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# Examination of Teachers' Knowledge Levels of the Concept of Early Literacy in Terms of Various Variables

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## Abstract

The aim of this study is to determine the level of knowledge of primary school teachers about the concept of early literacy, to determine whether this knowledge level differs according to the teachers' gender, the type of school they graduated from and their professional seniority; to reveal the importance of early literacy skills for 1st grade students of primary school and how to increase teachers' early literacