moderately Agree). The opinions of the practice teachers and instructors regarding the survey data are as follows:

PT: I don't think that prospective teachers have enough pre-knowledge to take the TPC (n: 1). L: I do not think that the outcomes of the TPC meet the training needs of teacher candidates (n:2). L: The content of the TPC does not meet the needs of pre-service teachers and the activities to be carried out within the scope of TPC are not defined in detail (n:6). L: In TPC, assessment and evaluation studies suitable for the purposes of the course were not determined (n:2). L: The administrators of the schools selected for TPC do not have the characteristics to support the process (n:4). L: The conditions of the schools selected for TPC do not meet the needs (n:4). L: At the beginning of the TPC, the necessary material is partially given to the pre-service teachers and these materials are not clear enough (n:4).

In the interviews with the instructors, the opinion that is common with the pre-service teachers in terms of input; It is related to the fact that the necessary materials are not given to the teacher candidates when starting the TPC or that there are not enough materials.

Table 4: Descriptive values regarding the scores given by the teacher candidates to the items in the process dimension

Items	n	X	Ss
1. In TPC, the activities of the course are carried out in line with the objectives.	63	4.15	1.06
2. In TPC, sufficient time is given to the activities of the course.	63	4.06	1.07
3. A two-hour seminar course is held regularly at TPP.	63	3.00	1.68

4. Pre-service teachers are informed about TPP (course objectives, activities, practice schools, etc.).	63	4.07	1.02
5. Pre-service teachers make regular observations in the classroom at TPP.	63	4.12	1.21
6. Pre-service teachers observe how the teacher conducts the lesson in TPP.	63	4.39	.97
7. Pre-service teachers observe how the mentor teachers manage the classroom in TPP.	63	4.38	1.03
8. Pre-service teachers observe what the practice teachers do during the day at TPP.	63	4.15	1.22
9. Pre-service teachers observe students inside and outside the classroom at TPP.	63	4.26	1.03
10. Pre-service teachers examine the curriculum of their fields at TPP.	63	4.28	.99
11. In TPP, teacher candidates examine the teaching materials used in their fields at school.	63	4.25	.93
12. Pre-service teachers examine the lesson plans prepared by the practice teachers at the TPP.	63	4.34	.91
13. Pre-service teachers prepare lesson plans at TPP.	63	4.07	1.16
14. Pre-service teachers examine the lesson plans they have prepared in TPP with the practice teachers.	63	3.92	1.15
15. Pre-service teachers examine the lesson plans they have prepared in TPP with the instructor.	63	3.74	1.28
16. Pre-service teachers regularly teach at TPP under the supervision of practice teachers.	63	4.25	.94
17. Pre-service teachers evaluate the lessons they teach at the TPP with the practice teachers.	63	4.20	.96
18. Pre-service teachers teach at TPP under the supervision of instructors.	63	3.55	1.53
19. Pre-service teachers evaluate the lessons they have studied at the TPP with the instructors.	63	3.71	1.33
20. Pre-service teachers work in collaboration with their groupmates at TPP.	63	4.42	.91
21. Pre-service teachers observe their groupmates while they are teaching at the TPP.	63	4.39	.90
22. Pre-service teachers evaluate the lessons they have studied at the TPC with their groupmates.	63	4.44	.91
23. Pre-service teachers use necessary instructional technologies while teaching at TPP.	63	3.92	1.19
24. Pre-service teachers use different teaching methods and techniques while teaching at TPP.	63	4.30	1.05
25. Pre-service teachers develop teaching materials for the courses they will teach at the TPP.	63	3.80	1.33
26. Pre-service teachers carry out studies (preparing exam questions, evaluating exam papers, etc.) aimed at measuring and evaluating students at TPP.	63	3.92	1.15
27. Practice teachers are constantly helping teacher candidates in TPP.	63	4.47	.75
28. Other teachers at the school attended for TPP also assist teacher candidates.	63	4.19	1.24
29. Instructors constantly assist teacher candidates in TPP.	63	4.15	1.20
30. School administrations assist teacher candidates in TPP.	63	4.00	1.19
31. Pre-service teachers communicate regularly with the responsible lecturers at TPP.	63	4.36	.98
32. Pre-service teachers communicate well with students studying at the practice school at TPP.	63	4.46	.83
33. Practice teachers are good models for teacher candidates in TPP.	63	4.25	1.10
34. Pre-service teachers are preparing a useful product file in TPP.	63	4.39	.99
35. In TPC, process and product evaluations are made in determining the success of teacher candidates.	63	4.15	1.19

(TPP: Teaching Practice Process)

In Table 4, the arithmetic mean of the physical education teacher candidates' views on the items in the Process dimension varies between 3.00 and 4.39. The item in which the physical education teacher candidates expressed

the most negative opinion on the process dimension was the item ($X=3.00$ - Moderately Agree) that two-hour seminar courses are held regularly at 3-TPP. The opinions of the practice teachers and instructors regarding the survey data are as follows:

PT: There are teacher candidates who stated that the two-hour seminar course is not held regularly in TPP (n:4). L: A two-hour seminar course is not held regularly in TPP (n:3). PT: Pre-service teachers do not participate much in the assessment and evaluation of students in TPP (n:4). L: Pre-service teachers do not carry out studies to measure and evaluate students in TPP (n:5). PT: Other teachers in the school do not help teacher candidates for the teaching practice course, and we do not see that school administrations help teacher candidates during the teaching practice process (n:4). L: In TPP, the activities of the course are carried out partially in line with the objectives and sufficient time is not given to the activities of the course (n:4). L: Pre-service teachers are not informed on time about TPP (n:3). L: Pre-service teachers teach under the supervision of practice teachers at TPP, and pre-service teachers do not evaluate their lessons with practice teachers (n:7). L: Pre-service teachers do not have the necessary teaching technologies while teaching during the teaching practice process and they have difficulties in developing teaching materials (n:4). L: At TPP, we cannot always help teacher candidates. Because there is no planning about this and the course density is too high. Accordingly, we cannot communicate regularly with pre-service teachers and practice teachers (n:7).

Considering the common features of these substances; While the practice teachers stated that they did their responsibilities in this process, the instructors stated that they could not.

Table 5: Descriptive values regarding the scores given by the teacher candidates to the items in the product dimension

Items	n	X	Ss
1. With the TPC, teacher candidates got to know their fields better.	63	4.66	.74
2. With the TPC, pre-service teachers understood the importance of their field better.	63	4.63	.82
3. With the TPC, teacher candidates got to know the curriculum(s) applied in the school more closely.	63	4.65	.72
4. Lesson plan preparation/lesson planning skills of teacher candidates improved with TPC.	63	4.63	.74
5. With TPC, pre-service teachers' ability to recognize students' individual differences improved.	63	4.68	.64
6. With TPC, pre-service teachers' skills in determining students' readiness improved.	63	4.55	.83
7. With TPC, pre-service teachers' ability to start the lesson more effectively improved.	63	4.57	.87
8. With TPC, pre-service teachers' ability to use different teaching methods and techniques effectively improved.	63	4.42	.92
9. With TPC, the skills of pre-service teachers to use instructional technologies while teaching have improved.	63	4.20	1.23
10. Classroom management skills of pre-service teachers improved with TPC.	63	4.58	.61
11. With TPC, teacher candidates' ability to use time efficiently while teaching/time management skills improved.	63	4.53	.77
12. With TPC, pre-service teachers' skills in solving problems that arise in the classroom have improved.	63	4.55	.73
13. With TPC, pre-service teachers' ability to measure and evaluate student achievement improved.	63	4.49	.83
14. With TPC, pre-service teachers' skills in preparing the materials to be used in the lesson improved.	63	4.38	.95
15. With TPC, the skills of pre-service teachers to communicate effectively with students while teaching the lesson improved.	63	4.60	.79
16. With TPC, the skills of pre-service teachers to ensure active participation of students while teaching the lesson have improved.	63	4.65	.62
17. With TPC, the pre-service teachers' ability to give effective feedback/corrections to students while teaching the lesson improved.	63	4.65	.59

18. With TPC, teacher candidates' ability to reinforce students while teaching the lesson improved.	63	4.58	.63
19. With TPC, the teacher candidates' ability to motivate students to the lesson improved while they were teaching the lesson.	63	4.65	.59
20. With TPC, the skills of pre-service teachers to use special teaching methods related to their fields have improved.	63	4.58	.63
21. With TPC, the pre-service teachers' skills of giving instructions/explanations to the students while teaching the lesson improved.	63	4.69	.58
22. TPC enabled pre-service teachers to develop more positive attitudes towards the teaching profession.	63	4.66	.59
23. TPC helped prospective teachers to get to know the teaching profession better.	63	4.88	.36

In Table 5, the average of the physical education teacher candidates' opinions on the items in the Product dimension varies between 4.20 and 4.88. The item 23-TPC, in which the physical education teacher candidates expressed the most positive opinion on this dimension, helped the teacher candidates to know the teaching profession better ($X=4.88$ - Totally Agree). Physical education teacher candidates expressed their views on these items at the level of Totally Agree. These findings show that the candidates consider the teaching practice to be effective at a sufficient level. The opinions of the practice teachers and instructors regarding the survey data are as follows: Most of the practice teachers and instructors expressed a completely positive opinion on the product dimension. *PT: With TPC, I think that pre-service teachers' skills in using instructional technologies while teaching, their ability to measure and evaluate student achievement, and the skills of pre-service teachers to prepare materials to be used in the course are not sufficiently developed (n: 1).*

4. Discussion

In this study, it was aimed to evaluate the teaching practice course based on Stufflebeam's Context, Input, Process and Product Evaluation Model (CIPP) according to the Views of the Teaching Staff, Practice Teachers and Teacher Candidates, and for this purpose, quantitative and qualitative data were collected. In the context dimension of the study; The arithmetic mean of the physical education teacher candidates' views on the items varies between 3.20 and 4.85. According to the opinions of the physical education teacher candidates in the context dimension, it has been determined that the necessary conditions are not provided in the practice schools for the efficiency of the TPC and it is not the right choice to give the TPC in the last year of teacher education. The opinions of the practice teachers and instructors in the qualitative data are; TPC does not have a very important place in teacher training policy, TPC should not be given in the last year of teacher education, if today's education system focuses on learning by doing, the application of this course should be as important as the total time allocated for the course. It is not enough for the realization of the program and the necessary conditions are not available in practice schools for the TPC to be effective. Some practice schools have gymnasiums, and in others, even open spaces are insufficient.

The items that physical education teacher candidates gave the most negative opinion in the questionnaire about teaching practice were related to the starting time of the practice, the total duration of the practice and the necessary conditions in the practice schools. It was observed that this situation was also observed in the qualitative data, and some of the practice teachers and instructors were of the opinion that the teaching practice should be extended over a longer period of time and the conditions in the practice schools were insufficient.

The arithmetic mean of the physical education teacher candidates' views on the items in the input dimension varies between 3.26 and 4.28. Pre-service physical education teachers thought that too many necessary materials were not provided at the beginning of the TPC. Considering the common view of practice teachers and instructors in qualitative data; They stated that pre-service teachers do not have enough pre-knowledge required for TPC and that the achievements of TPC do not meet their needs in educating prospective teachers. Considering only the views of the instructors in the input dimension; The content of the TPC does not meet the needs of teacher candidates and the activities to be carried out within the scope of TPC are not defined in detail, assessment and evaluation studies are not determined in accordance with the objectives of the course in the TPC, the administrators

of some schools selected for the TPC do not have the features to support the process and the conditions do not meet the needs because in some of them sports activities. While there is a living room, it is emphasized that even the garden is insufficient in some of them. In the interviews with the instructors, the opinion that is common with the pre-service teachers in terms of input; It is related to the fact that the necessary materials are not given to the teacher candidates when starting the TPC or that there are not enough materials.

The arithmetic mean of the physical education teacher candidates' views on the items in the process dimension varies between 3.00 and 4.39. Physical education teacher candidates moderately agreed with the item that a two-hour seminar course is held regularly in TPP in the process dimension. In the interviews with the practice teachers and instructors, the common view with the pre-service teachers; the two-hour seminar course is not held regularly in TPP. The common view of practice teachers and teaching staff is; It was found that pre-service teachers did not participate much in the studies on measuring and evaluating students in TPP and they did not carry out studies on assessment and evaluation of students in TPP.

Another issue that the instructors mostly focus on is; It was stated that they could not always help the teacher candidates in TPP. Because they complained that there was no planning for this lesson and that they could not follow the pre-service teachers due to the high intensity of the lesson. Accordingly, regular communication cannot be established with teacher candidates and practice teachers.

The average of the opinions of the physical education teacher candidates about the items in the product dimension varies between 4.20 and 4.88. Physical education teacher candidates expressed a completely positive opinion on the product dimension. These findings show that the candidates consider the teaching practice to be effective at a sufficient level. Practice teachers and instructors also expressed positive views on the product dimension.

Looking at other studies: Selvi et al. (2017) stated that teacher candidates generally need some knowledge and skills during School Experience and Teaching Practice. They stated that these deficiencies are often knowledge and skills related to pedagogical content knowledge and content/content knowledge. In addition, they emphasized that they had difficulties in School Experience and Teaching Practice courses due to their inadequacy in subjects such as current-scientific-technological developments/information, pedagogical knowledge, and professional experience, and that they were eager to make up for their deficiencies. When the perspectives on School Experience and Teaching Practice courses are examined; It has been determined that pre-service teachers emphasize more on the advantages of these courses. While interpreting the advantages of these courses, it is seen that they often emphasize advantages such as gaining professional experience and awareness, liking the profession / interest. Despite this, some pre-service teachers stated that they had disadvantages due to the insufficient place and time of these courses in the program. Considering the opinions they have about the effects of the courses they took in the faculty on the profession, most of the pre-service teachers mentioned the inadequacies of these courses, while few of them stated that the theoretical and applied courses were sufficient for them. According to Aslan and Sağlam (2017) it is observed that the duration that is allocated to teaching practice are inadequate, that schools are not determined appropriately and teaching practice should be implemented in schools having different conditions, that teachers and academicians did not have the necessary competencies, that appropriate materials about teaching practice are not given to teacher candidates, and that many problems experienced in the process of teaching practice, and that teaching practice did not effective to develop some important professional skills of teacher candidates.

As a result of their studies, Tüfekçi-Can and Baştürk (2018) revealed that novice teachers gained experience in many different subjects thanks to their teaching English in a real classroom environment. The study also revealed that prospective teachers' positive views on teaching practice, practice teachers, practice instructors, and evaluating their own performance outweigh their negative opinions. The result of the study revealed that the Ministry of National Education and the Departments of Foreign Languages in the Faculties of Education should share the responsibility of providing a good quality education to the novice teachers. Özdaş and Çakmak (2018) stated that the emphasis was mostly on "experience" and "observation-imitation" in the research. While negative metaphors for the "difficulties" category were produced from the metaphors obtained for the Teaching Practice Course, it was determined that the metaphors for the other categories were positive. Kılınç et al. (2018) states that the

phenomenon of teaching practice consists of four components, namely seeing the importance of classroom management strategies and knowing the material to be used, gaining experience in the teaching profession, first step in teaching, and satisfaction with the teaching profession. Pre-service teachers describe the teaching practice process as a process where they see the importance of classroom management strategies and the use of materials in the classroom, increasing the quality of classroom teaching and helping students learn. According to Aslan and Sağlam (2018) The time allotted for teaching practice is not enough, schools in which teaching practice was applied don't have appropriate conditions, partners of teaching practice don't have enough qualifications and the student teacher weren't provided enough information prior to the teaching practice process. For all that, teaching practice course has generally led to positive outcomes.

In the study of Kırçiçek and Yüksel (2019), it was stated that academicians stated that the practice school was beneficial in terms of many skills about its contribution to the teaching profession, and that they thought that the practice teacher contributed to the teaching contribution. Yücesoy-Özkan et al. (2019)'s research findings from the teaching staff of the teacher candidates; It reveals that they have professional expectations such as sharing knowledge and experience, guiding and directing, being a model, systematic and regular work, and personal expectations such as establishing positive communication, supporting and helping, being tolerant, listening and solving problems, and being easily accessible.

Topal and Uzoğlu (2020) stated that during the teaching practice process of primary school teacher candidates; they found that they encountered problems at 4 main points, namely the problems arising from the teachers in the schools, the school administrators, the students in the schools and the personnel working in the schools, and that these problems stemmed from the lack of coordination between the relevant institutions and the personnel organizing the process. In Batmaz and Ergen's (2020) research, faculty members and teachers stated that the Teaching Practice course contributed to teacher candidates in terms of carrying theory into practice, effective communication in school, developing positive professional attitudes, and experiencing the school and classroom environment; on the other hand, they stated that they encountered problems regarding the duration of the course and the use of educational technologies in the course.

Çevik and Müldür (2021) revealed three categories as positive experiences, problems and contributions as a result of the research. The results showed that the participants had positive experiences in preparing and implementing a lesson plan for reading skills, classroom management, communication between group members, and doing research. It has been seen that the problems are related to the process, model and negative emotions. It has been determined that the problems in the process are related to issues such as finding resources for reading activities, preparing lesson plans suitable for different classes. Cengiz (2021), within the scope of the study, showed that the observations made by the pre-service teachers in the classrooms enabled them to learn the characteristics of the students. In addition to these, pre-service teachers are pleased that the practice teachers give them responsibility, have information about the students, and share their experiences with them. Again, a pre-service teacher expressed an opinion that the expectations of the practice teacher and the practice instructor from the teacher candidates do not match. Perhaps the most striking point under this topic is that most of the pre-service teachers find the feedback given to them by the practice teacher insufficient. Pre-service teachers state that both observing and being observed enable them to see different perspectives. In addition, some pre-service teachers stated that observing their peers enabled them to see different methods and techniques and to obtain information about the field. In addition to these, most of the pre-service teachers stated that taking notes while observing their peers was helpful in keeping what was done at the end of the lesson in mind. All pre-service teachers stated that they saw the benefit of preparing a lesson plan during the teaching practice. The pre-service teachers stated that the lesson plans they prepared helped them prevent the disruptions in the classroom during the teaching process and guide them when they were stuck.

According to the participants in the study of Tonga and Tantekin-Erden (2021), some of the problems encountered in the Teaching Practice process are the disagreements between the pre-service teacher and the mentor teacher or the difficulties experienced in classroom management. When looking at the solution suggestions of the participants for these problems, suggestions such as keeping the pre-service teacher and the practice teacher in constant communication or using interesting methods to facilitate classroom management are included. In the part of the

responsibilities of individuals, it was mentioned that the practice instructors should be involved in the process as much as the teacher candidates and practice teachers.

4.1. Conclusion

In the light of the findings obtained; in the field of Physical Education and Sports, as in every field, there must be a strong communication between the practice school, the teacher candidate and the teaching staff triangle in order for the Teaching Practice courses to reach their goals in the teacher training programs. For this, it is recommended to benefit from the views of teacher candidates, instructors and practice school staff, and it is recommended that new configurations be made for these courses. Necessary precautions should be taken in order not to repeat the difficulties faced by pre-service teachers within the scope of Teaching Practice courses, in which they gain professional experience and gain opinions. In order to eliminate such negative approaches and difficulties, it is necessary to ensure very good coordination between the school and the faculty.

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Investigation of Mindfulness Levels of Individuals Playing Team and Combat Sports

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Abstract

In this study, it is aimed to examine the mindfulness levels of individuals who do team and fighting sports. The research was conducted using the descriptive survey model. While the universe of the research consists of active athletes in clubs affiliated to Provincial Directorates of Sports, the sample consists of a total of 748 athletes, 469 men and 279 women, selected by random sampling method in 2022 actively doing sports in different branches. The data were collected with the athlete's mindfulness scale, which was adapted into Turkish by Tingaz (2020). The collected data were analyzed with the SPSS 20 program. Percentage and frequency values were taken for the demographic variables of the participants, distributions for the fight and team sports branches. Since the data were not normally distributed, non-parametric test methods were used. Kruskal-Wallis H test was used for group comparisons and Mann-Whitney U tests were used for pairwise comparisons. There was no significant difference in the sub-dimensions of "awareness," "no judgment," "refocus" and "mindfulness" according to the gender and age variable of the athletes. When the level of conscious awareness is examined according to the type of sport; There is no significant difference in the level of "no judgment," "refocusing" and "mindfulness". In the "Awareness" sub-dimension of mindfulness, the difference was found to be significant in terms of sport type. When the mean rank in mindfulness and sub-dimensions is examined, the mean rank values in fighting sports are higher than in team sports. According to fighting sports branches, there is no significant difference in the sub-dimension of "no judgment". In the "Awareness" sub-dimension of conscious awareness, the difference was found to be significant according to fighting sports branches. As a result, when the fighting sports branches are examined, it has been determined that the Kickboxing branch has the highest average value of the group in mindfulness and sub-dimensions.

Keywords: Mindfulness, Individuals Playing Team, Team Sports, Fighting Sports, Sports Type

1. Introduction

1.1 Introduce the Problem

Sport is an educational and entertaining activity that can be done individually or collectively, has its own rules, helps to develop physical and mental abilities, and is generally competitive based (Morpa Spor Encyclopedia,

1997). Sports branches are categorized in many ways. The most widely known of these is "Team Sports and Individual Sports". Team sports are sports where teams of players who share the same goals face each other in competition. Fighting sports is the common name of sports branches that involve competition and are carried out within the framework of certain rules. It is the art of self-defense of athletes. Team sports and individual sports have many common goals and features, as well as important points of differentiation. These differences can be both physiological and psychological (Yarayan et al., 2018). Fighting sports (martial arts, martial arts), which attract attention among individual sports and are the subject of discussion, may require advanced physical and psychological characteristics, although the branches expressed as "martial arts" in English include close contact and hardness. Individual sports involving such close contact and hardness can have their own unique culture and characteristics. There is a struggle in every sport, but the struggle in martial arts is in a different dimension (Bowman, 2016).

Historically, mindfulness comes from the Buddhist philosophy of meditation. The word 'Sati' used in Pali, the ancient Buddhist written language, is known as mindfulness (Goldstein & Stahl, 2010). Sati, means mindfulness and remembering (Alidina, 2010). Mindfulness, which originates from the traditions of Asian thought, has been secularized and started to be used in many areas today (Zelazo & Lyons, 2012). Mindfulness is to increase awareness of the mind and body, to live here and now, to learn how to directly relate to life (Goldstein & Stahl, 2010). Mindfulness means paying attention to the purpose in the present moment with attitudes of compassion, curiosity, and acceptance. Being mindful, the person discovers how to live in harmony with the present moment rather than the sorrows and regrets of the past, the worries and worries of the future (Alidina, 2010). Mindfulness (awareness) prevents the person from getting out of autopilot and giving habitual responses (Gardner & Moore, 2007). The way out of autopilot is to be a moment-to-moment observer of one's own mental processes. In this way, the person can realize the fleeting nature of all these without integrating with his own feelings, thoughts and experiences. He can watch his body like a spectator watching television from outside, rather than being a part of the game. This allows the person to distance himself from his feelings and thoughts (Marchand, 2015). Mindfulness practices first focus on 'breathing'. Then, it includes being in harmony with what happens in the body and mind and being able to witness one's own experiences (Napoli, Krech, & Holley, 2005).

Mindfulness is defined as, "an open-hearted, moment-to-moment non-judgmental awareness" (Kabat-Zinn, 2005). Mindfulness contributes to both high levels of awareness and acceptance of in the moment reality (Kabat-Zinn, 1994). Aligned with the core tenant of mindfulness is the concept of acceptance, which can be conceptualized as "taking a stance of nonjudgmental awareness and actively embracing the experience of thoughts, feelings and bodily sensations as they occur" (Hayes et al, 2004). Mindfulness allows the individual to consider all internal and external information that is occurring which can ultimately allow them to experience a changed relationship to habitual reactions. For example, instead of athletes having intense fear before a competition, using avoidant thinking and not focusing on performance, athletes could notice fear and accept it. With such mindfulness attention, athletes would then be freed to focus their attention on task relevant cues (Gardner & Moore, 2007).

Schools have become a stressful environment that makes it difficult for students to learn due to high academic achievement expectations of administrators and teachers. Trying to learn in a stressful environment causes both the academic performance of students to decrease and their self-confidence to be damaged (Knothe & Marti, 2018). Mindfulness practices increase students' kinesthetic awareness and add meaning to their physical movements (Ennis, 2017). It enables students to avoid mechanical movements and get off the autopilot, transforming all movements into a more aware, natural and internal state (Lu, 2004). Physical education teachers are as concerned with the emotional health of students as they are concerned with their physical health. It is an important part of physical education that students become aware of their own emotions and learn to manage them ("School Specialty," 29 April 2020).

According to Martin and Ergas (2016), using mindfulness practices in physical education classes enables students to develop a more concrete understanding of the world. They understand, recognize, and manage their emotions and realize how their body relates to it. Body scanning practices, which are included in mindfulness practices, can be used for the body that begins to bore itself with increased feelings of stress and anxiety. This practice helps to

realize the tension in the body and brings positive developments in stress management. This can improve body flexibility (Knothe and Marti, 2018).

Mindfulness meditation has been demonstrated to be efficacious with a plethora of the non-sport clinical populations (Keng et al, 2011). There is a growing interest in the sport realm to use mindfulness interventions to ultimately contribute to sport performance. One reason may be that performance anxiety is a chronic, core challenge for sport psychologists to address with their athlete clients (Williams, 2010). Enhanced mindfulness, through mindfulness meditation practice, has been found to reduce many symptoms associated with anxiety (Baer, 2003) and mindfulness practice has been associated with the ability to let go of and decreased occurrence of negative thoughts (Frewen et al, 2008).

1.2 Importance of the Problem

Today, the widespread practice of fighting sports in our country has increased the interest in fighting sports. This interest has also increased scientific studies on fighting sports. Research on fighting sports and team sports is limited in our country. This research, which was carried out with the aim of examining the mindfulness levels of athletes who are engaged in team and fighting sports, can contribute to the limited literature and form a scientific basis for future research on similar subjects. Therefore, the research is considered to be important.

1.3 State Hypotheses and Their Correspondence to Research Design

Considering the above information and considering the unique structures of fighting sports among individual sports, the aim of this research is to examine the mindfulness levels of team and fighting athletes. In other words, it was tried to determine whether there was any difference between the branches. The following hypotheses were tested in the study. The following hypotheses were tested in the study. What is the mindfulness level of those who do team and fighting sports? Are there differences according to the branches? In this context, answers to the following problems will be sought; Is there a significant difference between the gender, age and mindfulness level of the athletes who are interested in team and fighting sports?

2. Method

The survey type descriptive research method was used in this study, which examines the athlete's mindfulness levels of active athletes engaged in team and fighting sports.

2.1 Participant (Subject) Characteristics and Sampling Procedures

The population of the research consists of active athletes working in clubs affiliated to the Provincial Directorates of Sports, while the sample consists of a total of 748 athletes, 469 men and 279 women, selected by random sampling method in 2022 actively doing sports in different branches.

2.2 Data Collection and Tools Used

The data was collected via Google Forms. Two different data collection tools were used in the study. In order to determine the demographic characteristics of active athletes (age, gender, branch in fighting and team sports), a Personal Information Form consisting of four questions created by the researcher was used. To determine the mindfulness levels of the participants, Thienot et al. (2014) developed by and adapted into Turkish by Tingaz (2020) Athlete Mindfulness scale was used. The scale consists of 3 sub-dimensions, Awareness (1-5), Non-Judging (6-10), and Refocusing (11-15) and a total of 15 items. The Cronbach's alpha internal consistency coefficient of the scale was calculated as .82.

2.3 Analysis of Data

Data analysis was performed with the SPSS Statistic 20 program. Percentage frequency values were taken for the demographic variables of the participants, distributions for the fight and team sports branches. Non-parametric test methods were used because the normal distribution and variance of the data showed heterogeneity in terms of groups. Kruskal-Wallis H test was used for group comparisons and Mann-Whitney U tests were used for pairwise comparisons. Statistical significance was accepted as 0.05.

3. Results

Table 1: Frequency distribution of socio-demographic characteristics

Socio-Demographic Characteristics	Frequency (n)	Percent (%)	
Age	7-14	271	36.2
	15-23	401	53.6
	24-30	35	4.7
	31-37	16	2.1
	38 years and older	25	3.3
	Total	748	100.0
Gender	Man	469	62.7
	Woman	279	37.3
	Total	748	100.0
Fighting Sports	Boxing	145	19.4
	Wrestle	46	6.1
	Judo	16	2.1
	Karate	38	5.1
	Kick box	14	1.9
	taekwondo	99	13.2
Team Sport	Basketball	53	7.1
	Football	268	35.8
	Handball	36	4.8
	Volleyball	33	4.4

When the demographic values in Table 1 are examined, 62.7% of the research consists of 469 people with men, 37.3% with 279 women and a total of 748 athletes. According to the age variable, 36.2% are 7-14 years old, 53.6% are 15-23 years old, 4.7% are 24-30 years old, 2.1% are 31-37 years old and 3% are It has been observed that 3 of them are athletes aged 38 and over. When fighting sports are examined; 19.4% were interested in boxing, 6.1% in wrestling, 2.1% in judo, 5.1% in karate, 1.9% in kickboxing and 13.2% in taekwondo. When team sports were examined, it was seen that 7.1% of them were interested in basketball, 35.8% in football, 4.8% in handball and 4.4% in volleyball.

Table 2: Comparison of athletes' mindfulness levels according to gender variable (Mann-Whitney U Test)

Factors	Gender	N	Mean Rak	U	Z	p
Awareness	Man	469	365.62	61263	-1.467	.142
	Woman	279	389.42			

Non-judgment	Man	469	367.51	62148	-1.15	.25
	Woman	279	388.25			
Refocus	Man	469	373.49	64950	-.167	.867
	Woman	279	376.2			
Mindfulness	Man	469	367.62	62198.5	-1.13	.258
	Woman	279	386.07			

In Table 2, there is no significant difference in the sub-dimensions of "Awareness", "Non-judgment", "Refocus" and " Mindfulness" according to the gender variable of the athletes ($p>0.05$).

Table 3: Comparison of athletes' mindfulness levels according to age variable (Kruskal-Wallis H Test)

Factors	Age	N	Mean Rak	X^2	sd	p
Awareness	7-14	271	365.03	2.12	4	.714
	15-23	401	375.64			
	24-30	35	387.77			
	31-37	16	420.31			
	38 age and older	25	410.86			
Non-judgment	7-14	271	356.39	5.504	4	.239
	15-23	401	385.83			
	24-30	35	418.57			
	31-37	16	368.31			
	38 age and older	25	331.24			
Refocus	7-14	271	387.81	3.858	4	.426
	15-23	401	368.42			
	24-30	35	375.91			
	31-37	16	289.72			
	38 age and older	25	380.04			
Mindfulness	7-14	271	366.97	2.022	4	.732
	15-23	401	378.32			
	24-30	35	413.94			
	31-37	16	354.03			
	38 age and older	25	352.68			

In the Kruskal-Wallis H test, which was performed to determine the significant difference in the mindfulness level and sub-dimensions of the athletes according to the age variable in Table 3, no significance was found in the sub-dimensions of "Awareness", "Refocusing", "Non-judgment" and "Mindfulness" ($p>0.05$).

Table 4: Comparison of athletes' mindfulness levels according to sports type (Mann-Whitney U Test)

Factors	Sports Type	N	Mean Rak	U	Z	p	
Awareness	Individuals	Playing	390	358.43	63542.5	-2.138	.033*
	Team						
Non-judgment	Fighting Sports		358	392.01	68203	-.546	.585
	Individuals	Playing	390	370.38			
	Team						
Refocus	Fighting Sports		358	378.99	68946	-.294	.769
	Individuals	Playing	390	372.28			
	Team						

	Fighting Sports	358	376.91			
Mindfulness	Individuals	Playing	390	367.03		
	Team				66895.5	-1.13
	Fighting Sports		358	382.64		.323

*p<0,05

In Table 4, when the level of mindfulness of the athletes according to the sport type variable is examined; There is no significant difference in the levels of "No Judgment", "Refocusing" and "Mindfulness" ($p>0.05$). In the "Awareness" sub-dimension of mindfulness, the difference was found to be significant in terms of sport type ($p<0.05$). When the mean rank in mindfulness and sub-dimensions is examined, the mean rank values in fighting sports are higher than in team sports.

Table 5: Comparison of mindfulness levels of athletes according to their fighting branches (Kruskal-Wallis H Test)

Factors	Fighting Sports	N	Mean Rak	X^2	sd	p
Awareness	Wrestling ^a	46	203.95	17.465	5	.004*
	Judo ^{a,b}	16	130.44			
	Karate ^{b,c}	38	206.89			
	Kickboxing ^{b,d}	14	238.75			
	Taekwondo	99	181.34			
	Boxing ^{c,d}	145	163			
Non-judgment	Wrestling	46	199.68	7.487	5	.187
	Judo	16	138.34			
	Karate	38	195.32			
	Kickboxing	14	214.11			
	Taekwondo	99	173.08			
	Boxing	145	174.54			
Refocus	Wrestling ^a	46	169.61	17.781	5	.003*
	Judo ^b	16	158.5			
	Karate ^{a,b,c,d}	38	222.07			
	Kickboxing ^{a,b,x,y}	14	260.93			
	Taekwondo ^{c,x}	99	171.54			
	Boxing ^{d,y}	145	171.37			
Mindfulness	Wrestling ^a	46	195.75	18.497	5	.002*
	Judo ^{a,b}	16	138.75			
	Karate ^{b,c}	38	212.12			
	Kickboxing ^{a,b,d,x}	14	260.25			
	Taekwondo ^d	99	173,25			
	Boxing ^{c,x}	145	166,77			

*p<0.05 a,b,c,d,x,y: Superscripts indicate within-group differences. There is a difference in the average scores with the same letters. The difference between the groups was determined with the Mann-Whitney U test in pairs.

It does not show a significant difference in the sub-dimension of " Non-judgment" according to the branches of fighting sports ($p>0.05$).

In the "Awareness" sub-dimension of mindfulness, the difference was found to be significant according to fighting sports branches ($H=17.465$; $p<0.05$). According to the results of the double test between the groups, a significant difference was found between Wrestling branch and Judo and Boxing branch, Judo branch and Karate and Kickboxing branches, Karate and Boxing branches and Kickboxing and Boxing sports branches.

The difference in the level of "mindfulness" according to fighting sports branches was found to be significant ($H=18.497$; $p<0.05$). According to the results of the pairwise test between the groups; A significant difference was found between Wrestling and Judo and Kickboxing, Judo and Karate and Kickboxing, Karate and Boxing, Taekwondo and Kickboxing, and Boxing and Karate and Kickboxing.

When the fighting sports branches are examined, it has been determined that the Kick Boxing branch has the highest rank average value of the group in mindfulness and sub-dimensions.

4. Discussion

This study was carried out to determine the level of mindfulness of the athletes who are engaged in team and fighting sports and to examine them in terms of different variables. When the analyzes were evaluated, there was no significant difference in the mindfulness levels of the athletes in the study group according to the gender and age variable, in the sub-dimensions of "Awareness", "Non-Judgement", "Refocus" and "Mindfulness". When the level of mindfulness is examined according to the type of sport; there is no significant difference in the level of "No Judgment", "Refocusing" and "Mindfulness". In the sub-dimension "Awareness" of mindfulness, the difference was found to be significant in terms of sport type. When the mean rank in mindfulness and sub-dimensions is examined, the mean rank values in fighting sports are higher than in team sports. According to fighting sports branches, there is no significant difference in the sub-dimension of "No Judgment". In the "Awareness" sub-dimension of mindfulness, a significant difference was found according to fighting sports branches. When the fighting sports branches are examined, it has been determined that the Kickboxing branch has the highest rank average value of the group in mindfulness and sub-dimensions. The findings obtained in the study are presented in detail below:

In the "Awareness" sub-dimension of mindful awareness, the difference was found to be significant according to fighting sports branches ($H=17.465$; $p<0.05$). According to the results of the double test between the groups, a significant difference was found between Wrestling and Judo and Boxing, Judo and Karate and Kickboxing, Karate and Boxing and Kickboxing and Boxing. In the "Refocusing" sub-dimension of mindfulness, a significant difference was found according to fighting sports branches ($H=17.781$; $p<0.05$). According to the results of the double tests between the groups, a significant difference was found between Wrestling branch and Karate and Kickboxing branches, Judo branch and Karate and Kickboxing branches, Karate and Taekwondo branches, Kickboxing and Taekwondo branches and Boxing and Karate and Kickboxing branches. The difference in the level of "Mindfulness" according to fighting sports branches was found to be significant ($H=18.497$; $p<0.05$). According to the results of the pairwise test between the groups; a significant difference was found between Wrestling and Judo and Kickboxing, Judo and Karate and Kickboxing, Karate and Boxing, Taekwondo and Kickboxing, and Boxing and Karate and Kickboxing. When the fighting sports branches are examined, it has been determined that the Kickboxing branch has the highest rank average value of the group in mindfulness and sub-dimensions.

Tingaz, et al. (2020) in the study results; the athletes with a history of injuring another athlete had a higher score average in impulsiveness scale. The total scores from the overall mindfulness inventory did not differ significantly based on the status of having injured another athlete. It was observed that the athletes who experienced severe injury had a lower score average in the overall impulsiveness scale compared to the athletes who experienced a moderate injury. No significant difference was observed in the score averages from the overall mindfulness scale based on injury severity. Among the most notable results of the present study are the positive relationship between motor impulsiveness and injury frequency and the negative relationship between mindfulness and the total of the impulsivity scale and all its sub-dimensions. According to Yahya et al. (2022); the higher the awareness, resilience, and perceived social support, the higher the perceived emotional well-being.

Tingaz, et al. (2020) who participated in the research in his studies three hundred sixty-three individual and team-sport athletes (63.9% male; 35.8% female; 0.3% non-binary, $Mage = 21.51$ $SD = 3.33$) participating in the study were asked to fill out the Mindfulness Inventory for Sport, the Self-Compassion Scale, and the Oxford Happiness Questionnaire. There were significant positive correlations between mindfulness, self-compassion, and happiness.

Structural equation modeling revealed that self-compassion did not have a moderator role in the relationship between mindfulness and happiness. On the other hand, self-compassion played a fully mediating role in the relationship between mindfulness and happiness in student-athletes. While these are correlational data that do not permit causal inferences, these findings raise the possibility, in this population, that advances a better understanding of the impact mechanism of mindfulness on happiness.

Tingaz, et al. (2020) in the study results; examined the mediating role of depression, anxiety, and stress in the relationship between mindfulness and self-rated performance. Three hundred sixty-three student-athletes (61.2% male, 38.2% female, Mage = 21.47, SD = 3.30) were asked to fill the Mindfulness Inventory for Sport (MIS), the Depression Anxiety Stress Scale-21 (DASS-21), and the Self-rated Performance Questionnaire. While mindfulness was positively related to athletic performance, it was negatively related to depression, anxiety, and stress. The relationship between mindfulness and athletic performance was partially mediated by depression, anxiety, and stress. While the cross-sectional design does not permit causal inferences, these findings raise the possibility, in this population, that mindfulness may positively affect perceived performance by reducing depression, anxiety, and stress.

According to the results of Vural and Okan (2021)'s study on mindfulness in shooting sports sports branches; it was determined that while there was a significant difference in mindfulness sub-dimensions within the groups according to the gender variable, there was no significant difference for the groups according to the national status. However, when the correlation analysis results according to the sports age variable were examined, it was determined that there were positive low-level significant relationships in the mindfulness total score and refocus sub-dimension.

According to the study results of Terzioğlu and Çakır (2020); in terms of mental skills, elite archers' scores in refocusing, competition planning, activation, and relaxation significantly increased on completion of the program. According to the findings that there was also a significant increase in archers' scores in four subscales of mindfulness: observe, acting with awareness, describe, and nonreactivity to inner experience. These results indicate that an 8-week mindfulness-based skill training program contribute to improvements in elite athletes' mental skills and mindfulness.

The purpose of Baltzell and Akhtar (2014) was to assess the impact of the mindfulness meditation training (MMT) program on positive and negative emotions, mindfulness, psychological well-being and life satisfaction of the athlete participants. The main findings indicated that MMTS positively enhanced mindfulness of the soccer players, the intervention group. In addition, MMTS may have served as a steadying influence given that the intervention group experienced no change in mean scores of positive and negative emotions. This is quite different than what happened with the team that continued to train as usual, with no intervention. The rowing team experienced no change in mindfulness and, at once, reported higher levels of negative emotions as assessed by the Positive Affect Negative Affect Scale (PANAS).

In the research of Tingaz et al. (2021), it was found that professional soccer players had higher mindfulness levels compared to amateur soccer players. It was observed that mindfulness levels differed in favor of soccer players who received mentorship or psychological performance counselling, performed mental training and had more experience in sports. It was also observed that attackers had higher mindfulness levels compared to midfielders.

Bulğay et al. (2020) evaluated the mindfulness levels of track and field athletes according to variables such as sports branch (sprints, middle distance, jumps and throws), gender, age, national athlete status, personal best grade and best grade; it was determined that the athletes with high performance had higher mindfulness levels. Additionally, it was found that the national athletes and the athletes with high training experience had higher mindfulness levels in different sub-dimensions and in terms of the gender variable, the mindfulness levels of the female participants were higher. It is also notable that the athletes who perform mental training had higher mindfulness levels compared to those who do not. In the evaluation based on branches, it was observed that the

sprinters were more competent in the refocusing sub-dimension compared to the athletes in all other branches. The findings obtained in the present study indicated that mindfulness can be affected by different variables.

As a result, in this study, it was seen that mindfulness may differ according to some variables. Kick boxing, which is one of the fighting sports branches, has the highest rank average value of the group in mindfulness and sub-dimensions. Self-defense sports enable people to think faster. In kick boxing, there are more sub-branches among other fighting sports branches. It is thought that mindfulness will be higher thanks to these sub-branches. Studies in this area may yield both similar results and different results. This situation can be explained by the fact that various factors vary according to time and conditions. Such studies can also be done as a relationship study on different branches and with different current scales.

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Online Learning Quality, Satisfaction, and Word-of-Mouth Promotion

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Abstract

This study aimed to verify and analyze the two influences. The first was the effect of online learning quality (OLQ) on student satisfaction and word-of-mouth (WOM) promotion. The second was the impact of student satisfaction on WOM promotion. Then, we used the population of 137 students taking online classes during the COVID-19 pandemic at Indonesia's *Interkultural Edukasi Partner* (IEP) in Bandung to support this intention. Furthermore, we applied the Slovin formula with a 5% border of fault to obtain a sample size of 103. After getting it, the samples were taken by simple random sampling. Unfortunately, only 45 students responded by filling out the questionnaire distributed. As a result, this study utilized the structural equation model based on variance to examine the proposed hypotheses. After testing and discussing them, this research concluded that OLQ positively influenced student satisfaction, but OLQ did not. Besides, student satisfaction positively affected this promotion.

Keywords: Educational Institution, Online Learning Quality, Satisfaction, Word-of-Mouth Promotion

1. Introduction

Every company globally strives to face the competitive market in industry 4.0 successfully. To survive in this arena, companies need several unique platforms to offer their products to their market (Prasetyo & Sutopo, 2018). For example, by collaborating with Gojek or Grab, culinary business owners in Indonesia can sell their products to their customers through these online delivery applications. This collaboration is effective because the customers do not need to directly visit the business sites (Fridayani, Iqbal, & Atmojo, 2021).

Technology is being increasingly utilized today in the education sector in Indonesia as in the rest of the world, especially since the novel Coronavirus 2019 pandemic at the beginning of 2020 (Muhyiddin & Nugroho, 2021). As has been the case globally, this virus has already infected numerous people in Indonesia (Baraputri, 2021) by droplets, aerosols, and fomites when talking, breathing, coughing, or sneezing during face-to-face meetings (Jayaweera, Perera, Gunawardana, & Manatunge, 2020).

Furthermore, the Indonesian government required educational institutions to introduce online learning to reduce its spread. To comply with this requirement, education institutions immediately began to implement online learning through various meeting platforms such as Zoom Meeting, Google Classroom, Edmodo, and Microsoft Teams (Nuriansyah, 2020), as well as through a learning management system (Rahman, Arifin, & Al-Fuqron, 2019).

After the students, teachers, and lecturers have been vaccinated, the learning pattern changes from fully online learning to blended learning [see Supriyanto, Mulawarman, Soesanto, Sugiharto, and Hartini (2021)]. Training lecturers to utilize online platforms to teach their classes has been mandatory for each institution facilitating this composite pattern. Therefore, specified departments and personnel must be available to handle this training (Pham, Limbu, Bui, Nguyen, & Pham, 2019).

With online platforms and e-learning systems as the tangible features used for the fulfillment of service quality, educational institutions expected that students would be satisfied after using these applications, as demonstrated by several studies, such as Pham, Limbu, Bui, Nguyen, & Pham (2019), Tj and Tanurahrjo (2020), Puriwat and Tripopsakul (2021), and Shehzadi, Nisar, Hussain, Basheer, Hameed, and Chaudhry (2021). However, this result did not always occur. For example, Theresiawati, Seta, Hidayanto, and Abidin (2020) found that e-learning systems did not affect student satisfaction.

Similarly, studies examining the impact of online learning quality on word-of-mouth promotion (WOM) were inconsistent. For example, Kusuma, Yasmari, Agung, and Landra (2020) and Shehzadi et al. (2021) confirmed a positive impact in their research. Meanwhile, Meštrović (2016) found no relationship between service quality and WOM promotion by utilizing the role-related indicators of teaching and administrative staff members, campus image, environment and equipment, and teaching syllabus to measure this quality.

Intuitively, the influence of student satisfaction on WOM promotion should be positive, as displayed by Khraim (2011), Mulyana and Ayuni (2015), Meštrović (2016), Melastri and Giantari (2019), and Giantari, Yasa, Sukawati, and Setini (2021). Unfortunately, this relationship was still unproven as Kusuma et al. (2020) showed contradictory results: student satisfaction did not affect WOM promotion.

With the inconsistent evidence shown above, this study attempt to research and analyze the effect of online learning quality on student satisfaction and word-of-mouth promotion and the influence of student satisfaction on WOM promotion. As the object to be surveyed, the researchers use the students learning languages at Indonesia's *Interkultural Edukasi Partner (IEP)* in Bandung as one of the branches. IEP is a non-formal language course institution registered under *Yayasan Mitra Pengembangan Indonesia*. Besides Bandung, IEP has a branch in Baubau and Bali. The courses offered include Indonesian programs for foreigners, English, and local languages: Sundanese in the Bandung and Wolio in the Baubau. IEP uses the six-phase program as its primary learning method. Furthermore, IEP provides online learning since its primary target market consists of foreigners aboard to continue classes during the pandemic.

2. Theoretical Framework and Hypothesis Development

2.1. Online learning quality and satisfaction

In their study of 300 students in Vietnam, Pham et al. (2019) demonstrated that as the quality of online learning increased, so did student satisfaction. Tj and Tanurahrjo (2020) surveyed the 64 undergraduate students at Krida Wacana Christian University in Jakarta, Indonesia, as samples to analyze the impact of online learning quality on satisfaction. After testing the data, they verified a positive effect. This positive influence was also confirmed by Puriwat and Tripopsakul (2021) after investigating 185 university students in Bangkok, Thailand. In Pakistan, a similar result occurred after Shehzadi et al. (2021) investigated the relationship between digital learning and the satisfaction of 374 students. Based on this evidence, this study formulated the first hypothesis:

H₁: Online learning quality affected student satisfaction positively.

2.2. Online learning quality and word-of-mouth promotion

In their study investigating 91 customers of the regional development bank in Bali, Kusuma et al. (2021) showed that service quality influenced WOM promotion positively. Likewise, after testing the responses of 374 students in Pakistan, Shehzadi et al. (2021) confirmed the positive impact of online learning quality on word-of-mouth promotion. Based on these results, this study formulated the second hypothesis:

H₂: Online learning quality affected word-of-mouth promotion positively.

2.3. Satisfaction and word-of-mouth promotion

It is assumed that students will communicate positive news about an institution if academically satisfied. Through a survey of 447 students from Philadelphia, Applied Research, and Amman Private Universities, Khram (2011) demonstrated that student satisfaction positively impacted word-of-mouth promotion. After investigating 115 students in an open university in Indonesia, Mulyana and Ayuni (2015) affirmed that student satisfaction positively affected this promotion. This propensity was also confirmed by Meštrović (2016) after studying 214 students of the Rijeka University in Croatia.

In a further study, Melastri and Giantari (2019) examined the relationship between student satisfaction and word-of-mouth promotion by surveying the students taking English for business classes at English First in Denpasar, Bali. After reviewing the responses, they concluded that the more satisfied, the greater the students' tendency to communicate their experience with their friends, family, etc. In another study, Giantari et al. (2021) supported this finding as a result of investigating 260 students from state and private universities in Bali. Based on this evidence, this study formulated the third hypothesis:

H₃: Satisfaction affected word-of-mouth promotion positively.

2.4. Research Model

By formulating the hypotheses in this study, the research model was depicted in Picture 1.



Picture 1: Research Model

3. Research Method

3.1. Variable measurement

Based on Picture 1, this study used online learning quality as the exogenous variable by referring to three dimensions and their indicators in Pham et al. (2019). Because the institution where this research took place did not provide an e-learning system yet, the researchers removed the e-learning system as a dimension when measuring online learning quality. Therefore, two relevant dimensions were investigated: (1) instructors and course contents and (2) administration and support division (see Table 1).

Table 1: Online learning quality with the relevant dimensions and indicators

Dimension	Indicators	Source
Instructor and course substances (ICS)	<p>The online instructors are well-informed in their field (ICS1).</p> <p>The online course content is easy to use and put into practice (ICS2).</p> <p>The online course content motivates me to learn and study (IC3).</p> <p>The difficulty and length of the assessments given are reasonable (ICS4).</p> <p>The instructors respond promptly to my needs and questions (ICS5).</p> <p>The instructors consistently provide outstanding lessons (ICS6).</p> <p>The instructors plan and organize the content of the lessons well (ICS7).</p> <p>The instructors create a learning environment that stimulates me to be actively involved in sessions interactively (ICS8).</p> <p>The instructors focus on my needs and keep me interested in the online lessons (ICS9).</p> <p>The online course materials are beneficial to me (ICS10).</p> <p>The online course materials are up-to-date and appropriate for online learning (ICS11).</p> <p>The duration and difficulty of tasks assigned are reasonable (ICS12).</p>	Pham et al. (2019)
Administrating and supporting division (ASD)	<p>The administrative service division of the institution assists with facilitating online learning for me (ASD1).</p> <p>The administrative staff members keep me updated with the information I need to participate effectively in online learning (ASD2).</p> <p>The administrative staff members punctually assist me (ASD3).</p> <p>The administrative staff members provide exceptional service (ADS4).</p> <p>The administrative staff members recognize my needs (ADS5).</p> <p>The administrative staff members pay personal attention to me and my needs (ADS6).</p> <p>The administrative staff members have convenient working hours to serve; therefore, I can contact them if needing their assistance (ADS7).</p>	

Furthermore, student satisfaction (SS) was treated by modifying the number of indicators utilized by Puriwat and Tripopsakul (2021) from four to three as the first endogenous variable:

1. The online learning platform used by *Interkultural Edukasi* Partner met my expectations during the Covid-19 pandemic (SS1).
2. The online learning platform provided by *Interkultural Edukasi* Partner suited my needs and situation during the Covid-19 pandemic better than onsite learning (SS2).
3. I enjoyed using the online learning platform provided by *Interkultural Edukasi* Partner during the Covid-19 pandemic (SS3).

Finally, word-of-mouth promotion was used as the second endogenous variable. Three of six positive indicators found in Goyetee, Ricard, Bergeron, and Marticotte (2010) were used to measure this variable. This method was chosen because of the similar content in the indicators. The indicators utilized were as follows.

1. I would recommend studying at *Interkultural Edukasi* Partner to my relatives and friends due to my online learning experience (WOM1).
2. I would always speak positively about *Interkultural Edukasi* Partner to my relatives and friends (WOM2).
3. I am grateful to be a learner at *Interkultural Edukasi* Partner (WOM3).

3.2. Population and Sample

The population for this research was the active students using online learning through *Interkultural Edukasi* Partner, Indonesia, in 2022. Based on the institutional database, the population size (N) was 137. Moreover, the

Slovin formula with the 5% error margin (e) in the first equation, cited from Suliyanto (2009), was applied to obtain the sample size.

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

Applying this formula, the sample size was $\frac{137}{1 + 137(5\%)(5\%)} = \frac{137}{1.3425} = 102.04 \approx 103$ students. After obtaining this number, a simple random sampling method was used.

3.3. Method to collect the data

Following Hartono (2012), this study used a survey technique to collect the responses by distributing questionnaires with closed questions to the students. Also, mentioning Hartono (2012), the five-point Likert scale from significantly disagree to agree was utilized to measure the answers to the questions.

3.4. Method to analyze the data

Because the sample size was between 30 and near 100, the structural equation model (SEM) based on variance was utilized. Moreover, to describe the relationship between the variables used in the first picture, two related equations were used:

$$SS = \gamma_1 OLQ + \zeta_1 \quad (2)$$

$$WOM = \gamma_2 OLQ + \beta_1 SS + \zeta_2 \quad (3)$$

Before estimating the path coefficients: γ_1 , γ_2 , and β_1 , answers to the items needed to be validated and met the reliability test. Moreover, to check the validity, the confirmatory factor analysis was utilized, referencing Ghozali (2014) and Sholihin and Ratmono (2013):

- For the first-order model, if the loading factor exceeded 0.5, the answer to the item was valid, and vice versa. If lower than 0.5, the answer was invalid, and the related item must be removed.
- The loading factor needed to be available for the second-order model consisting of dimensions and indicators. If the loading factor was higher than 0.5, the answer to the item was valid, and the dimension could reflect the latent variables.

Moreover, to detect the reliability, this study used Cronbach Alpha and composite reliability coefficients with the cut-off point of 0.7. If these coefficients were higher than this point, the respondent answers were reliable because of consistency (Sholihin & Ratmono, 2013).

Because of the variance-based SEM, the model assessment based on f-square, R-square, and Q-square had to be executed by following this cut-off point (see Ghozali, 2008):

- If the f-square was 0.02, 0.15, and 0.35, the partial effect of explanatory variables was small, medium, and big.
- If R-square was 0.67, 0.33, and 0.19, the contribution of explanatory variables was strong, moderate, and weak.
- If Q-square was more significant than 0, the model had a predictive ability.

4. Results and Discussion

4.1. The demographic features

The survey was conducted in May 2022, and 45 students responded; thus, the response rate was $45/103 = 43.96\%$. The demographic features containing gender and age, and academic characteristics, such as entrance year and current phase, were noted in Table 2.

Table 2: The demographic and academic features of the students participating in this survey

Demographic Features	Description	Total	Percentage
Gender	Males	17	37.78%
	Females	28	62.22%
Age	20	2	4.44%
	21-30	9	20.00%
	31-40	18	40.00%
	41-50	7	15.56%
	51-60	7	15.56%
	61-66	2	4.44%
Academic Features	Description	Total	Percentage
Entrance year	2012	3	6.67%
	2016	2	4.44%
	2018	2	4.44%
	2019	6	13.33%
	2020	11	24.44%
	2021	15	33.33%
	2022	6	13.33%
Current phase	One	3	6.67%
	Two	8	17.78%
	Three	8	17.78%
	Four	19	42.22%
	Five	6	13.33%
	Six	1	2.22%

4.2. The Instrument Examination Result

To detect the validity and reliability of answers, we used Smart PLS, as Ghozali (2008) suggested. In the first step, after performing the confirmatory factor analysis, invalid responses were obtained from students to indicators ASD7, ICS1, and ICS4, displayed by the loading factor of 0.310, 0.480, and 0.497. Following Sholihin & Ratmono (2013), these answers must be removed because of below 0.5. After that, we retested this validity and confirmed that the responses from students to the rest of the items (ICS, ASD, SS, and WOM) were valid, as reflected by the loading factor above 0.5, as seen in Table 3 in Panel A. Also, we got that the loading factor for the two dimensions of online learning quality was higher than 0.5: 0.946 for LV_ICS and 0.898 for LV_ASD: These dimensions reflected online learning quality well.

Table 3: Final Validity and Reliability Examinations

Indicator/Dimension	Loading factor				
	ICS	ASD	OLQ	SS	WOM
ICS2	0.759	-	-	-	-
ICS3	0.823	-	-	-	-
ICS5	0.521	-	-	-	-
ICS6	0.776	-	-	-	-
ICS7	0.773	-	-	-	-
ICS8	0.862	-	-	-	-
ICS9	0.861	-	-	-	-
ICS10	0.876	-	-	-	-
ICS11	0.667	-	-	-	-
ICS12	0.750	-	-	-	-

Table 3: Final Validity and Reliability Examinations

Panel A. Validity Testing Result by Confirmatory Factor Analysis					
Indicator/Dimension	Loading factor				
	ICS	ASD	OLQ	SS	WOM
ASD1	-	0.913	-	-	-
ASD2	-	0.791	-	-	-
ASD3	-	0.763	-	-	-
ASD4	-	0.810	-	-	-
ASD5	-	0.892	-	-	-
ASD6	-	0.855	-	-	-
LV_ICS	-	-	0.946	-	-
LV_ASD	-	-	0.898	-	-
SS1	-	-	-	0.917	-
SS2	-	-	-	0.889	-
SS3	-	-	-	0.913	-
WOM1	-	-	-	-	0.904
WOM2	-	-	-	-	0.926
WOM3	-	-	-	-	0.938
Panel B. Reliability Testing Result by Cronbach Alpha and Composite Reliability Analyses					
Dimension/Variable	ICS	ASD	OLQ	SS	WOM
Cronbach Alpha	0.923	0.915	0.943	0.892	0.918
Composite reliability	0.936	0.934	0.950	0.932	0.945

Source: Adjusted Output of Smart PLS

Next, the Cronbach Alpha resulted from the reliability detection for accurate answers to ICS, ASD, OLQ, SS, and WOM was above 0.7: 0.923, 0.915, 0.943, 0.892, and 0.918, and composite reliability for ICS, ASD, OLQ, SS, and WOM was higher than 0.7: 0.936, 0.934, 0.950, 0.932, and 0.945 (see Panel B). Since this result was attained, the responses are consistent; hence, the reliability test was achieved.

4.3. The assessment of the estimated model

An assessment of the model was essential before estimating the path coefficients and their significance. Consequently, the f-square, R-square, and Q-square scores must be calculated as noted in Table 4:

- The f-square score for the partial influence of OLQ on SS was 0.509, meaning that the OLQ impact on SS was enormous. Meanwhile, the f-square scores for the partial effects of OLQ and SS on WOM were 0.002 and 0.3714, indicating that the relationship between OLQ and WOM was weak, but the relationship between SS and WOM was substantial.
- The R-square for $SS = f(OLQ)$ was 0.509 and for $WOM = f(OLQ, SS)$ was 0.454. Because these values exceeded 0.35, the impact of all explaining variables was moderate.
- The Q-square for $SS = f(OLQ)$ was 0.396 and for $WOM = f(OLQ, SS)$ was 0.288. These values exceeded 0; thus, the model could predict student satisfaction and WOM.

Table 4: The measurement to assess the model

Equation	Causal relationship	f-square	R-square	Q-square
$SS = f(OLQ)$	$OLQ \rightarrow SS$	0.509	0.509	0.396
$WOM = f(OLQ)$	$OLQ \rightarrow WOM$	0.002	0.454	0.288
	$SS \rightarrow WOM$	0.371		

Source: Adjusted Output of Smart PLS

4.4. The model estimation result

The adjusted Smart PLS output was shown in the model estimation in Table 5. This output showed that the probability of the t-statistic for the path coefficient related to hypotheses one, two, and three was 0.000, 0.858, and 0.006, respectively. Based on these results, it could be stated that:

- a. The positive effect of OLQ on SS and SS on WOM was significant because each probability was below a 5% significance level.
- b. The positive effect of OLQ on WOM is insignificant because the probability exceeded this 5% level.

Table 5: The estimation of path coefficients and their significance associated with the examination of the hypothesis

Hypothesis	Causal association	Path Coefficient	Standard deviation	t-statistic	Probability
I	OLQ → SS	0.714	0.081	8.861	0.000
II	OLQ → WOM	0.044	0.246	0.179	0.858
III	SS → WOM	0.642	0.233	2.759	0.006

Source: Adjusted Output of Smart PLS

4.5. Discussion

This study showed that online learning quality significantly positively affected student satisfaction concerning hypothesis one. Based on this evidence, this study result was confirmed by Pham et al. (2019), Tj and Tanuraharjo (2020), Puriwat and Tripopsakul (2021), and Shehzadi et al. (2021). The success and quality of online learning, in turn, could not be separated from the quality of the lecturers or instructors who provided the online instruction and their teaching materials. In this study, the loading factor of ICS5 was the lowest: 0.521 (see Table 3 in Panel A). This item referred to the prompt response of lecturers or instructors to students' needs. In other words, most students assumed that lecturers or instructors responded slowly to the needs of students. The same situation was supported by Cahyawati and Gunarto (2020) as one of the obstacles to online learning. To overcome it, the lecturers must personally understand the characters of each student by providing extra time outside their online classes.

When testing hypothesis two, this study found that online learning quality did not affect word-of-mouth promotion. In contrast, after examining hypothesis three, student satisfaction significantly and positively impacted word-of-mouth promotion. Statistically, it showed the mediating effect of student satisfaction on the relationship between online learning quality and word-of-mouth promotion. This communication would become an effective promotion tool if the students were satisfied with the learning services. The absent impact of online learning quality on WOM promotion was confirmed by Kusuma et al. (2020). However, the positive effect of student satisfaction on WOM promotion was verified by Khraim (2011), Mulyana and Ayuni (2015), Meštrović (2016), Melastri and Giantari (2019), and Giantari et al. (2021).

5. Conclusion

This study aimed to investigate and analyze the influence of online learning quality on student satisfaction and word-of-mouth promotion and the impact of student satisfaction on word-of-mouth promotion. After analyzing the survey responses of the students studying at *Interkultural Edukasi* Partner in Indonesia, this study found that online learning quality positively influenced student satisfaction; however, online learning quality did not. Meanwhile, student satisfaction positively affected this promotion.

Although successfully proving the relationship between online learning quality and student satisfaction and the association between this satisfaction and word-of-mouth promotion, this study still had limitations: the small sample size and the few variables utilized. Concerning the small sample size, further research is needed within educational institutions having larger student populations, such as over 200 students, to confirm and verify the

results and conclusions better than this study. Furthermore, to overcome a few variables, future research could add some variables, for instance: institutional image and perceived value, as the antecedence of student satisfaction and word-of-mouth promotion.

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Digital Learning Literacy Preference and Accessibility of Universitas Terbuka (UT)'s SUAKA-UT: An Evaluation towards Its System of Open Educational Resource (OER)

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Abstract

This article aims to analyze the preference and accessibility that determine the students' behavioural appreciation in using learning resources towards the Open Educational Resources (OER) system owned by the Universitas Terbuka (UT), a so-called SUAKA-UT. It used qualitative research methods with descriptive percentage analysis. Furthermore, the instrument employed a Sakal Likert questionnaire and limited interviews. The research population was a non-basic educational program, with the random sampling technique by selecting 123 students. The following sample details: 35 students in Makassar City, 19 Students in Sidrap Regency, 23 students in Tana Toraja Regency, 23 Students in Selayar Regency, and 23 students in Luwu Timur Regency. The results showed that the preference for online sources and accessibility is in the excellent category and had an average score of 4.10 out of ten SUAKA-UT service questions. They showed that, generally, the respondents strongly agree with the available learning resources since they can meet the needs and accessibility of online learning resources. Preference for online learning resources is a supporting tool for achieving independent learning success. The utilization of SUAKA-UT in the working area of UT Makassar went very well in providing easy access to learning resources. The UT has met students' needs and expectations so they can study flexibly. SUAKA-UT has become a preferred and has excellent acceptance as an online learning resource among the students. To maintain the existence of open learning sources of UT (SUAKA-UT), as a distance learning university with the motto of "Making Higher education," it must consistently innovate and update its online learning resources.

Keywords: SUAKA-UT, Online Learning Resources, Flexible

1. Introduction

As a state university, Universitas Terbuka (UT) provides access to higher education for all levels of society through the implementation of various Distance Open Higher Education programs. To produce graduates with good competitiveness, UT has developed innovations related to the quality of educational products and online academic

services. Learning technology at UT can adapt to changing times following developments, becoming a benchmark for distance education providers and becoming a leader towards cyber university. In this regard, UT's open learning source, so-called SUAKA-UT, is an Open Educational Resources (OER) (accessible through <http://www.ut.ac.id/OER/index.html>) containing online-based enrichment materials. They include UT Television, UT Radio, Online Smart Teachers, UT Journal, MOOCS, ASEAN Studies Program, and Digital Libraries that provide learning materials that students and the wider community can access for free. SUAKA-UT provides a variety of quality learning resource materials made by the lecturers, either individually or in teams, by adopting a creative commons license (link: <http://www.creativecommons.org>). Its materials use the CC BY-NC-SA license. Its benefit is that it can help students improve mastery of the learning material by freely utilizing learning resources to encourage students to become strong independent learners.

SUAKA-UT's contributions to the Open Education Consortium's Learning Resources include the UT Library Service Center, with quite diverse library materials consisting of a Virtual Reading room and Online-Based Material Enrichment in the form of videos. In it, students can access course enrichment, interactive videos, dry lab, radio programs, television programs, material enrichment and independent online exercises, and UT TV. The UT has a collection of learning materials in videos that can be accessed by online streaming. According to the faculty and student majors, the study materials are divided into several categories. SUAKA-UT's variety includes 1) UT Radio, which is the UT's internet radio pride; 2) the Central Web-UT, containing various types to support the needs of students, both administrative and academic needs; and 3) Online independent exercise, where students can directly access questions under the subjects being studied, aiming to measure and find out the level of mastery of the subject matter before facing the final semester exam. Furthermore, the UT open course is an online-based enrichment of primary material and a virtual reading room with primary material to be used anywhere to improve students' mastery of the material.

The development and use of open education resources (OER) are rapidly increasing in various countries' higher education institutions (HEIs) (Mtebe & Raisamo, 2014). Access to these resources is expanded, reduces costs, and can improve the quality of education. Utilizing the aforementioned UT-online learning resources is a preference with various variants of online service activities. Preferences for measuring the usability of online learning materials, from which students take advantage of UT-online service resources as an option that can motivate them to increase their independent spirit in the learning process. The availability of UT-online services allows students to meet their learning needs to achieve the desired learning goals. Preferences shape behaviour and perceptions of using learning resources at UT-online regarding perceived benefits. Preference when interpreted is a choice of liking or disliking UT-online learning resources. Student decisions in utilizing online learning resource facilities, student preferences in utilizing online services, and the level of participation in their use continue to increase based on questionnaires and limited interviews. Students have a good preference for using SUAKA-UT to improve mastery of the material to support academic activities. The accessibility or ease of accessing online learning resources is determined by how students access learning resources available at SUAKA-UT. Online learning resources can use facilities such as mobile phones (with an android system) or laptop, which has a network to access online learning resources. The increase in its utilization results from new student study orientation and distance learning skills training, which socialize and train them to use online learning resources.

The UT-online facility, related to one of the research findings with an average score of 4.1 in the excellent category, helps improve the quality of student academic services. Sugilar et al. (2014) explained that the utilization of UT-online resources, and its facilities based on the number of users, frequency of users, and length of access, was assessed with a positive score. UT Makassar has maximized socialization for students to participate in new student study orientation and distance learning skills training so that students are more skilled in accessing and utilizing SUAKA-UT to achieve independent learning success. The students' preferences emphasize students' attitudes to using and utilizing online learning resources as an alternative based on pleasure, satisfaction, fulfillment, and usefulness. They enable students to achieve the desired learning goals and increase accessibility to the use of online resources to support learning activities according to their learning targets. Easy access to online learning materials allows students to use teaching materials wherever and whenever they are. Such ease of accessing learning resources to improve student mastery of the material before taking final exams is vital. By knowing the conditions of students' preferences and accessibility in utilizing SUAKA-UT resources, the students are increasingly

motivated to use it as a learning mode that supports the success of distance education students at UT Makassar spread over 24 districts in South Sulawesi. Student learning activities through SUAKA-UT help those living in remote areas and islands improve mastery of primary materials in preparation for their final exams. Based on these backgrounds, this article intends to answer the research question of "how could the students take advantage of SUAKA-UT as UT's online learning resource services by combining printed teaching materials with online blended learning to support their successful learning?". This article assesses student preferences and accessibility in using online learning resources (SUAKA-UT) by taking samples from the outermost points of UT Makassar, namely the Selayar Islands, East Luwu, and Tana Toraja Regency. Although there are several similar previous studies in other UT units, the research differs in sampling and data collection techniques. It used questionnaires and limited interviews to explore further the facilities, as well as the obstacles experienced by students. This article is expected to become an input for policy making regarding the socialization of using online learning resources at UT Makassar.

2. Literature Review

2.1 *The Open Learning Resources of UT (SUAKA-UT)*

Students who study with the distance education system must be independent in solving all their problems. This learning model is required for the students to learn independently. Furthermore, distance education providers are required to provide learning assistance services. Study assistance for distance learning students in all forms of assistance given to students so that their study process runs smoothly, starting from registration, study process, during exams and even when they finish exams. In a narrow sense, learning assistance services are services provided by education providers to students in studying teaching materials or during the learning process. Services in studying teaching materials are often called tutorials.

In accessing tutoring and independent online practice, UT students must have facilities or tools connected to the internet network. Facilities that can be used include mobile phones based on the android system. Almost everyone has had it as a communication device, making it easy for students to access the UT-online service page from various places where internet networks are available. Student access to UT-online has a significant relationship or influence with the level and variation of student accessibility, starting from the lowest, medium, and high levels. The level of student accessibility depends on each student's activity (Wahyuningsih Suharmini Sri et al., 2014).

Quality and affordability are challenges for today's higher education success. Low-cost open educational resources (OER) can increase students' final grades. It presents a multifunctional medium in the learning process (Colvard, Watson, & Park, 2018). Communication via the internet can be done interpersonally or en masse, known as one-to-many communication. The internet can also be present in real-time audio-visual as with the conventional teleconference application. Based on this, the internet as an educational medium can present distinctive characteristics, such as (a) interpersonal and mass media, (b) interactive (c) allowing synchronous and asynchronous communication (Hariyono, 2015). The OER, a term agreed upon by various organizations, including UNESCO, is defined as teaching materials or research results available in open media sharing (applying for an open license) and free of charge to be accessed, reused or adapted and redistributed by users. It is usually in textbooks, curriculum, syllabus, notes, sample assignments, sample tests provided in audio format, video tutorials or animations. Nascimbeni & Burgos (2019) explain that it covers the creation, use, and reuse of open educational resources, open pedagogy, and the open sharing of teaching practices. Teaching materials in OER are often also called digital internet-based or web-based teaching materials. Lestari et al. (2015) expose that three main characteristics constitute the great potential of online teaching materials: presenting multimedia, storing, processing, and presenting information and hyperlinks. Because of its online nature, web-based teaching materials have unique characteristics according to the characteristics of the web itself and help students improve student achievement. From a constructivist perspective, OER's conceptual model suggests four characteristic dimensions: balancing privacy and openness, developing digital literacy, valuing social learning, and challenging traditional teaching role expectations.

2.2 Accessibility of UT-Online Learning Resources

According to Kamus Besar Bahasa Indonesia (KBBI) or the Indonesian Language Master Dictionary, "access" is a way to enter and continue. Further referring to multiple journals means the degree of ease people achieve towards an object, service, or environment. Furthermore, accessibility is the ease of accessing destinations that provide comfort for activities (Wahyuningsih, 2015). So that users or students can find what they need quickly, precisely and on target. In this case, information and communication technology (ICT) is very helpful in finding the information needed. The development of the internet network that has penetrated regions and islands such as in Selayar Regency makes it easier for students to find and access the SUAKA-UT. Ease of access can influence student participation in learning through internet media. Accessibility in the UT's distance learning relates to the availability and ease of obtaining or using online learning resources. It is a measure of convenience with online learning resources interacting easily through a network system with available service access procedures. Furthermore, it measures ease, including time, cost, and effort in using UT-online learning resources. The high or low levels of accessibility can be determined by the available network facilitating accessibility to them. Additionally, Wahyuningsih, Rusli, & Bintarti (2015) investigate student accessibility in tutoring and the relationship of accessibility to tutoring with learning evaluation (final exams). They found that the convenience for students in using online tutorial services can help them understand the learning material provided and help students get the final semester exam scores as expected.

2.3 SUAKA-UT Learning Resources Constituting Student Preferences

The consumer preferences show the likeliness inclination of consumers from the choice of products or services that exist in their perception. The preferences will determine a person's behaviour towards a service or facility. The choice of someone's likes or dislikes for products or service facilities is to be used to fulfil their needs. The factors that influence student preferences for using online facilities provided in SUAKA-UT will describe the factors that influence the students of non-basic education programs. The learning assistance services at SUAKA-UT provide online services to students, covering Online-Based Tutorials, so-called Tuton, independent online practice, online-based material enrichment, and radio tutorial. In detail, Tuton is provided that individual students get special access differently from other students. This feature could be accessed through "learning.ut.ac.id". It provides tutoring facilities in line with course registration carried out by students during the ongoing semester. Besides Tuton, SUAKA-UT also provides independent online practice. It is hidden or not directly visible on the UT's web home page. It can be accessed through "http://student.ut.ac.id/repository/." It aims to determine student understanding of the module material through the number of questions answered correctly and incorrectly. It does not have a contribution to the final score. Still, if the students are diligent in practising through it, they can improve their ability to understand module material, which has an impact on increasing their academic achievement. As a supplement to student academic success, UT also provides "web-supplement.ut.ac.id" or online-based material enrichment, an integral part of the student's primary material. It contains the main points and essential concepts of basic materials per course. With more diverse student learning resources, the student will have more preference in choosing and accessing the learning resources provided by UT. UT also provides radio tutorials through National Program 1 of Radio of the Republic of Indonesia (RRI) on FM 92.8 MHz, MW 1332 kHz and SW 9680 kHz at 14.35 – 15.00 WIB. This radio tutorial is held six times a week, Monday to Saturday. Especially for teachers, TV tutorials can be watched via TM Education channel 2. It is broadcasted via Telkom I satellite with a satellite dish directed to Horizontal Polarization with the broadcast frequency of 3807 MHz and Downlink 3807 MHz. It is also broadcasted via Symbol Rate (SR) 400 on Saturday from 14.00 – 16.00 Western Indonesia Time (WIB) and via satellite on the SWARA channel from Monday to Sunday from 05.00 – 05.30 WIB.

All UT educational menus, whether informational or service, are included on the UT website. Its online services have followed the development of information technology in the modern era. Direct access to UT services, which contains a list of UT's services, can be undertaken using an Android-based cellphone or laptop with an online network. SUAKA-UT provides many menus of learning assistance services for students to support the success of independent learning, which is the hallmark and character of students undertaking distance education programs.

3. Method and Methodology

3.1 Types of research

This type of research is descriptive qualitative percentage research. It is a research technique of collecting data using a questionnaire instrument to generate primary data sources and using limited interviews to picture SUAKA-UT utilization directly. The data and its frequency are managed, simplified, and presented to provide an orderly picture of an event that can be expressed in numbers. The discussion will refer to the results of the Likert scale questionnaire and will refer to limited interview information obtained from respondents.

3.2 Population and Sample

3.2.1 Population

In this study, the population was all non-basic education program students at UT Makassar who registered in 2017 and 2018. The students are assumed to have followed the new student study orientation, attended self-study skills training, and understood the online learning resources provided by the UT.

3.2.2 Sample

The random sampling technique was used in determining random samples based on the area (random cluster sampling). In it, the population does not consist of individuals. However, it consists of regional groups or district clusters in this research, consisting of 35 students in Makassar City, 23 students in Selayar Regency, 19 students in Sidrap Regency, 23 students in Tana Toraja Regency, and 23 students in East Luwu Regency. There are five clusters with 123 students—the cluster samples were chosen randomly from the cluster population.

3.3 Data source

The data source is an essential factor that is considered in determining the data collection method. Data sources in this article were obtained from primary and secondary data. The primary data was obtained directly from the respondents by providing questionnaires and interviews. Data sources are more emphasized for students who have access to online learning resources. Meanwhile, the secondary data was obtained from limited interviews to complete a questionnaire about the complete picture of the utilization of SUAKA-UT.

3.4 Data Collection Method

The data collection method used in this study is a survey method to collect data using a Likert scale questionnaire. A survey (or self-administered survey) collected primary data by giving questions to individual respondents. The interview method was aimed at students who have already used SUAKA-UT, course enrichment materials, and radio tutorials. The type of interview used was limited to support quantitative data related to SUAKA-UT.

3.5 Data Analysis Method and Flows

In this study, descriptive frequency analysis was used with the tool used to find the relationship between variables was software SPSS 15 for windows. Meanwhile, the data analysis flows to facilitate data analysis was ordered as follows: The author surveyed respondents whom the author had determined. Then, after the data from the respondents were collected, the authors tabulated the data by entering data from the respondents into Microsoft Excel. Then after the data were entered into it, the writer processed the data using SPSS 15 using descriptive analysis of frequencies. Therefore, it generated data for preferences and accessibility in the number of per cent (%) of SUAKA-UT usage.

3. Results

The results show a significant change in the use of online learning resources. Students take advantage of the facilities, have understood the access procedure, and know the benefits of online learning resources. The frequency of students using online learning resources available at SUAKA-UT contributes to learning success. Accessibility to online learning resources for students is getting better. Using these online learning resources is an initiative and responsibility of the students to independently learn, research, solve the problem, and absorb material to increase a comprehensive understanding of the course's core educational material or modules. Students' flexibility in managing their learning patterns reflects their ability to adapt to how distance education students learn. The learning resources provided by UT are very diverse and online-based to ensure adaptation to the era of ICT disruption. The Ministry of Research and Higher Education prioritizes fields of study to be able to absorb the benefits of the rapid development of technology and information. The development of the internet network has changed the paradigm of education and learning in obtaining varied information and communication, which is no longer being limited by the dimensions of space and time in the learning process. Specifically, the research data collection, reflecting the educational dynamics usage of UT's online learning resources (SUAKA-UT), was carried out in Makassar City and Sidrap, Tanah Toraja, Selayar, and East Luwu regencies. The number of each respondent is as shown in the following table (in general, it has been close to a proportional number in each region):

Table: 1 Frequency of Respondents of SUAKA-UT Open Learning Resources Utilization

No	Instrument	Scale				Total	Average
		<i>Dislike</i>	<i>Neutral</i>	<i>Like</i>	<i>Very Like</i>		
1	Varied online learning resources	3	18	65	37	123	4.11
2	Easy access to UT-online as an affordable and valuable source of student learning	1	9	62	51	123	4.32
3	Preference for UT-Online learning resources is very helpful for students' academic success	0	18	80	25	123	4.06
4	The UT-online learning resource page is interesting because it provides various means to support learning activities.	0	19	83	21	123	4.02
5	The influence of literacy to support the learning process at UT	0	23	71	29	123	4.04
6	The material presented is up to date.	2	22	62	37	123	4.11
7	Help improve material mastery.	1	23	68	31	123	4.06
8	UT-online learning accessibility is very beneficial for students and the general public.	0	12	80	31	123	4.15
9	Online independent practice helps students self-evaluate the value of learning achievement.	0	13	84	26	123	4.11
10	A digital library (virtual reading room) helps to support learning activities.	4	19	70	30	123	3.99
11	UT-online provides TV and radio learning content that students need.	1	17	68	37	123	4.14
12	The enrichment material for the web supplement course helps improve mastery of the material.	0	17	86	20	123	4.02

Source: Primary Data processed 2019.

Based on Table 1. above, the respondents were 123 students. They can be described as follows;

1. Varied online learning resources: the average of the overall scores resulted in 4.11, which means, in general, it can be stated that respondents strongly agree that the learning resources available in online learning resources are varied,
2. Easy access to UT-online as an affordable and valuable source of student learning: the average of the overall scores resulted in 4.32. In general, it can be stated that respondents strongly agree that learning resources are easily available and accesibble.
3. UT-Online learning resources reference is very helpful for students' academic success: the average of the overall scores resulted in 4.06. In general, it can be stated strongly agree to make preference or choice of learning resources.
4. The UT-online learning resource page is interesting because it provides various means to support learning activities. The average of the overall scores resulted in 4.02.
5. The influence of literacy to support the learning process at UT with a score of 4.04 responded very well. In general, it can be stated that respondents strongly agree with the learning resources available in online learning resources.
6. The material presented is up to date with a score of 4.11, meaning that the material follows the needs and developments. Generally, it can be stated that the respondents strongly agree with the currently available learning resources.
7. Help improve the mastery of the material score of 4.06, which means that in general, it can be stated that the respondents strongly agree with the learning resources available in online learning resources.
8. UT-online learning accessibility is very beneficial for students and the general public, with a score of 4.15. In general, it can be stated that respondents strongly agree that the available learning resources are easily accessible.
9. Online self-evaluation helps students with self-evaluation with a score of 4.11. In general, it can be stated that respondents strongly agree with online self-evaluation exercises for mastery of the material.
10. The digital library helps to support learning activities with a score of 3.99. The response was very well to the digital library. In general, it can be stated that the respondents strongly agree that learning resources are available online learning resources.
11. UT-online provides TV and radio. The learning content needed by students scores 4.14, which means that, generally, the respondents strongly agree with the learning resources available in online learning resources.
12. The enrichment material for the web-supplement course helps improve the mastery of the material with a score of 4.02, which means that, in general, the enrichment of online material is very agreeable as an online learning resource.

So that the average of 12 items, the overall score produces a score of 4.1. In general, it can be stated that the respondents responded strongly agree that SUAKA-UT online learning resources are excellent.

4. Discussion

Based on the respondents' answers, several criteria indicate that SUAKA-UT has been socialized through various activities such as new student orientation and distance learning skills training. They have led to increased students' ability and digital literacy to take advantage of the online learning resources provided by UT. Ghofur & Wahjoedi (2018) explained that the increasingly diverse online learning resources give students more active and fun learning choices. However, this is also determined by the preferences and abilities of students in choosing the right online learning resources. Iswanto (2021) further explained that the socialization of online learning that is not optimal for institutional leaders and users could affect students' preferences and abilities in choosing the right learning resources. The availability of free and open materials found by the library still needs to be sought intensively by users who have not experienced OER services at the library.

This study further shows that students' preferences for online learning resources are excellent. All respondents from East Luwu Regency, Makassar City, Selayar Regency, and Sidrap Regency indicated that they preferred

SUAKA-UT as an online learning resource. The results of this study align with Sugilar's (2014) research that UT-Online, an online-based student learning service provided to all students with various characteristics and knowledge, shows an increase in its utilization. Student accessibility to UT online learning resources benefits students and the general public. Mardiana & Surahman (2022) explained that student accessibility needs to be improved by increasing digital literacy. It can be done by providing knowledge about how to access the internet safely and healthily and the ability to identify which applications and smartphones are good and wise for them to use. Easy access to SUAKA-UT using mobile devices and laptops helps students combine online learning resources with basic materials to help students utilize various supporting facilities to support learning success.

Based on the survey results, the ease of accessing UT-online as an affordable and valuable source of student learning averages 4.32 (excellent). It is the choice with the highest value among other items. The ease with which students access SUAKA-UT based on the responses to the research sample shows that online learning resources are easily accessible to areas in South Sulawesi. Triyono & Tatminingsih (2013) said a difference in the average score between groups that accessed and used SUAKA-UT. This difference in value indicates groups of students who are better and some who are less good at using SUAKA-UT. Student learning activities in accessing learning resources that can be obtained online can help improve mastery of the subject matter. UT's online learning resources include online tutorials, independent online exercises, web supplements, and a digital library. Online tutorials are study assistance services that can contribute to a student's final score added to the final semester exam score. Course enrichment materials using web supplements help improve material mastery with various online activities. They give students various choices or preferences in using learning resources. Preferences for teaching materials can be known by measuring each attribute's usefulness and relative importance in online learning material.

Student satisfaction with online learning resource facilities on the UT website (www.ut.ac.id) is a student's preference for making choices and decisions in utilizing available UT online learning resources. In their research, Rachman, Sukrawan, & Rohendi (2019) found an increase in learning outcomes by using UT's online learning resources. The average n-gain value evidences this at stage three, which reached 0.83 (high criteria), where students were delighted with the application of the blended learning model and enjoyed the learning process. More than that, as many as 78% of students stated that they were interested in and liked the blended learning model, which was characterized by increased motivation, interest, and awareness of students' learning. More specifically, UT-TV and UT Radio are media with learning content that students need and can be accessed by streaming. Ease of access helps students in utilizing these two media as learning resources. In their research, Susanti, Hart, Karyana, & Halimah (2018) found that a well-designed video could increase students' understanding of the informational aspects contained in the video. They included video duration, media form, use of colour, music and illustrations, presenter, and language use. Regarding online tutorials (Tuton), Sugilar & Abzeni (2015) explained that Tutons are UT online learning facilities known, used, and mastered at a very high level by students. Meanwhile, ITV-UT is the least known facility. It contrasts with the current condition where students are very adept at watching live streaming.

Open Educational Resources (OER) has been developed by various universities and organizations worldwide and Indonesia as a learning resource. Harliansyah (2020) argues that the learning process at universities in Indonesia will continue to develop using OER as a learning medium. According to McKerlich, Ives, & McGreal (2013), open educational resource initiatives have been ongoing for more than a decade, and higher education institutions are slowly adopting it. The use and manufacture of OER in all countries is an important aspect needed to improve the quality of education. The availability of quality educational materials readily and widely will change the teaching and learning paradigm and improve the quality of education and knowledge, which holds the key to a country's success. Furthermore, Mtebe & Raisamo (2014) view that open education (OER), which is freely available in the public domain, has the potential to improve the quality of resources. Tanzania, for example, is one country that has adopted and implemented OER as a higher education learning strategy. Meanwhile, in Indonesia, through SUAKA-UT, UT has pioneered the OER model's adoption and utilization.

Student accessibility to learning resources is primarily determined by the ease of students access to available learning resources. Almost all students are proficient and have skills in using technology such as android mobile

phones or laptops with a network to access SUAKA-UT. UT Makassar has conducted training on the use of online learning resources in a hybrid manner (online and offline) on new student study orientation activities and distance learning skills training. This activity aims to achieve student learning success through accessibility or ease of accessing online learning resources provided by UT. In implementing OER at UT, digital libraries or virtual reading rooms have a vital role. Basic materials or digital modules in full text are provided through virtual reading rooms. They are intended to help support student learning activities because they can be accessed anywhere and anytime using a mobile phone or laptop. Through this learning media, students can set the learning atmosphere to meet their planned learning targets. The combination of learning with digital library services for the UT academic community has helped students learn printed and digital basic materials with the same content, thus supporting students to read anywhere and anytime. Meanwhile, independent online practice helps students evaluate themselves through online problem solving with an automatic correction system. Blegur (2020) explains that the evaluation of learning outcomes directly through independent online exercises is objective and transparent, following the final goals that students want to achieve. It encourages students to focus on the final results obtained from their learning activities. This independent exercise also aims to help students discover their success or learning progress after studying a subject matter and prepare themselves for the end-of-semester exams. The question paper in this independent exercise is equipped with instructions containing signs to complete each item and feedback containing explanations for each correct or incorrect answer.

The aforementioned online self-learning facilities provide distance education students with a wealth of experience. The basic assumption of distance education is that all humans can learn independently and grow and develop according to their capacity to direct themselves and adapt to their learning conditions. The experience of using SUAKA-UT learning resources as open education resources (OER) has met the learning needs of UT students very well in remote areas and islands. SUAKA-UT allows individuals to learn according to their learning needs while still doing their jobs and carrying out other life tasks. Learning flexibly, with integrity, and oriented to meet learning needs is done by utilizing online learning resources. This study has shown that the overall score average is 4.10 out of ten SUAKA-UT service items. In general, it can be stated that the respondents strongly agree that the online learning resources provided by UT can meet the learning needs of students and can maximize their independent learning strategies. Student learning by utilizing SUAKA-UT can ultimately form an independent character by utilizing and seeking information and knowledge according to their needs and capacities, with initiatives to support the success of independent learning. It also supports students in applying local wisdom "siri" or "a shy character" if they are not success as it relates to self-esteem in the program and learning achievement.

5. Conclusion

In conclusion, student preferences for non-basic education programs at UT Makassar in utilizing SUAKA-UT online learning resources have been excellent. The tendency and preference of students to take advantage of UT's online learning resources have increased significantly. Meanwhile, the ease of access (accessibility) to UT online learning resources (SUAKA-UT) has an excellent assessment by students. Students respond very well to all online learning resources that UT provides to meet their need for helpful learning resources. In the end, to maintain the level of preference and accessibility of students to SUAKA-UT in the excellent assessment category, UT needs to maintain and simultaneously improve the quality of existing services. Eventually, this study recommends that future research can formulate a research model on the effect of preferences and accessibility on improving student achievement.

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An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills

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Abstract

The objective of this study was to create an “An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills ”based upon the following concepts: “*Develop the teacher so that they will develop their students,*” “Successful teachers, successful students,” and “Knowledge is not power; knowledge plus action equals power.” This study employed Research and Development (R&D) methodology, and the created online program consisted of the following: 1) a project for Teachers’ learning development with six online sets of instructions, and 2) a project for the Teachers to assist in developing students with one set of online action instructions. The created online program was examined by 25 teachers and 146 students in a randomly selected school, which represented the Pariyattidhamma Schools in the General Education section, which is under the National Office of Buddhism. The results validated the fact that the created online program had been effective. The findings illustrated that the post-development test for teachers had met the standard of the 90/90 criteria, and that the mean score had been statistically significantly higher than before the development. In addition, the students’ mean score on the assessment of the self-directed learning skills after the development had been statistically significantly higher than before the development. This indicated that the created online program could be disseminated for educational use in other Pariyattidhamma schools with a similar target population.

Keywords: Self-Directed Learning Skills, Online Program, Research & Development

1. Introduction

The 21st century is being impacted by change, globalization, digitalization, a surge in information, and unforeseen issue scenarios (Zyl & Mentz, 2022). One of the most important 21st-century skills is self-directed learning. Individuals must be able to plan, develop, adapt, and alter their learning in a society that is digital and interactive, and is being globalized. (Brandt, 2020). Furthermore, Karataş, Şentürk, and Teke (2021) mentioned in their study that knowledge of certain disciplines or academic knowledge has fallen out of favor with respect to furthering 21st-century skills. In particular, the 21st-century skills include learning and regeneration skills, learning to learn, managing metacognition, lifelong learning, and self-directed learning skills. In this regard, lifelong learning and self-directed learning skills, which have been defined as “monitoring the individual's own learning process,” are critical for teachers and pre-service teachers, who carry educational policies and curricula and put them into effect. Lifelong learning and self-directed learning are synonymous. At present, people must continue to study throughout

their lives, even if they are not learning in a traditional school setting. To be effective in the lifelong learning process, people must have self-directed learning skills. Because individuals must be able to organize, execute, and manage their own learning process in order to engage in lifelong learning, they must possess the skill of self-directed learning, which was mentioned above.

This concept is in accordance with Weimer (2010), who stated that self-directed learning skills refer to a person's ability to manage learning tasks without being supervised by others. These are skills that are vital for effective lifelong learning and are skills that students are required to develop in college. As students mature and acquire knowledge of the content, they are expected to have self-directed learning skills. In addition, Melkonian (2020) pointed out that self-directed learning describes a process in which an individual takes initiative (with or without the help of others) in diagnosing learning needs, setting learning goals, identifying human and physical resources for learning, and in determining appropriate learning strategies. Moreover, it represents the process of selection and performance to evaluate learning outcomes.

The opposite of self-directed learning is teacher-directed learning, which is often based on what is called "pedagogy," while self-study is based on "andragogy" (Loeng, 2020). Teacher-directed learning is represented by an authoritative person, who is responsible, and who directs and selects the lessons and content. The teacher chooses the groupings and the settings to make sure he / she is the leader of the lesson (Frazier, 2018).

The preceding information showed that the development of self-direction learning skills is critical to today's learning. Therefore, the research team conducted a synthetic study of the perspectives of Alternatives to School (n.d.), Andriotis (2017), Green (n.d.), Gutierrez (2017), Holz (2017), Self-Directed Learning (n.d.), Timpau (2015), and Western Academy of Beijing (2017). The academics believe that self-direction learning skills development can respond to the needs of education in the 21st century and a technological society this is rapidly changing. Self-direction learning skills development prepares students to search for knowledge according to their individual interests and supports the development of psychology and the nature of the learners. Learners can develop their personalities, learn new attitudes, and seek new knowledge, which will lead to lifelong learning, and which will, in turn, bring them many benefits. Learners can learn what they want and are interested in because they are able to determine their own ways of learning. The advantages generated by self-directed learning skills can be clarified as follows: a) objectives and goals can be set; b) there is determination in learning; c) there is the motivation to learn; d) learners can learn by having experiences in a real environment; e) they can implement the learning outcomes in their daily lives; f) they can be creative; g) they can develop good attitudes toward learning; h) learners can build confidence in learning; i) they can develop Self-esteem; j) they can seek new knowledge, k) learners can become self-organized in terms of time and knowledge; l) they can make plans, can follow-up, and can assess their own learning; m) they can develop rational thought processes; n) learners can explore; o) they can build human relationships with their colleagues, teachers, and with experts; and p) they can creatively solve problems.

There are 408 general education Phrapariyattidhamma Schools, under the National Office of Buddhism, which is scattered throughout various regions of the country. There is a curriculum for lower secondary and high school, which uses the Basic Education Curriculum B.E. 2551 of the Ministry of Education. The Buddhist teaching focuses on studying the Principles of Buddhism in the Tripitaka scriptures. Nevertheless, the general education in the Pariyattidhamma schools must be adjusted to continue to meet the needs of society in this era, especially developing the teaching performances of the teachers (National Office of Buddhism, 2020).

Both the influences of the self-directed learning skills, which focus on learning in the 21st century, and the expectations for quality improvement in the General Education section of Phrapariyattidham Schools inspired the research team to develop an educational innovation called "An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills." The development started with literature review related to self-directed learning skills from a wide range of perspectives. The knowledge gained was the foundation for the teacher's learning development. The teachers were expected to bring their learning outcomes and to direct them towards student development. In addition, the Research and Development (R&D) methodology was the key component of this study.

In a study by Sanrattana) 2018), it was pointed out that educational innovations, which are developed by the research and development methodology, are meant to help instructors improve the quality of their work. Teachers are expected to apply their knowledge and put it into practice, which will generate the power to work on the job more efficiently and effectively in accordance with the concept of "Knowledge + Action = Power." This concept led the researchers to believe that R&D be used to could create "An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills" that could be used to develop teachers. Consequently, the teachers would be able to apply knowledge to effectively and comprehensively develop their students. The online program, which was the result of R&D, was offered to schools in random experimental locations. Therefore, it can be disseminated to benefit other schools with target populations across the country. In accordance with the principles of R&D, once an innovation has been researched and developed and that innovation has been tested in a representative experimental area with a target population, and once the results of the experiment have confirmed that an innovation has been effective according to the specified criteria, then the innovation can be widely distributed for the benefit of the population that has been the reference group in the research.

2. Research Objective

The objective of this research was to conduct research with Research and Development (R&D) methodology that would effectively generate "An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills" according to the specified criteria. The designed online program was composed of a teacher's learning development project and a project to implement the teachers' learning outcomes to develop the students. These consisted of a module-based learning online instruction sets for self-learning, and an online instruction set to help teachers develop their students.

3. Research Hypothesis

The researchers reviewed the relevant literature to understand the academics' perspectives, and to create sets of online instructions. Next, the sets of online instructions were inspected and revised to ensure the validity of the research tools. The trials were conducted in the target school using R&D methodology, which is considered to produce beneficial educational innovations. Therefore, the hypothesis of the study was that the designed "An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills" would be in accordance with the specific criteria: 1) the post-development test for teachers would meet the standard of 90/90, 2) the mean score of the teachers' post-test would be statistically significantly higher than before the development, and 3 (the students' mean score on the assessment of innovation skills after the development would be statistically significantly higher than before the development.

4. Research Methodology

4.1. Concepts and Procedures

In this research, as in the researches of Promrub and Sanrattana (2022), Chobjai and Sanrattana (2022), and Dhanapañño and Sutheejariyawattana (2022), is based on the Research and Development (R&D) methodology, according to Sanrattana (2018), who believes that the innovations created via the R&D process should be utilized in personal development so that the quality of work can be increased by using phenomena as the empirical evidence, which suggests that the need exists. Furthermore, there have been a lot of randomly new ideas and hypotheses on educational innovations recently. These ideas have centered on the assumption that teachers will use their learning outcomes (Knowledge) to help learners grow (Action), which will result in more competent work performance (Power). Concisely, it is founded upon the principle that "*Knowledge plus Action equals Power.*" or "*Make Them Know What to Do, Then Encourage Them Do What They Know,*" and "Link to On-The-Job Application." Another crucial stage was to analyze the literature on media literacy skills, which is seen as a necessary first step when gathering knowledge for the creation of online program for the projects. Each project had its specific manual for self-learning modules. Therefore, the procedure of the study began with a literature review in accordance with the R1&D1...R2&D2...R3&D3...Ri&Di patterns as described below:

R1&D1: Reviewing the Literature The research team studied the literature related to the following aspects of self-directed skills: definitions, influences, characteristics, developmental approaches, the developmental processes, and assessments. The knowledge acquired from this step was utilized in composing six online sets of instructions to be used for the teachers' learning development and one set of online instructions for the teachers to use in student's development.

R2&D2: The First Inspection for Defects The first inspection to search for defects was conducted for the sets of online instructions. The elements, which were inspected, included conciseness, usefulness, appropriate language, and the presentation of appealing content. Focus group discussion was conducted with 10 teachers at Wiwegthamprasitwittaya School, a non-experimental site.

R3&D3: The Second Inspection for Defects The second inspection to search for defects was conducted for the sets of online instructions. The elements, which were inspected, included conciseness, usefulness, appropriate language, and the presentation of appealing content. Focus group discussions were conducted at two non-experimental sites: Chantwittayakhom School (with 8 teachers) and at Wat Nongwaengwittaya School (with 7 teachers).

R4&D4: The Review of the Additional Literature The research team carried out further study to collect more about the assessment of self-directed learning skills in order to utilize information to create two research tools: 1) the test for teacher's learning based on the content of six manuals and 2) the student's information self-directed assessment.

R5&D5: The Trial of the Online instruction sets The online instructions sets were evaluated at Prapatsorn Wittaya School at Wat Si Nuan, a school that had been randomly assigned to represent the General Education Department of Phra Pariyatidhamma school under the Division of Buddhist Studies of the National Office of Buddhism. The experiment took place in the Second Semester of the Academic Year of 2021. The experiment was divided into two phases.

Phase 1: Conducting Project 1: The Teacher Learning Development Project The activities and schedule consisted of the following steps:

1. For the teachers in the experimental group, the objectives and research methods in Phase 1 were clarified, and then the teachers' knowledge was assessed prior to the experiment (pre-test). This step took two days.
2. The teachers began the self-study modules using the online instructions sets and the self-study programs. The online sets of instructions were available for teachers to download from the research team's website. The learning process had to take place without any involvement from the members of the research team or from anyone else. This process took a month.
3. The target teacher group cooperated to inspect the online instructions sets for any defects in order to make improvements, and then took the post-test. This step took two days.
4. The research team analyzed the post-test results and compared the results to the standard criteria of 90/90. After that, they made a comparative analysis of the average scores of the pre-test and the post-test by using a t-test dependent. This step took two days.

Phase 2 : The Implementation of the Teacher's learning outcomes to develop the students The activities and schedule in this phase consisted of the following steps:

1. For the teachers in the experimental group, the objectives and research methods for Phase 2 were clarified and then the teachers' knowledge was assessed prior to the experiment (pre-test). This step took two days.
2. The teachers began the self-study modules using the sets of online instructions and the self-study programs. The online instructions sets were available for the teachers to download from the research team's website. The learning process had to take place without any involvement from the members of the research team or from anyone else. This process took a month.
3. The target teacher group cooperated to inspect the sets of online instructions, which focused upon self-directed learning skills assessment, and to search for any defects in order to make improvements, and then they took the post-test. This step took two days.

4. The research team made a comparative analysis of the average scores of the pre-test and the post-test using a t-test dependent. This step took two days.

4.2. Research Tools

1. The Teacher's learning outcomes test : This assessment tool was used to evaluate the teachers' knowledge as a pre-test and a post-test and consisted of multiple-choice questions with four answers. The research team created this test using the content from the sets of the teacher's learning online instructions, which were composed of definitions, influences, characteristics, developmental approaches, developmental steps, and assessments. The test was an online form (Google Form). In addition, it was based on Benjamin S .Bloom's cognitive domain in The Revised Taxonomy (2001), which classifies thinking skills from low to high as follows: remembering, understanding, applying, analyzing, evaluating, and creating (Armstrong, 2010). Finally, the validity of the test was examined in the following manner:

1. 1 The test validity was inspected by five experts, who were well-versed in the fields of curriculum, teaching, and measurements using Rovinelli and Hambleton's (1977) Indices of Item-Objective Congruence (IOC). The results indicated that every question had exhibited an IOC value of greater than 0.50 (Chaichanawirote & Vantum, 2017).

1. 2 The test was tried out with 30 teachers at two non-experimental schools: Sarakhunwittaya School and Thaprahongthetpradit School. The analysis showed the following: 1) the index of difficulty of the questions had been between 0.20 -0.80, and the power of discrimination had been between 0.20-1.00, which conformed to the specified criterion; 2) the KR - 20 coefficient was 0.91, which was greater than the specified criterion (equal to or greater than 0.70); and 3) the test difficulty had been equal to 44.44. Therefore, the test had exhibited the proper degree of difficulty.

2. The Students' self-directed learning skills assessment: The researcher constructed the assessment using a collection of characteristics from self-directed learning skills based on the perspectives of Atkinson (2015), Caruso (2011), Melaiikene (2015), Nucum, K, N (2019), and Vapulus (2019), and from a study of the concept of the assessment of the self-guided learning skills based on the perspectives of Khiat (2015), Stewart (2007), and Williamson and Seewoodhary (2007). The assessment form was an online form (Google Form) with 5-level rating scale: the most, very, medium, less, and the least. The validity of the assessment was examined as shown in the following steps:

2.1 The validity of the assessment form was inspected by five experts in the fields of curriculum, teaching, and measurement using Rovinelli and Hambleton's (1977) Indices of Item-Objective Congruence (IOC). The results indicated that every question had shown an IOC value of greater than 0.50 (Chaichanawirote & Vantum, 2017). Therefore, the questions could be used to assess the target group.

2.2 The Assessment Trial was conducted in a non-experimental school. There were 30 students from Wiwegthmprasitwittaya School, who participated in this step. Cronbach's method was employed to analyze the alpha coefficient of reliability. An analysis of the results demonstrated that the alpha coefficient of confidence for the entire questionnaire had been 0.97. The examination of each aspect revealed the following: 1) 'Awareness' had been 0.85, 2) 'Self-control' had been 0.69, 3) 'Self-assessment' had been 0.80, and 4) 'Learning desire' had been 0.92, 5) 'Learning strategy' had been 0.84, 6) 'Learning Activity' had been 0.85, and 7) 'Interpersonal communication' had been 0.89. The alpha coefficient of confidence had been greater than the specified criterion, which was equal to or greater than 0.70. Therefore, it was proven that the students' development assessment form could be utilized with confidence (UCLA :Statistical Consulting Group, 2016).

4.3. Data Analysis

1. The analysis and comparison of the post-experimental results from the teachers' learning outcomes had been in accordance with the 90/90 Standard. The first 90 represented the percentage of the mean scores, which had been obtained from the teachers' knowledge test. The second 90 represented the percentage of teachers, who had passed the test in accordance with all of the objective criteria (Yamkasikorn, 2008).

2. The t-test dependent statistic was employed to analyze the data and to compare the results from the teacher's learning outcomes and the student's self-directed learning assessment for both the pre-experimental test and the post-experimental test.

5. Research Results

"An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills" was comprised of two projects, each with its own instructions, and was based on the study's findings from the R1&D 1 stage.

1. The development of the teachers' learning project: There were 6 sets of instructions for teacher self-learning. Each set presented the perspectives of academics and agencies found in the relevant literature as follows:

1.1 The instructions for the definition of self-directed learning skills presented perspectives from Brookfield (1985), Garland (1985), IGI Global Disseminator of Knowledge (n.d.), Meredith (1989), Mezirow (1985), Mocker and Spear (1982), Petro (2017), Stefanou, Perencevich, DiCintio, and Turner (2004), Tekkol and Demirel (2018), and Weimer (2010).

1.2 The instructions for the influences of self-directed learning skills presented perspectives from Alternatives to School (n.d.), Andriotis (2017), Green (n.d.), Gutierrez (2017), Holz (2017), Self-Directed Learning (n.d.), Timpau (2015), and Western Academy of Beijing (2017).

1.3 The instructions for the characteristics of self-directed learning skills presented perspectives from Atkinson (2015), Caruso (2011), Melaikiene (2015), Nucum (2019), and Vapulus (2019).

1.4 The instructions for the developmental approaches of self-directed learning skills presented perspectives from Ark (2016), Briggs (2015), Centre for Teaching Excellence (n.d.), Cobb (n.d.), Cox (2019), Design Your Homeschool (n.d.), Dickinson (2018), Professional Learning Board (2018), and Weimer (2010).

1.5 The instructions for the developmental processes of self-directed learning skills presented perspectives from Brookes (2019), Dobbs (2017), and Harvey (2019).

1.6 The instructions for the assessment of self-directed learning skills presented perspectives from Khiat (2015), Stewart (2007), and Williamson and Seewoodhary (2007).

2. Implementation of teachers learning outcomes for the student development project: There was a set of instructions for practicing with the explanation and the list of essential topics on the following: 1) The Expected Self-Directed Skills Qualifications in Students, 2) The Developmental Guidelines for Self-Directed Skills, and 3) The Developmental Processes of Self-Directed Skills. The final part of the instructions was attached to the self-assessment for teachers and focused on the implementation of the developmental approaches and the developmental steps, feedback about the flaws in the instructions, and reflections from the teachers after completing the work.

Remarks:

- 1) Please refer to every manual written in Thai at: http://www.mbuisc.ac.th/phd/A_R&D%20Modules/PhaladLek.pdf
- 2) Please refer to the teacher practice level assessment form written in Thai at: <https://bit.ly/3HN9mcS>
- 3) Please refer to the teacher's learning outcome test written in Thai at: <https://bit.ly/3A1Iw9>
- 4) Please refer to the development assessment form self-directed learning skills of students written in Thai at: <https://bit.ly/3NmIvWi>

The employment of R2&D2, R3&D3, R4&D4 and R5&D5 generated the following: 1) six sets of online instructions for the development of teachers' learning outcomes; 2) a set of online instructions for the implementation of learning outcomes for student development; 3) the teacher's learning test; and 4), the student self-directed learning assessment form. Moreover, the field experimental research, which adopted the pre-experimental research with a one group pre-test/post-test design, was conducted. The online instructions were evaluated at Prapassornwithaya, which is a school that represented the General Education Phrapariyattidhamma Schools, under the National Office of Buddhism. An experimental research model, which was designed as a one group pre-test/post-test, consisted of an experimental group of 25 teachers and 146 students. The research findings

were consistent with the hypothesis that “An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills” was certified as beneficial according to the specific criteria. The details of the findings are discussed below:

1. Regarding the teacher's learning outcomes, the post-experimental test results conformed to the standard of 90/90. The first 90 represented the percentage of the mean post-test scores, which was 33.52 points out of 36 or 93.11 percent, and which was higher than the specified criterion (90). The latter 90 represented the percentage of the teachers, who had been able to complete all of the objectives. The results showed that 95.33 % of the 25 teachers had been able to pass all of the objectives on the exam. The number was determined to be higher than the specified criterion (90).
2. The results of the pre-experimental test mean score from the 25 teachers had been 28.56, and the standard deviation had been 2.77, while the post-experimental test mean score had been 35.52 and the standard deviation had been 1.87. After the data had been analyzed using a t-test dependent, the mean score of the post-experimental test was found to be statistically significantly higher than the mean score of the pre-experimental test at 0.05, which is shown in Table 1.

Table 1 :The t-test dependent results when comparing the teachers' learning outcomes before and after the experiment

Tests	Sample sizes	Means	Standard Deviations	t
Before	25	28.56	2.77	17.7019*
After	25	33.52	1.87	

*p < 0.05

- 3) The assessment results from self-directed learning skills with the 146 students before the experiment illustrated that the mean had been 3.49 with a standard deviation of 0.14. Meanwhile, the results from the assessment after the experiment had shown a mean of 4.35 with a standard deviation of 0.24. After the data had been analyzed using a t-test dependent, the mean score from the post-experimental assessment was found to be statistically significantly higher than the mean score from the pre-experimental assessment at 0.05, which is shown in Table 2.

Table 2: The t-test dependent results when comparing the students' information literacy skills before and after the experiment assessments

Assessments	Sample sizes	Means	Standard Deviations	t
Before	146	3.49	0.14	36.366*
After	146	4.35	0.24	

* p < 0.05

6. Discussion

The created program, “An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills” was developed from a study of the literature related to self-directed learning skills on the topic of definitions, influences, characteristics, developmental guidelines, developmental steps, and assessments. The body of knowledge from the literature review was developed into 6 sets of online instructions for teacher learning and 1 set for the teachers to use as a guideline for student development. The findings of the study demonstrated that “An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills,” which had resulted from utilizing R&D methodology, had allowed the post-experimental test results in the teacher's learning outcome to meet the standard of 90/90. Moreover, the learning outcome after the experiment had been statistically significantly higher than before the experiment. It also showed that after the experiment, the self-directed learning skills assessment of the students had been statistically significantly higher than before the experiment. The definitions of self-directed skills in late 20th century and in 21st century are similar, but the development approaches differ because the 21st century context consists of disruption, globalization, digitalization, a surge in information, and the scenarios rising from more unknown problem that are bound to cause

a lot of change. Therefore, the use of R&D methodology in this research as a tool for innovation development has resulted in innovations that are in line with the changing social conditions. As Ross (2021) stated, R&D is not solely about creating new products, because it can be used to strengthen an existing product or service with additional features. It showed that the online program, which was the result of this research, could be disseminated to 408 nationwide Phrapariyattidhamma Schools in the General Education section, which are affiliated with the National Office of Buddhism. In addition, according to the principles of R&D, once an innovation has been researched and developed and that innovation has been tested in a representative experimental area of the target population, and once the results of the experiment have confirmed that the innovation is effective according to the specified criteria, it means that the innovation can be widely distributed for the benefit of the population that is the reference group in the research (Sanrattana, 2018).

In this study, the research team placed emphasis on the idea that the intention for the educational innovations, which have been developed through the research and the developmental process, is that the innovations be used to develop teachers to improve the quality of their work. (The main task of the teacher is to manage teaching and learning to develop students.). Presently, there are many principles, concepts and theories that are considered innovative in education. Given these educational innovations, it is expected that if teachers have knowledge and they are motivated to convert the knowledge into practice, then the power to perform their duties in a more efficient manner will be generated. This concept is consistent with findings from Speck (1999) and Seyfarth (1999), who stated that to conduct educational administration, teachers must be educators and leaders in teaching and learning. It also in line with the concept of teacher professional development that was put forth by Gusky (2000) and Hoy and Miskel (2001), who agreed that in teacher development, the students must be considered with respect to the benefits that impact the ultimate goal of education. Furthermore, this is consistent the perspective of Narinto (2019), who identified that the development of teacher quality has always been an interest of educational reform. In the era when education is giving priority to 21st-century educational reforms based on rapidly changing social conditions, global society has become a society of knowledge or a society of learning. The model is in line with the world's current and future changing trends. In the 21st century, when educational changes are becoming a top priority, the world civilization has evolved into a learning society and a knowledge society. The model harmonizes with the present and future evolving patterns in the world. Rakwichtkul (2017) stated that teacher professional development is continuous learning. Therefore, professional development activities must be designed to integrate with the work that is being done. The teachers must improve their teaching so that the development of the students' learning potential will be positively affected.

To conform with the times and with technological advancements, a focus has been placed on the creation of online programs. Instead of a program that utilizes printed media, online programs and online media are more convenient and cost-effective to employ in a variety of situations. As noted by Wannaprapha (2017), social media is a tool for education, which enables people to communicate effectively, and which plays a role in education both in teaching and in learning & management. Teachers can use social media to benefit the education system via formal education and informal education. In the future, it is most likely that social media will help learners to explore the unlimited knowledge of time and space and will help to build self-directed learning skills for students more frequently than in the past. This is consistent with the view of Damjab (2019), who stated that current learning focuses on hands-on activities. Therefore, taking action and being self-directed should be encouraged by relying on the combined use of logical thinking skills and innovation & information technology.

7. Recommendations

As mentioned above, in the research and development portion of "An Online Program to Enhance Teacher Learning to Develop Students' Self-Directed Learning Skills," the research team places emphasis on utilizing the knowledge that is widely available on the Internet in order to further the development of teachers and students. The lessons, obtained from the research, revealed that the research method had assisted in the development of a variety of 21st-century abilities, such as: information literacy skills, media literacy skills, ICT (information, communications, and technology) literacy skills, cross-cultural skills, and productivity skills. Therefore, it may be feasible to establish another concept that can be regarded as a 21st century skill, which can be called "**R&D Skills**"

or "**R&D Thinking Skills.**" It may be a study that adapts the concepts from the R&D methodology, which were used in this research, and makes them suitable for classroom teaching.

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Appendix

The student's Self-Directed Learning Skills Self-Assessment form used in the research.

Self-Directed Learning Skills Characteristics	Self-Assessment levels				
	5	4	3	2	1
Awareness					
1. I am responsible for learning by myself.					
2. I can plan and set my own learning goals.					
3. I can identify my own learning needs.					
4. I can choose for myself the best learning method.					
5. I can maintain my motivation for learning.					
Self-control					
6. I can decide to learn according to my own needs and interests.					
7. I know my abilities					
8. I believe in my abilities					
9. I manage my time very well.					
10. I can prioritize my work.					
Self-Evaluation					
11. I can assess my basic learning skills.					
12. I am inspired by the success of others.					
13. I always check myself whether I have achieved my learning goals or not.					
14. I find both successes and failures motivating me to learn more.					
Desire for learning					
15. I want to learn new things					
16. I enjoy learning new information.					
17. I am always open to new ideas.					
18. I learn from experience and environment.					
19. I like to gather facts before making a decision.					
20. When I face an unresolvable problem I will ask for help					
Learning Strategies					
21. I am skilled at acquiring new knowledge through creative problem- solving learning.					
22. I like to learn as a group to exchange learning.					
23. I have found that having a friend as a mentor can help me study successfully.					
24. I find that concept maps are an effective method of learning.					
25. I have found that participating in teaching is more effective than listening to lectures.					
26. I have found that modern educational technology has greatly improved my learning process.					
Learning Activities					
27. I can choose an appropriate learning technique/activity.					
28. I like to take breaks between classes.					
29. I like to use concept maps to understand a wide variety of information.					
30. I can choose the right technology medium.					
Interpersonal communication					
31. I am always open to the opinions of others.					
32. I find it easy to work with others.					
33. I have always been successful in verbal communication.					
34. I can express my thoughts through writing effectively.					
35. I find it challenging to try to learn with a wide variety of people.					
36. Interacting with others has helped me develop deep understanding and learning.					

The Acquisition Level of 21st Century Skills in the Primary Education 4th Grade Social Studies Curriculum

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Abstract

Depending on classroom teachers' views, this study determined the acquisition level of the 21st-century skills in the primary education 4th-grade social studies curriculum. Designed in an explanatory mixed-method model, it used the interpretative phenomenological method for the qualitative data and the scanning method for the quantitative data. The sample consisted of 86 classroom teachers (42 female and 44 male) selected using the cluster sampling method, one of the probabilistic sampling methods. The quantitative data were collected using a 5-point Likert-type scale and analyzed using frequency (f) and percentage (%). The qualitative data were collected using a semi-structured interview form developed by the researcher and analyzed using the content analysis method. The result revealed that the primary education 4th-grade social studies curriculum was insufficient and impractical to convey 21st-century skills. However, it was better in gaining the skills of "collaboration," "using technology for learning," and "communication." It was determined to be insufficient in gaining the skills of "self-management/self-regulation" and making "global connections" and "local connections."

Keywords: Social Studies Course, Social Studies Education, Curriculum, 21st-Century Skills

1. Introduction

Globalization, economic, environmental, and political issues, and the rapid developments in information and communication technologies are constantly changing the knowledge and skills that individuals need for success (Chu et al., 2017; Griffin, McGaw & Care, 2012; Saavedra & Opfer, 2012; Zajda, 2015). In this sense, it is evident that traditional basic skills such as reading, writing, and arithmetic are insufficient in the 21st century. Today, global life requires a different educational approach and model that goes beyond the repetition skills, basic/applied knowledge, and limited literacy skills of the 20th century (Kereluik, Mishra, Fahnoe & Terry, 2013). One should be able to find alternative solutions to complex problems, communicate effectively, produce and manage information, work as a team, and adapt to rapid changes in order to have a good job, active citizenship, and happy life in the 21st century, described as an intense period of transformation (Ananiadou & Claro, 2009). The mentioned skills are acknowledged as the 21st-century skills in the literature.

It is observed that the role expectations and qualifications have drastically changed in parallel with the social, economic, political, and technological developments in the 21st century. Those changes also affect the education systems and create an urge to make certain changes in today's knowledge, skills, and competencies. According to Harari (2020), today, the last thing that should be delivered in education is knowledge, and it is vital to make sense of and use information, distinguish between what is essential and what is not, and associate information with the world. Technological innovations, political issues, economic changes, mass media tools, globalization, and multiculturalism are among the current issues we deal with today. Thus, students are expected to interpret world events, develop original ideas and products, learn about mass media, learn to live together with different languages and cultures, and make global and local connections, which will be possible with a multidimensional adaptation of education programs, schools, and curricula.

According to Cansoy (2018), the 21st century will be characterized by more challenging problems, a boost in knowledge, changes, and instability, and more autonomous organizations and systems. It will be the era in which humans would have a central place in organizations, the country's demographics would change due to migrations, and there would be multiculturalism and new ways of working. The key to leading a good life in the 21st century is possible with the acquisition of necessary knowledge and skills. Skill refers to solving problems, performing tasks, and applying knowledge to handle challenging tasks (Ananiadou & Claro, 2009). This comprehensive definition underlines the diversity of dispositions, knowledge, and abilities a student must have to exercise a particular form of expertise.

The 21st-century skills depend on applying knowledge and daily life experiences (Bal, 2018), which implies having interdisciplinary knowledge rather than specific information in a field. It can also be argued that one would have various skills such as management knowledge, cognitive and meta-cognitive skills (e.g., critical thinking, innovative thinking, learning to learn, self-regulation), social and affective skills (e.g., empathy, self-efficacy, cooperation) and practical skills (using new information and communication technologies) (OECD, 2018).

Since acquiring 21st-century skills would be possible with efforts in the classroom, school, and system level (Nieveen & Plomp, 2018), first of all, a mental transformation must be achieved in the whole education system (Saavedra & Opfer, 2012). In this sense, integrating the mentioned skills into curricula systematically and practically, enriching course contents by adding new and up-to-date topics and attainments, and engaging in interdisciplinary studies that help students acquire the intellectual, personal and social skills necessary for more in-depth learning and restructuring schools as learning institutions can be considered paths to success in 21st-century skills (Voogt & Roblin, 2012).

While food supply and shelter were the vital concerns of ancient people, today, the ability to compete in the global market and use knowledge and technology are the most fundamental priorities (Çiftçi & Bakar, 2020). Dynamic changes in the information society have entailed specific skills such as communicating to solve complex problems, producing, using, and sharing information, adapting to new demands and changing conditions and being open to innovations (Binkley et al., 2010; Saavedra & Opfer, 2010). 2012). Additionally, the supply and demand in the global market force individuals to acquire specific skills for future occupations that do not exist yet (Dede, 2010). Those skills refer to 21st-century skills involving harmonious working relationships, flexibility, and productivity in the interdisciplinary work world that requires cooperation (Saavedra & Opfer, 2012).

Despite the variety of 21st-century skills, critical thinking, problem-solving and cooperative work skills, and creativity are the standard features. The 21st-century skills are grouped under three skill fields "learning and innovation skills," "knowledge, media and technology skills," and "life and career skills" (Kylonen & Bertling, 2014; Trilling & Fadel, 2009). Although there is no common definition (Çiftçi & Bakar, 2020), it is an inclusive concept that embraces knowledge, skills, personality, and mental characteristics that one needs to contribute to the information society (Voogt & Roblin, 2010). Collaboration, leadership, entrepreneurship, initiative, curiosity, imagination, agility, adaptability, critical thinking, problem-solving, effective communication, and information access and analysis are among the 21st-century skills (Dağhan, Nuhoğlu Kibar, Menzi Çetin, Telli & Akkoyunlu, 2017). The 21st-century skills facilitate quick access to information and practical use to solve daily problems,

expect individuals to have sophisticated skills, use technology effectively, and approach world events and phenomena from a broader perspective.

21st-century skills help raise individuals who know their rights and responsibilities as world citizens, contribute to a healthy and global society, seek sustainability, and share their ideas and know-how to propose new policies (Saavedra, 2012). In addition to acquiring civic knowledge, individuals with those skills can think critically, produce solutions to social problems, analyze events and phenomena without prejudice, and make better choices and decisions (Saavedra & Opfer, 2012).

The 21st-century individuals are expected to think critically and creatively, solve problems, cooperate and communicate with others well, access information by using technology effectively, take responsibility, have self-management, leadership, and social skills, be open to new ideas, and be productive, self-confident, flexible and adaptable. It is predicted that individuals with those skills and characteristics will be successful in education and business life (Eryılmaz & Uluyol, 2015). Today, the primary goal of education is to raise responsible and creative individuals who can adapt to changes and find solutions to problems, are open to criticism and have a flexible mindset characterized by multidimensional and critical thinking skills (Kutlu & Schreglmann, 2011). The mentioned competencies can be considered 21st-century skills.

In Turkey, 65% of teachers stated that the Turkish Education System could not adapt to the globalization process, students do not know universal values (66%), the current education system cannot solve students' problems (68.3%), and they suggested reframing the educational content, goals, and values (85.4%) (MoNE, 2011), which underlies the serious challenges in the acquisition of 21st-century skills in schools. The primary reason for this problem is the teaching programs and curricula because they are essential elements of any education system that directly affect national development and future policies and integrate traditions with contemporary values. In parallel with the trends of our age, the efforts to raise socially, culturally, and technologically better-equipped generations place curricula at the center of the education process.

A curriculum consists of four basic components: goal, content, instructional activities, and measurement and evaluation process, and it is a guide for practitioners (Yazıcı & Koca, 2008). It is a learning experience mechanism that provides learners with planned activities in and out of school (Demirel, 2021). It produces learning outcomes based on the characteristics of the age and is an instrument to educate an ideal individual (Doğanay, 2005). A social studies curriculum, which focuses on teaching concepts, values, and skills, aims to ensure that students acquire the target knowledge and skills under the guidance of teachers. According to Belet-Boyacı and Güner-Özer (2019), curricula can be considered an introductory guide to education for students.

However, 21st-century skills cannot be acquired only by student requests or teacher competencies. It is possible with radical and systematic changes and purposeful practices. Therefore, in recent years, 21st-century skills have begun to find a place in curricula (Demir & Özyurt, 2021). For example, 21st-century skills have been integrated into curricula and education programs of several institutions and organizations in most states in the USA (Gelen, 2017). Likewise, Australia, Canada, Finland, Belgium, Ireland, Italy, Norway, and New Zealand have included 21st-century skills in their curricula (Anagün, Atalay, Kılıç, & Yaşar, 2016) because the given skills are acknowledged to have great significance in modern education systems (Larson & Miller, 2011; Saavedra & Opfer, 2012). In Turkey, 21st-century skills were integrated into the revised curricula in 2017, one of which was the Social Studies Curriculum.

The social studies course curriculum can be one of the most suitable instruments for delivering 21st-century skills (Çelikkaya, 2011). It aims to train individuals who can produce and use knowledge, solve problems, think critically, communicate and empathize better and have an entrepreneurial spirit (MoNE, 2018). Social studies course prepares students for social life and provides students with particular skills to succeed in business, private, and education. Social studies course content closely intertwined with daily life offers preliminary preparations for social events, phenomena, or concepts that students may encounter and helps them become well-equipped individuals. The main objectives of the social studies course include information processing and management and

the transfer of cultural norms, values and citizenship responsibilities (Öztürk, 2010). In this sense, social studies courses can be practical in helping students adapt 21st-century skills.

This study aimed to determine the acquisition level of the 21st-century skills in the primary education 4th-grade social studies curriculum, address the relevant problems and suggest additional ways to acquire the given skills better. Although some studies focus on evaluating or delivering a limited set of 21st-century skills, there is no systematic and overall approach to those skills (Jia, Oh, Sibuma, LaBanca & Lorentson, 2016). Aiming to develop sustainable educational programs, our study would fill the gap in the literature by analyzing the available curricula from a critical perspective and uncovering the social studies course curriculum's strengths and weaknesses in reflecting 21-century skills. It is also hoped that it would be an opportunity for teachers to become familiar with 21st-century skills. We also aimed to determine the multidimensional requirements for the effective integration of 21st-century skills into social studies curricula. The fact that it is important to start teaching 21st century skills at primary school or even pre-school age (Çetin & Çetin, 2021) and the fact that the primary school period is an important period in which the foundations of personality development are laid constitute one of the reasons why this research is included in the primary school fourth grade social studies curriculum.

Depending on classroom teachers' views, this study determined the acquisition level of the 21st-century skills in the primary education 4th-grade social studies curriculum. In this sense, answers to the following questions were sought:

1. What is the acquisition level of the 21st-century skills in the primary education 4th-grade social studies curriculum?
2. What are the problems in acquiring the 21st-century skills in the primary education 4th-grade social studies curriculum?
3. What can be done to improve the acquisition of 21st-century skills in the primary education 4th-grade social studies curriculum?

2. Method

2.1. Study Model

We used the interpretative phenomenological method for the qualitative data and the scanning method for the quantitative data. This study applied an explanatory mixed-method model to determine the acquisition level of 21st-century skills according to classroom teachers' views. An explanatory mixed-method allows to carry out two research: firstly, a quantitative study is completed, and then qualitative research is planned accordingly. According to Creswell and Guetterman (2018), combining qualitative and quantitative research methods provides a better understanding of a given problem.

The quantitative data were collected using a scanning method that shows participants' opinions, attitudes, interests, and competencies about a subject or situation (Büyüköztürk, Akgün, Karadeniz, Demirel & Çakmak, 2017). Additionally, the study used the interpretative phenomenological method for the qualitative data regarding classroom teachers' opinions and experiences on acquiring mentioned skills.

2.2. Study Sample

The sample consisted of 86 classroom teachers (42 female and 44 male) selected using the cluster sampling method, one of the probabilistic sampling methods. Cluster sampling is preferred when all clusters in the universe have an equal chance of being selected (Karasar, 2018). Of the teachers who worked with the 4th graders, 42 (48.84%) were female, and 44 (51.16%) were male. 53 teachers stated that the primary education 4th-grade social studies curriculum was insufficient and impractical to convey 21st-century skills. We interviewed 28 of them who were selected using the snowball sampling method, one of the purposeful sampling methods (16 male and 12 female). Following Patton's (2015) questions of "Who knows the most about the issue? Whom would you recommend us to interview?"

2.3. Data Collection Tools

The study data were collected using the *21st Century Competencies Scale* developed by Niemi, Pehkonen, Niu, Teng, and Harju (2018) as a quantitative data collection tool. It is a 5-point Likert scale (i.e., Very inadequate, Inadequate, Moderate, Good, Perfect) with 58 items. The maximum score obtained from the scale is 290, and the minimum is 58. The Cronbach's Alpha reliability coefficient was calculated as .96. After the Turkish translation of the instrument, it was checked by two academics and two English teachers and revised based on the feedback. The qualitative data were collected using semi-structured interview forms developed by the researchers to determine the reasons for the inadequacy of the curriculum and learn about the suggestions and ways to improve it. According to Yıldırım and Şimşek (2018), semi-structured interview forms involve questions that participants can answer as they wish. Interviews were conducted after testing the interview form and scheduling the place and time of the interviews. The interview questions/items were prepared considering the study goal, sub-problems, comprehensibility, and clarity. The draft form, created by taking the opinions of two field experts, was tested on four teachers who were not included in the sample but had similar characteristics. Then, it took its final form.

2.4. Data Collection

The participants were informed in detail about the study goal, data collection tools, and processes. The data were collected through face-to-face interviews. Instead of real names, the participants were coded as T-1, T-2... T-86. The scale used to collect quantitative data was completed by the participants in approximately 30 minutes and under the researcher's supervision. Each interview to collect qualitative data took approximately 15 minutes, and at the schools where the teachers worked, audio recordings were made, and notes were taken with the consent of participants. The scientific research principles and publication ethics were followed in the study. Necessary permissions were obtained from the relevant institutions, the participants were informed in detail about the study, and signed an informed consent form.

2.5. Data Analysis

The quantitative data, including participant responses to the scale, were analyzed using frequency (f) and percentage (%). The response rates and percentages were determined and interpreted. The qualitative data obtained from the interviews were analyzed by content analysis. The participant responses were grouped by similarities, and the data were quantified (digitized) through descriptive statistics (i.e., frequency and percentage). Quantification of qualitative data involves a numerical description of the data obtained through qualitative data collection tools (e.g., interview, observation, document review) (Yıldırım & Şimşek, 2018). Direct quotations were made from the participants' statements.

3. Findings

3.1. Findings Regarding the First Sub-Problem

The data on the acquisition level of the 21st-century skills in the primary education 4th-grade social studies curriculum are shown in Table 1 below.

Table 1: The acquisition level of the 21st-century skills in the curriculum

Level	f	%
Very inadequate	17	19.77
Inadequate	36	41.86
Moderate	8	9.30
Good	15	17.44
Perfect	10	11.63

As seen in Table 1, 19.77% of the participants stated that the primary education 4th-grade social studies curriculum content was “very inadequate” to deliver the 21st-century skills, 41.86% “inadequate”, 9.30% “moderate”, 17.44%

“good”, and 11.63% “perfect”. In terms of frequency percentages, %61.63 stated that the primary education 4th-grade social studies course curriculum was “insufficient” and “very inadequate,” and %29.07 rated “good” and “perfect.” This study also examined the acquisition level of the 21st-century skills in the current curriculum. The results are presented in Table 2.

Table 2: The acquisition level of the 21st-century skills in the current curriculum

21 st Century Skills	Very inadequate		Inadequate		Moderate		Good		Perfect	
	f	%	f	%	f	%	f	%	f	%
Critical thinking	10	11,63	13	15,12	14	16,28	28	32,56	23	26,74
Collaboration	5	5,81	7	8,14	12	13,95	36	41,86	28	32,56
Communication	7	8,14	11	12,79	15	17,44	30	34,88	25	29,07
Creativity and Innovation	15	17,44	18	20,93	16	18,60	21	24,42	18	20,93
Self-regulation/self-management	15	17,44	19	22,09	17	19,77	20	23,26	17	19,77
Global connections	20	23,26	22	25,58	23	26,74	11	12,79	12	13,95
Local connections	17	19,77	21	24,42	21	24,42	14	16,28	15	17,44
Technology use	6	6,98	11	12,79	13	15,12	32	37,21	26	30,23
Teaching in digital environments	14	16,28	16	18,60	12	13,95	26	30,23	20	23,26

As we understood from the table above, the primary education 4th-grade social studies curriculum was good enough to present the skills of "collaboration" and "technology use," but it was insufficient in terms of gaining "global connections" and "local connections" skills. In terms of the frequency percentages of "good" and "perfect", the order of the skills was as follows: Collaboration (74.42%), technology use (66.44%), communication (63.95%), critical thinking (59.30%), teaching in digital environments (53.49%), creativity and innovation (45.34%), self-regulation/ self-management (43.03%), local connections (33.72%), and global connections (26.74%).

3.2. Findings Regarding the Second Sub-Problem

Table 3 shows the data on the obstacles related to the primary education 4th-grade social studies curriculum.

Table 3: Obstacles related to the curriculum

Obstacles	f	%
It is not student-centered.	26	92.86
It is exam-oriented.	24	85.71
Frequent changes are made in the curriculum.	23	82.14
It does not update itself.	21	75.00
It does not consider stakeholder opinions.	19	67.86
Its content is too loaded.	16	57.14
It is not developed by field experts.	13	46.43
It does not have universal content.	11	39.29
It is inflexible.	8	28.57

The reasons why the primary education 4th-grade social studies curriculum was inadequate to reflect the 21st-century skills can be listed as follow: the curriculum is not student-centered but exam-oriented; it is changed frequently; it lacks updates and improvements and does not consider the views of stakeholders or field experts; the content of the curriculum is too loaded; it is not flexible and does not include universal subjects. Some teachers' statements on the obstacles in the primary education 4th-grade social studies curriculum are given below:

- T4: The curriculum is teacher-centered and even book-centered, which is a barrier between students and us.
- T12: We completely and only focus on exams. Now we have nothing to worry about but exams. Well, who cares about 21st-century skills!
- T23: Those educational programs will not work well as long as they are developed without taking the opinions of teachers, who are the actual practitioners.

T41: Since the curriculum content is very loaded, there is no time for 21st-century skills.

T72: The curriculum is not based on scientific developments but is driven by ideological and political concerns.

3.3. Findings Regarding the Third Sub-Problem

Table 4 shows the data on what can be done to make the curriculum more effective and practical in teaching the mentioned skills.

Table 4: Suggestions for the curriculum

Suggestions	f	%
Exam-oriented approach should be abandoned.	25	89.29
The curriculum should be student-centered.	23	82.14
Stakeholders' views should be considered in preparing the curriculum content.	20	71.43
The curriculum should have universal content.	18	64.29
The era's trends should be considered in preparing the curriculum.	17	60.71
The curriculum content, coursebooks, and other materials should be prepared coherently.	16	57.14
The curriculum content should be reduced.	15	53.57
The curriculum should be dependent on practical experiences.	12	42.86
Modern educational tools and methods should be included in the curriculum.	11	39.29
Field experts should prepare the curriculum.	8	28.57
The curriculum should aim to present 21st-century skills.	5	17.86

As seen in Table 4, teachers recommended abandoning the exam-centered approach, developing a student-centered program, taking stakeholders' opinions, integrating universal values, trends of the era, and modern educational tools and methods into the curriculum, preparing coursebooks and other educational materials considering the curriculum content, reducing the program content, adopting an application-oriented approach and taking expert opinions in preparing a curriculum that should focus on the acquisition of 21st-century skills. Some teachers' suggestions to make the curriculum more effective in teaching the 21st-century skills are summarized below:

T9: An effective curriculum should not focus on exam performance.

T32: Students should be prioritized in preparing a curriculum.

T51: Teacher and field expert opinions should be considered when developing a curriculum.

T80: Local, political, or ideological concerns should be eliminated in preparing a curriculum characterized by universal values.

4. Discussion and Conclusion

The study results showed that 60.23% of the participants found the primary education 4th-grade social studies course curriculum insufficient to teach 21st-century skills, and 30.68% found it good or perfect. Similar to our findings, in a study conducted by the Turkish Ministry of National Education, the majority of the teachers stated that students could not acquire the universal values of the 21st century, the current education system did not have international standards, and the values and goals to be achieved should be renewed (MoNE, 2011). Barası and Erdamar (2021) found that the current education program partly had the 21st-century competencies and that skills such as critical thinking, learning to learn, creativity, entrepreneurship, and leadership were not adequately included in the program, which overlaps with our findings. Similarly, Sarıtaş and Yılmaz (2022) revealed that despite the efforts to update the curriculum, it still lacked most 21st-century skills. Demir and Özyurt (2021) suggested enriching the social studies course curriculum and making it inclusive, which parallels our suggestions. The findings of Kayhan, Altun, and Gürol (2019), emphasizing that the current curriculum did not adequately achieve the goal of raising individuals with 21st-century skills, align with our findings.

The inefficiency of the current curriculum in teaching 21st-century skills stems from the fact that scientific principles were not prioritized in developing it. Besides, the curriculum was not addressed as a whole with its educational goals, content, learning-teaching experiences, and measurement-evaluation dimensions, and the emphasis was unnecessarily on the content. According to Cuban, passive learning, drilling, and memorization are prevalently used in social studies curricula, and many teachers do not care about what, why, or how they teach (Russell, 2010). In Turkey, the curricula on how to gain 21st-century skills lack explicit content and assessment and measurement methodology (Bozkurt, 2021). The ambiguous place of 21st-century skills in the curriculum leads to problems in implementation (Arı & Çalıřođlu, 2021; Öztürk & Kafadar, 2020). The uneven distribution of 21st-century skills in the curriculum negatively affects the utility of those skills as well (Bal, 2018). It should be noted that the curricula in Turkey are incompatible, inconsistent, and very inadequate in terms of 21st-century skills (Gelen, 2017). Besides, teachers do not prioritize the acquisition of 21st-century skills, which makes it challenging to popularize those skills (Saavedra & Opfer, 2012b).

The given curriculum was effective in presenting collaboration skills (74.42% of the participants), technology use skills (67.44%), communication skills (63.95%), critical thinking skills (59.30%), teaching skills in digital environments (53.49%), creativity and innovation skills (45.34%), self-regulation/self-management skills (43.03%), local connections skills (33.72%), and global connections skills (26.74%). In this sense, it was concluded that the primary education 4th-grade social studies curriculum was better at gaining the skills of "collaboration," "use of technology," and "communication" but not practical in terms of "self-regulation," and "global connections" and "local connections." Similarly, in their studies, Bozkurt (2021) and Barası and Erdamar (2021) found that the social studies education undergraduate program was better in gaining cooperation and communication skills but not sufficient for gaining global and local connection and self-regulation skills, which aligns with our findings. Sarıtař and Yılmaz (2002) determined that the self-management skills were not efficiently addressed in the curriculum, and there were no relevant texts or activities in coursebooks. In the studies conducted by Bal (2018), Demir and Özyurt (2021), and Kayhan, Altun, and Gürol (2019), it was concluded that the social studies course curriculum did not cover all of the 21st-century skills, and there was no balanced distribution of those skills in the program.

The social studies course curriculum was deficient in meeting the needs to establish, improve and manage global and local connection skills. It can be suggested that the inability to think globally, interpret local and global events, and take the right attitudes and actions causes several problems. Self-regulation/self-management skill is characterized by managing goals and time, determining success criteria, balancing short and long-term goals, working independently, and being self-directed and self-disciplined (Yalçın, 2018). The deficiency in self-regulation skills prevents individuals from having a planned life, developing self-discipline, managing time, and adapting to changes. Therefore, the curriculum, which would offer the opportunity to lead a better life and become a value-creating individual, should include those skills in a balanced and consistent way.

The reason that the curriculum was better in gaining some skills but worse in others is that those skills were not sufficiently included in all aspects of the curriculum. As Binkley et al. (2016) stated, a description of 21st-century skills in a curriculum is not enough to present to learners as long as the methodology to transfer those skills is not clarified well. According to Hamarat (2019), the 21st-century skills in curricula do not cover the whole system but focus on only one dimension, preventing transfer and acquisition. In this sense, as implementers of curricula, teachers also play a role in the ineffective transfer of 21st-century skills. For instance, Sarıtař and Yılmaz (2002) found that teachers did not know the curriculum content well.

The participant teachers listed the reasons why the primary education 4th-grade social studies curriculum was inadequate to transfer the 21st-century skills as follows: the curriculum was not student-centered but exam-oriented; it was changed frequently; it lacked updates and improvements and did not consider the views of stakeholders or field experts; the content of the curriculum was too loaded; it was not flexible and did not include universal subjects. Bozkurt (2021) similarly revealed that the main obstacle in acquiring 21st-century skills is the teacher-centered instruction model and examinations centered only on cognitive skills. One participant (T4) said, "The curriculum is teacher-centered and even coursebook-centered. It prevents reaching students.". In a study by Tař and Kırdođlu (2018), it was concluded that the content of the primary education 4th-grade social studies

curriculum was too loaded, and individual differences were not taken into account in the measurement-evaluation process. One participant (T41) said, "As the curriculum content is so loaded, there is no time to teach 21st-century skills." In the studies by İltter (2017) and Russell (2010), teachers' using passive learning and lecturing techniques and the textbooks as the primary source of information are among the obstacles to gaining 21st-century skills. Similarly, Barası and Erdamar (2021) underlined the unnecessarily overlapping and out-of-date knowledge, uninteresting learning content in curricula, the lack of physical infrastructure, material, and time, and the exam system that cannot measure skills as the most frequently encountered problems.

Time is changing, which requires individuals to be equipped with various skills than ever before. The increasing complexity of life entails the need for people with advanced skills in several fields (Mutluer, 2013). The failure to integrate the mentioned skills into curricula, which have become more critical in knowledge-based economies, may make it difficult to succeed in the 21st century (Rotherham & Willingham, 2009). This indicates a need for reforms in schools and education systems to meet students' and society's social and economic needs in the 21st century (Larson & Miller, 2011) and suggests that curricula should be updated accordingly.

For an effective transfer of 21st-century skills, the teachers recommended abandoning the exam-centered approach, developing a student-centered program, taking stakeholders' opinions, integrating universal values, trends of the era, and modern educational tools and methods into the curriculum, preparing coursebooks and other educational materials considering the curriculum content, reducing the program content, adopting an application-oriented approach and taking expert opinions in preparing a curriculum that should focus on the acquisition of 21st-century skills. It has been seen that they recommend that experts in the field prepare the program and that the program aims to gain 21st-century skills. The participants (T9, T32, T50, T80) said, "For a good curriculum, exams should be put aside, but students should be taken to the center. In preparing a curriculum, the opinions of teachers and experts should be sought; local, political or ideological concerns should be left aside, and universal values should be considered instead". They are meaningful findings that support our quantitative findings. Barası and Erdamar (2021) suggest increasing the curriculum's applicability by reducing the number of educational attainments, abandoning the exam-oriented approach, and using alternative assessment and evaluation techniques to measure 21st-century skills, which overlap with our findings. Demir and Özyurt (2021) found that the social studies curriculum should be enriched to be inclusive and develop students' 21st-century skills, supporting our results.

As reported in the social studies course curriculum, the main purpose of the education system is to raise individuals with knowledge, skills, and behaviors integrated with values and competencies (MoNE, 2018). According to Saavedra and Opfer (2012), for students to acquire 21st-century skills, a mental transformation strategy should be applied to the entire education system, teachers should be trained to convey these skills, and cooperation in schools should be increased. According to Taş and Kıröğlü (2018), the active participation of teachers in the curriculum development process should be ensured, the curriculum content should be reduced, and an appropriate measurement-evaluation method should be adopted. Voogt and Roblin (2012) indicate that the course content should be enriched with new topics, and more emphasis should be placed on interdisciplinary studies in the curriculum. According to Arı and Çalışoğlu (2021), the curriculum should be renewed and updated, an acquisition-skill relationship should be considered, and modern methods and techniques should be preferred for the transfer of skills.

5. Recommendations

1. The social studies course curriculum should be revised; the 21st-century skills should be equally integrated into objectives, achievements, learning-teaching situations, content, and measurement-evaluation techniques, and the delivery of these skills should be exciting, purposeful, and reinforced with activities and practices.
2. Raising individuals who are well-equipped with social, cultural, scientific, and technological skills should be at the core. The curriculum should be prepared to meet the requirements of the age and the changing needs of people and society and reflect the modern education theories and approaches.

3. The whole education system, especially the curricula, should undergo a mental change and transformation, and developed countries' education systems and curricula should be considered role models.
4. Teachers' rush to transfer academic information and students' efforts to memorize should end, the education system should stop focusing only on test scores, and a student-centered approach that reveals the hidden potential should be adopted.
5. Up-to-date information, skills, values, and habits should be pursued to develop a consistent, balanced, inclusive, and rich curriculum that reflects 21st-century skills.
6. Since teachers play vital roles in implementing the curricula, the active participation of teachers in the curriculum development/revision process should be ensured. Cooperation should be made with several national and international institutions and organizations, and field experts' and scientists' opinions and suggestions should be carefully considered at every stage of education program development.

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An Online Program for Teacher Learning to Enhance Students' Media Literacy Skills

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Abstract

“An Online Program for Teacher Learning to Enhance Students' Media Literacy Skills” was a product of employing Research and Development (R&D) methodology. It consisted of the teachers' learning development project and the utilized the teachers' learning outcomes for the student development project. The first project yielded six teachers' learning handbooks, whereas the second project was composed of one action handbook that utilized the teachers' learning outcomes to foster student development. The handbooks were evaluated in a school that represented the opportunity expansion schools under the Commission on Basic Education. In the experimental research model, which was designed with a one group pre-test/post-test, there was an experimental group of 12 teachers and 59 students. The results revealed that the invented online program had been effective and consistent with the study's assumptions. The findings illustrated the following: 1) the post-experimental test for teachers had met the standard of 90/90, 2) the teachers' post-test mean scores had been statistically significantly higher than before the experiment, and 3) after the experiment, the students' mean score on media literacy skills assessment had been statistically significantly higher than before the experiment. In addition, the results verified that the created online program would be appropriate for the dissemination in the target opportunity expansion schools under the Office of the Basic Education Commission throughout the country.

Keywords: Online Program, Teacher Learning, Students' Media Literacy Skills

1. Introduction

The advancement of technology and the invention of various innovations have brought disruptions into Thai society. Since the use of social network applications began, these disruptions have occurred even in communications, and the forms and methods have definitely been diverse. No matter where we are, people around world can interact and receive instant information in real time through video calls. The disruptions have caused Thai people to change their mindsets and attitudes towards themselves and the world. It is important to note that we need to enhance our skills for learning and to keep up the world's current situations and our daily life challenges (Sangsingkaew & Duangphummet, 2020).

Media and information literacy skills are crucial for digital era citizens. Children live their lives in two different worlds: the real world and the virtual world through social networks. As citizen creators, teachers must train children to become dependable people, who can take part in development and can move the society in better directions (Dulkanit, Asawasowan, Jetsan & Umpornpruti, 2020). Children need to learn new life skills that enable them to keep pace with change, including changes in the areas of technology, the environment, the economy, and society, as well as learning the skills of citizenship, which can help us to coexist with others. Therefore, learning media and information literacy skills should become a necessary subject in school in order to develop digital citizens, who can shape Thai society to become a knowledgeable society by using media creatively (Prachatai News, 2020).

The International Federation of Library Associations and Institutes (2012) defines *media and information literacy* as “a combination of knowledge, attitudes, skills, and practices required to access, analyze, evaluate, use, produce, and communicate information and knowledge in creative, legal and ethical ways that respect human rights.” Meanwhile, The United Nations Educational, Scientific, and Cultural Organization (UNESCO) defines it as the “set of competencies to search, critically evaluate, use and contribute information and media content wisely; knowledge of one’s rights online; understanding how to combat online hate speech and cyberbullying; understanding of the ethical issues surrounding the access and use of information; and engaging with the media and ICTs to promote equality, free expression, intercultural/interreligious dialogue, and peace, etc.” (UNESCO, n.d.).

Media literacy is important because it provides the right knowledge and understanding of the media access. It helps learners to analyze and distinguish the similarities and differences in various media contexts (Koltay, 2011). Fortun (2018) stated that media literacy enhances learners’ knowledge in the following areas: 1) sharing and exchanging online resources critically, 2) the media makers' social responsibility, 3) awareness of cultural impact, 4) the ways of communication, 5) communication devices, 6) media target access, 7) protecting one’s self from the media, and 8) making creative media.

Thailand values media literacy and information literacy, as evidenced by the National Strategy (2018-2037) that requires learners to be able to think critically. It also highlights the need to have the ability to constantly learn, adopt, and adapt to modern technologies (Office of the Secretary of the National Strategy Board, 2018). Meanwhile, The Cabinet has also set a policy to establish a digital learning platform and to encourage the use of appropriate information technology and creativity in a wide range of open online teaching and learning. The policy aims at a self-study concept based on the learners’ interests and ages, as well as developing learning resources and learning parks for Thai youth that connect technology with their lifestyles (Secretariat of the Cabinet, Thailand, 2019).

In addition, the National Education Act of 1999, as amended (No. 2), B.E. 2545 assures that Thai students will have sufficient knowledge and skills to use the technology for education in order to pursue self-knowledge continuously throughout life (Office of the National Education Commission, 1999). Furthermore, the National Education Plan 2017-2036, identifies that all learners must adopt the characteristics, as well as 21st century learning skills. The learners must adopt the skills of the 3R’s: 1) Reading, 2) Writing, and 3) Arithmetic), and the other 8C’s: 1) critical thinking skills; 2) problem solving skills; 3) creativity & innovation skills; 4) intercultural understanding & paradigm skills; 5) cooperation teamwork & leadership skills; 6) communication skills, which include information & media literacy skills, computer skills, information & communication technology skills; 7) vocational skills; and 8) learning skills, or demonstrating compassion, kindness, discipline, morality, and ethics (Office of the Education Council, 2017).

The focus of the budget for fiscal year 2021 was placed on developing teachers at all levels to have the necessary skills and knowledge. Learners, teachers, and educational administrators should have a variety of learning options at all times. Meanwhile, the Office of the Basic Education Commission (2020) set a policy to develop a new era of teachers and educators, who would be trained to reach their potential in teaching and learning according to competency-based curriculum. Moreover, the policy states that they should be trained to perform their duties

skillfully and be knowledgeable in using digital technology in order to continuously develop professionally, while embracing the spirit of being a teacher (Rohitsathien, 2020).

Based on the reasons mentioned above, it can be seen that in the view of the national authorities, media and information literacy skills are important. Therefore, the research team further studied the additional literature related to media and information literacy skills in order that the knowledge could be used to benefit teacher development. Following this, the teachers would bring their learning outcomes to promote student development. The results of the study found that academics and educational organizations have widely expressed their views on media and information literacy skills development. Some sources have referred to the development of media and information literacy skills, while some have referred only to media literacy skills, and others have referred to information literacy skills. As a consequence, the study team carried out an evaluation and concluded that further explorations into certain aspects would be more valuable for continuous teachers' development since these explorations would provide a particular body of information. Therefore, the decision was made to study specific knowledge about media literacy skills in order to employ the knowledge gained to develop "An Online Program for Teacher Learning to Enhance Students' Media Literacy Skills," which would be disseminated to the opportunity expansion schools under the Commission on Basic Education. This study employed Research and Development (R&D) methodology. According to Sanrattana (2018), effective educational innovations, which are developed using R&D methodology, should be disseminated in similar target schools. This online program was trialed in a randomly assigned school, which was used as the experimental site, and which featured representatives of the target population to propagate the innovations. In addition, the results of the experiment illustrated that the innovation had been effective in accordance with the specified criteria. Therefore, the innovation could be distributed to the target population across the country so that they could receive the educational benefits.

2. Research Objectives

This research aimed at conducting research and development to create "An Online Program for Teacher Learning to Enhance Students' Media Literacy Skills" that would be effective according to the specified criteria. The created online program consisted of two projects: 1) the project for the teacher's learning development and 2) the project in which the teacher's learning outcomes were applied to student's development. Each project featured its own self-learning modules with its own online handbooks.

3. Research Assumption

The researcher carried out the creation of "An Online Program for Teacher Learning to Enhance Students' Media Literacy Skills" by examining the literature related to media literacy skills development on a variety of topics and perspectives to analyze the knowledge gained on the topic of teachers' self-learning handbooks. This was followed by conducting quality checks and revisions of the online handbook, creating experimental tools, and by examining the online handbook in the field. This is a procedure that is believed to deliver high-quality research outcomes. Therefore, the following study assumption was formed: "An Online Program for Teacher Learning to Enhance Students' Media Literacy Skills" would be beneficial. The field test experiments yielded the following: 1) the scores from the teachers' test after the experiment, which were in accordance with the standard 90/90; 2) the scores from the teachers' tests after the experiment, which was statistically significantly higher than before the experiment; and 3) the scores from the students' media literacy skills assessment after the experiment, which were statistically significantly higher than before the experiment.

4. Research Methodology

4.1 Concepts and procedures

In this research, as in the research of Promrub and Sanrattana (2022), is based on the Research and Development (R&D) methodology, according to Sanrattana (2018), who believes that the innovations created via the R&D process should be utilized in personal development so that the quality of work can be increased by using phenomena as the empirical evidence, which suggests that the need exists. Furthermore, there have been a lot of randomly new ideas and hypotheses on educational innovations recently. These ideas have centered on the

assumption that teachers will use their learning outcomes (Knowledge) to help learners grow (Action), which will result in more competent work performance (Power). Concisely, it is founded upon the principle that *"Knowledge plus Action equals Power."* or *"Make Them Know What to Do, Then Encourage Them Do What They Know,"* and *"Link to On-The-Job Application."* Another crucial stage was to analyze the literature on media literacy skills, which is seen as a necessary first step when gathering knowledge for the creation of online program for the projects. Each project had its specific manual for self-learning modules. Therefore, the procedure of the study began with a literature review in accordance with the R1&D1...R2&D2...R3&D3...Ri&Di patterns as described below:

R1&D1: Reviewing the Literature. The Literature Review Research team explored studies and articles related to media literacy skills on the following topics: definitions, important aspects, the characteristics, the developmental guidelines, the developmental steps, and assessments. The information obtained from this step was used to create a set of six online handbooks for the teacher's learning development project. The set was comprised of the following: (1) the definitions of media literacy skills, (2) the importance of media literacy skills, (3) the characteristics of media literacy skills, (4) the developmental guidelines for media literacy skills (5) the developmental steps in media literacy skills, and (6) the assessment of media literacy skills. The other project centered upon the outcomes of the teacher's learning and applying what the teachers had learned to student's development, which consisted of one online-handbook.

R2&D2: Detecting the Flaws in the Handbooks. The handbooks were thoroughly examined for flaws or errors, including conciseness, utility, suitable language, and the presentation of appealing information. Focus group discussion was held with 12 teachers at Dindumwangchaiwittaya School, a non-experimental school.

R3 &D3 : Detecting Further Flaws in the Handbooks. The handbooks were further examined for any flaws, including conciseness, utility, suitable language, and the presentation of appealing information. The focus groups consisted of 15 teachers and were held at two non-experimental site schools: Bannongkungtanasan Sophon School (7 teachers) and Nongkralaengkraoawitthaya School (8 teachers).

R4&D4: Searching for Additional Literature. Investigations to find additional relevant literature were undertaken in order to develop two research tools: 1) the teacher's learning outcome exam and 2) the student's media literacy skills assessment questionnaire.

R5&D5: Examining the Handbooks. In the pre-experimental research step, the handbooks were examined with a one group pre-test/post-test design. The experimental area was Dindumwangchaiwittaya School, an opportunity expansion school for primary and lower secondary education under the Commission on Basic Education. This study adopted purposive sampling to select the experimental group. The target consisted of 6 primary education teachers, 6 lower secondary education teachers, 29 primary education students, and 30 upper secondary school students, making a total of 59 students. The field experiment took place during the Second Semester of the Academic Year of 2021. The experimental course was divided into the following two phases:

Phase 1: Conducting of the development of the teachers' learning using an online self-learning module (Project 1). The activities and schedule used in this phase were as follows: Firstly, the researchers met with the target group of teachers to give the research information and to conduct the teacher's pre-test. This step took two days. Secondly, in order to further develop the teachers' skills, online handbooks and self-learning modules were uploaded. After that, the teachers were able to download them from the website that the research team had created. The learning had to be completed without intervention from the research team or from anyone else. This step took one month. Thirdly, to improve the online handbooks, the target teacher group worked to inspect for flaws, and then they took a post-test. This step took two days. Finally, the researchers analyzed the post-test results and compared them by using the standard criteria of 90/90. Next, the researchers made a comparative analysis of the average scores from the pre-test and the post-test using the t-test dependent. This step took two days.

Phase 2: Applying the teachers' learning outcomes to enhance student development (Project 2). For this phase, the activities and durations of the activities were as follows: 1) the researchers met with the target teacher group to explain the research details and to evaluate the media literacy skills of the students in the target group by using

the pre-test (This step took one day.); 2) the target teacher group implemented the learning outcomes to develop the students' media literacy skills without receiving any intervention from the research team or from anyone else (This step took two months.); 3) in order to improve the online-handbooks, the target group of teachers worked to inspect for any errors and to evaluate the students' media literacy skills using a post-test (This step took two days.); and 4) the research team conducted a comparative analysis of the average scores from the pre-test and the post-test using a t-test dependent (This step took two days.).

4.2 Research Tools

1. The Teacher's Learning Outcomes Test. This test consisted of multiple-choice questions with four answers. It was used to measure the teachers' knowledge and was used as both as a pre-test and a post-test. The test was an online Google Form. The test was created by the researchers using the knowledge from the teacher's learning handbook, which consisted of definitions, important aspects, characteristics, developmental guidelines, developmental steps, and assessments. The test theory was drawn from cognitive domain by Benjamin S. Bloom, who classified thinking skills from low to high as follows: remembering, understanding, applying, analyzing, evaluating, and creating (Sanrattana, 2018). Lastly, the validity of the test was verified by completing the following steps:

1.1 The test validity was inspected by five experts in the fields of curriculum, teaching, and measurement by using Rovinelli and Hambleton's (1977) Indices of Item-Objective Congruence (IOC). The results indicated that every question had shown an IOC value that was higher than 0.50 (Chaichanawirote & Vantum, 2017).

1.2 The test was tried out with 30 teachers in four non-experimental schools: Sokhangsuksa School, Non-udomsa-adwittaya School, Nongkungsern-Nongnowittaya School, and Nonsa-adpittaya School. The results of the test showed the following: 1) the index of difficulty of the questions had been between 0.20 - 0.80, and the power of discrimination had been between 0.20- 1.00, which conformed to the specified criterion; 2) the reliability of the test, which was examined using the Kuder-Richardson method, had shown a KR - 20 coefficient of 0.94, which was greater than the specified criterion (equal to or greater than 0.70); and 3) regarding the difficulty of the test, the mean scores of all samples were employed as a criterion. A test is considered fairly difficulty if the average score is between 30 and 50 per cent of the total score. If the lower average score is 30, the test is consequently considered to be more complex. If the higher average score is 50, then the test is considered to be easier. Data analysis revealed that the average score for all samples had been 16.10, which was equal to 44.72 percent of the total score. Therefore, the level of difficulty of the test had been appropriate.

2. The student's media literacy skills assessment form was an online form, Google form, with 5-level rating scale: the most, very, medium, less, and the least. The researcher created the form in accordance with findings from studies that were related to the characteristics of media literacy skills based on the perspectives of Bauer (2015), Castellanos (2007), Ding (2011), Hobbs (2008), Johnson (2015), Lee (2015), the National Association for Media Literacy Education (2015), Reineck and Lublinski (2015), and Vu (n.d.), and media literacy skills assessment from the perspectives of Chouit (2013), Cooper (nd), Hallaq (2016), Simons, Meeus, & T'Sas, (2017), and Salamat, Ahmad, Bakht, and Saifi (2018). It was examined for validity as described below:

2.1 The assessment form validity was inspected by five experts in the fields of curriculum, teaching, and measurement using Rovinelli and Hambleton's (1977) Indices of Item-Objective Congruence (IOC). The results indicated that every question had shown an IOC value higher than 0.50 (Chaichanawirote & Vantum, 2017). Therefore, it was able to measure the target group.

2.2 The Assessment Trial was conducted in a non-experimental school, Nongkralaengkrodaowithaya School, at which 30 students participated in the assessment. In order to analyze the alpha coefficient of reliability, Cronbach's method was used. The results of the data analysis revealed that the alpha coefficient of confidence for the entire questionnaire had been 0.96. The examination of each feature illustrated the following results: 1) 'Media Accessing' had been 0.90, 2) 'Media Analysis' had been 0.91, 3) 'Media Evaluation' had been 0.83, 4) 'Media Utilizing' had been 0.87, 5) 'Self-reflection' had been 0.75, and 6) 'Media Creation' had been 0.90. The alpha coefficient of confidence had been higher than the specified criterion, which was equal to or greater than 0.70

(UCLA: Statistical Consulting Group, 2016). Therefore, it was assured that the media literacy skills assessment form could be used with confidence.

4.3 Data Analysis

1. The 90/90 Standard was employed to analyze the data and to compare the post-experiment of the teachers' learning outcomes. The first 90 represented the percentage of the mean scores, which had been obtained from the teachers' knowledge test. The second 90 represented the percentage of those teachers, who had passed the test in accordance with all the objective criteria. (Yamkasikorn, 2008)

2. The t-test dependent statistic was employed to analyze the data and to compare the results from the teacher's learning outcomes and the student's collaborative skills assessment based on the pre-experimental test and the post-experimental test.

5. Research Results

The results from the R1&D1 step produced “An Online Program for Teacher Learning to Enhance the Students' Media Literacy Skills,” which consisted of two projects. Each project had its own particular handbooks as described below:

1. The teacher's learning development project had a set of six online handbooks created from the perspectives of academics and agencies, which had been obtained from the literature review process. The following are the details from the six manuals:

1.1 The online handbook for the definition of media literacy skills was based on the perspectives of Briggs (n.d.), Commonsense Media (n.d.), Lipkin (n.d.), Marie (2021), National Association for Media Literacy Education (2015), Nazarbayev University Library (n.d.), and Thoman (1993).

1.2 The online handbook for the importance of the definition of media literacy skills was based on the perspectives of Koltay (2011), Pressbook (n.d.), Fortun (2018), Fortuna (n.d.), Sha (2017), Media-Coach (n.d.), Marie (2016), Center for Media Literacy (n.d.), The Success Manual (n.d.), and Williams (2018).

1.3 The online handbook for the characteristics of media literacy skills was based on perspectives from Bauer (2015), Castellanos (2007), Ding (2011), Hobbs (2008), Johnson (2015), Lee (2015), National Association for Media Literacy Education (2015), Reineck and Lublinski (2015), and Vu (n.d.).

1.4 The online handbook focusing on the guidelines for developing media literacy skills was based on the perspectives of Briggs (n.d.), Spicer (2021), Pitts (2017), The Success Manual (n.d.), Thoughtful Learning (n.d.), Weiß and Bader (2010), Young African Leaders Initiative (2015), and Lynch (2018).

1.5 The online handbook for the steps in the development of media literacy skills was based on perspectives from Buckingham, Grahame, Powell, Burn, and Ellis. (2014), Center for Media Literacy (n.d.), Media Smarts (n.d.), Roscorla (2010), Stansbury (2010), Thoman (1991), and Thoman and Jolls (n.d.).

1.6 The online handbook for the assessment of media literacy skills was based on the perspectives of Chouit (2013), Cooper (nd), Hallaq (2016), Simons, Meeus, & T'Sas, (2017), and Salamat, Ahmad, Bakht, and Saifi (2018).

The research team focused on the topic of “developmental guidelines” because the guidelines provided suggestions for principles, ideas, methods, strategies, techniques, and activities, which could be implemented, and offered a variety of options for teachers to learn and properly apply within the context of their teaching. From this research, 75 suggestions were obtained as follows:

1) Map existing community resources and offer small grants

- 2) Support a national network of summer learning programs
- 3) Create a digital and media literacy youth corps
- 4) Build interdisciplinary bridges in higher education
- 5) Create district level initiatives
- 6) Partner with media and technology companies
- 7) Develop online measures of media and digital literacy
- 8) Start an entertainment education initiative
- 9) Host a statewide, youth-produced public service announcement competition
- 10) Support an annual conference and educator showcase competition
- 11) Becoming aware of the importance of balancing or managing
- 12) Teaching specific skills of critical viewing
- 13) Social, political and economic analysis - goes behind the frame
- 14) Establishment of curriculum guidelines or "frameworks"
- 15) Teacher training programs at the university level
- 16) Teacher support
- 17) Educational resources for teaching
- 18) Exploit "teachable moments"
- 19) Give students a chance to create media, not just analyze it
- 20) Start and end with the key concepts
- 21) Recognize that kids – and adults – enjoy media
- 22) Teach about media, not just with media
- 23) Make media education about asking questions, not learning answers
- 24) Fight the perception that "it doesn't matter"
- 25) Assess and evaluate media literacy work
- 26) Let students bring their own media to the table
- 27) Keep up-to-date with media trends and developments
- 28) Create interesting content
- 29) Raise communication strategy, assess relevant information
- 30) Plan media appearances
- 31) Tracking and convincing
- 32) Providing knowledge and media development
- 33) Development and blended learning
- 34) Self-assessment report
- 35) Create an attitude
- 36) Deconstructing messages
- 37) Analyzing perspectives
- 38) Detecting bias
- 39) Conceptual education and questioning
- 40) Media sample study
- 41) Watching educator videos
- 42) Learning about media
- 43) Study of working methods
- 44) Recognizing fake news
- 45) Using multiple sources
- 46) Gauging tone and language
- 47) Questioning numbers and figures
- 48) Understanding images and the brain
- 49) Developing multimedia skills
- 50) Recognizing bias
- 51) Shaping the media ourselves
- 52) Curating information
- 53) Understanding images and the brain
- 54) Break down television

- 55) Anytime, someone does a press conference or a tweet
- 56) Use more than news source
- 57) When it is a source you don't know, look into them
- 58) Get the truth about hoaxes
- 59) To judge the news, if no one else is covering the important news in your locality, do it yourself
- 60) Sometimes, take a break from media
- 61) Process of accessing media literacy
- 62) How to access media literacy
- 63) Encourage students to develop basic skills for media literacy
- 64) Promoting and supporting problem analysis
- 65) All media messages are constructed
- 66) Media messages are constructed using a creative language with its own rules
- 67) Different people experience the same media message differently
- 68) Media have embedded values and points of view
- 69) Most media messages are organized to gain profit and/or power
- 70) Teach students to evaluate media
- 71) Digital data sources and databases
- 72) Compare/contrast various media sources
- 73) Discuss how the media edits and alters
- 74) Examine the "truth" in advertisements
- 75) Have students create media

2. The application of the outcomes of the Teachers' media literacy skills learning for the students' development project. An instructional handbook was created, which focused on the following: 1) The Desirable Media Literacy Skills Qualifications, 2) The Developmental Guidelines for Media Literacy Skills, and 3) The Developmental Steps of Media Literacy Skills. The online handbooks also included a teacher assessment form to determine the quality of the implementation of the developmental guidelines & the developmental steps, to give feedback on the handbook's strengths & weaknesses, and to reflect upon the work.

Remarks:

1. Please refer to every manual written in Thai at: <https://bit.ly/3xyAysn>
2. Please refer to the teacher practice level assessment form written in Thai at: <https://bit.ly/3yrnzcX>
3. Please refer to the teacher's learning outcome test written in Thai at: <https://bit.ly/3N8Agxz>
4. Please refer to the development assessment form on information literacy skills of students written in Thai at: <https://bit.ly/3N3YyZn>

The results of R2 & D2, R3 & D3, R4 & D4 and R5 & D5 produced the following: 1) six online handbooks for developing the teachers' learning outcomes, 2) one online handbook to be used for applying the teacher's learning outcomes for student development, 3) the teacher's learning test, and 4) the student assessment form. After that, the experimental field research, which was based on the pre-experimental research with one group pre-test/post-test design, was conducted. The handbooks were tested at Dindumwangchaiwitthaya a school, which represents the opportunity expansion schools under the Commission on Basic Education. An experimental research model was designed with a one group pre-test/post-test. The experimental group consisted of 6 primary education teachers, 6 lower secondary education teachers, 29 primary education students, and 30 upper secondary school students, with a total of 59 students. The research findings assumed that "An Online Program for Teacher Learning to Enhance Students' Media Literacy Skills," which was comprised of two projects (each with handbooks), would prove to be beneficial according to the specific criteria. The details of the findings are shown below:

- 1) The post-experimental test results from the teacher's learning outcomes with the 12 teachers were in line with the standard of 90/90. The first 90 represented the percentage of the mean post-test scores, which had been 33.58 points out of 36 (or 93.29 percent), and which had been higher than the specified criterion (90). The latter 90 represented the percentage of the teachers, who had been able to complete all of the objectives. The results indicated that 93.06 % of 12 teachers had been able to pass all objectives on the exam given that the number was higher than the specified criterion (90).

2) The results of the mean score from the pre-experimental test from the 12 teachers had been 25.92, and the standard deviation had been 7.07. In addition, the post-experimental test mean score had been 33.58 and the standard deviation had been 1.44. Therefore, after the data had been analyzed using the t-test dependent, the mean score of the post-experimental test was found to be statistically significantly higher than the mean score of the pre-experimental test at 0.05, which can be seen in Table 1.

Table 1: The t-test dependent results when the teachers' learning outcomes before and after the experiment were compared

Tests	Sample sizes	Means	Standard Deviations	t
Before	12	25.92	1.88	12.375*
After	12	33.58	1.44	

*p < 0.05

3) The results from the media literacy skills assessment conducted with the 59 students before the experiment indicated that the mean had been 3.24 with a standard deviation of 0.30. Meanwhile, the results from the assessment after the experiment had shown a mean of 4.23 with a standard deviation of 0.16. Therefore, after the data was analyzed by using a t-test dependent, the mean score from the post-experimental assessment had been statistically significantly higher than the mean score from the pre-experimental assessment at 0.05, which is shown in Table 2.

Table 2: The results of the t-test dependent when the students' information literacy skills were compared before and after the experiment assessments

Assessments	Sample sizes	Means	Standard Deviations	t
Before	59	3.24	0.30	20.332*
After	59	4.23	0.16	

* p < 0.05

6. Discussion

“An Online Program for Teacher Learning to Enhance Students' Media Literacy Skills,” which was a research and development study, focused on the concepts of “Student’s 21st Century Skills Development,” “Developing for teachers' learning, then teachers bring learning outcomes to student development,” “Knowledge and Action are Power,” and “Distribution of research innovations to the target population for widespread use.” Furthermore, with respect to the literature review, the research team placed emphasis on following five areas: definitions, important characteristics, developmental guidelines, developmental steps, and assessments. The essential knowledge was collected from a variety of perspectives and then the information was summarized and was used in the handbooks, which were made for the teachers. Teachers could synthetically draw conclusions from their own views and could bring the results from their learning to continually development their students. The research team valued the aspect of “developmental guidelines,” which yielded 75 alternative recommendations for implementation as outlined in the research findings. After the field trials, the researchers asked the experimental group of teachers to carry out a self-assessment on the implementation of those recommendations, and it was found that there were some recommendations that teachers had not chosen at all. However, the teachers had more or less applied the alternative recommendations with their students, according to their interests and aptitude. The top ten alternatives, which had been used by instructors in this experimental study, were as follows: 1) Create media, 2) Evaluate media, 3) Create media messages, 4) Create media by yourself, 5) Build positive attitudes about media, 6) Provide media literacy knowledge, 7) Provide opportunities for media creation, 8) Search for Information sources, 9) Use media wisely, and 10) Present your own media. From using the suggestions about the “developmental steps,” 7 models were presented that were in accordance with perspectives from Buckingham, Grahame, Powell, Burn, and Ellis. (2014), Center for Media Literacy (n.d.), Media Smarts (n.d.), Roscorla (2010), Stansbury (2010), Thoman (1991), and Thoman and Jolls (n.d.). The results revealed that the selection had been distributed in accordance with the interests and aptitude of each teacher. None of the teachers had used the integrated approach to create their own model.

The reason for examining the relevant literature from multiple perspectives was that the research team realized the necessity of having diverse perspectives to assist in the following: 1) developing a better understanding of things; 2) seeing a problem or challenge from different angles to develop a better knowledge; 3) evaluating the importance of something; 4) keeping worries or thoughts in perspective; 5) letting go of judgement and focusing on facts; 6) keeping things in a more balanced viewpoint; 7) seeing the strengths & weaknesses, the good & bad, and the positive & negative; 8) allowing us to react rationally and considerately rather than impulsively; 9) supporting us to develop a more accurate idea of where things sit; and 10) being objective and unbiased. There was also some information, which indicated the following useful perspectives: 1) avoiding judgement, 2) reducing stress, 3) responding constructively, not impulsively, 4) developing deeper empathy, 5) gaining greater clarity, 6) experiencing personal growth, and 7) having learning opportunities. (Dandelion Training and Development, 2021).

During the study and investigation, it was especially interesting to note the differing perspectives found across the Internet, given that the body of information originates from a wide variety of countries and that the Internet's body of knowledge is dynamic and is always being actively updated. A large number of online websites and data archives are able to receive real-time updates. This allows users to download up-to-date information, which can be verified and is ready for distribution. (ACT Bengaluru, 2021). Access to the Internet is fundamental to achieving this vision for the future. It can improve the quality of education in many ways by opening doorways to a wealth of information, knowledge, and educational resources, and thereby, increasing opportunities for learning in and beyond the classroom. By using online materials to prepare lessons, teachers can empower students to extend their range of learning. Interactive teaching methods, which are supported by the Internet, enable teachers to give more attention to the needs of individual students and to support shared learning. This can help to rectify the inequalities in education that are experienced by girls and women. Access to the Internet helps educational administrators to reduce costs and to improve the quality of schools and colleges. (Internet Society, 2017)

7. Recommendations

There are several reasons why developing 21st century skills are critical for students. Segar (2021) cited the following seven reasons: 1) preparing students for change, 2) preparing students for navigating information, 3) helping students to build character, 4) being tools for Problem-Solving in the Real World, 5) helping students stay competitive in the workplace, 6) doing it Because Everyone Else is Doing It, and 7) Promoting & Fostering Innovations. The research team expects that this research and development study, "An Online Program for Teacher Learning to Enhance Students' Media Literacy Skills," will be part of an innovation that encourages teachers in schools to recognize the value of learning and with regard to their students' development, take academic results seriously. Although it may not be perfect, at least, the initial stage of this research has been implemented by using knowledge that is widely available on the Internet, which has been transformed into a systematic and research-based online program. It can advance teachers' learning, which will allow teachers to deliver learning outcomes to the students and to enhance their students' development.

Given that media innovations can quickly change, this online program's information might not be current. To stay caught up with the ever-expanding growth, a further study should be conducted to gain a deeper understanding of recommendations for media literacy skills development. However, due to the rapid evolution of media innovations, the knowledge being presented in this online program may be outdated. Therefore, to keep up with the dramatic developments, a study that focuses upon media literacy skills development guidelines should be conducted.

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Appendix

The student's Media Literacy Skills Self- Assessment form used in the research.

Characteristics of Media Literacy Skills	Your opinion levels				
	5	4	3	2	1
Media Access					
1) I access the media in a variety of ways and customize them to my needs.					
2) I access media with tools, equipment and technology according to specified conditions.					
3) I understand the media access prerequisites.					
4) I access media with proper browsing process.					
5) I can interpret the media from reliable sources after accessing it.					
6) I learned how to approach media creatively.					
7) I share content to create knowledge.					
8) I know how to access Internet media from various sources.					
9) I can search to verify the truth in the media.					
Media Analysis					
10) I understand the purpose of media analysis.					
11) I have media analytical skills.					
12) I can distinguish between formats and types of media.					
13) I can utilize the media analytics.					
14) I have a strategy for media analysis.					
15) I can think analytically.					
16) I can distinguish between truth and lie.					
Media Evaluation					
17) I know the fundamentals of evaluating media based on objectives, concepts and perspectives.					
18) I can check media information from concept.					
19) I can assess the media and interpret it by watching, reading and listening.					
20) I have the skills to assess the media to determine whether it is accurate or not.					
21) I can reflect on the results of using media and technology.					
22) I understand the impact of media on individuals, society and culture.					
23) I can assess the reliability, fidelity and quality of media.					
Media Utilization					
24) I exchange and learn from various media sources.					
25) I communicate in a variety of ways.					
26) I use my skills, techniques and experience to communicate.					
27) I use the media ethically. according to the specified legal conditions					
28) I avoid inaccurate news and choose the right media source.					
29) I process and make decisions about the use of media.					
Media Creation					
30) I have the ability to create my own media creatively.					
31) I can develop effective media in a variety of contexts.					
32) I am able to create media from direct daily experience based on the principles of creating the right media.					
33) I can think and invent the media to match other learning subjects.					
34) I can produce objective media creatively and ethically.					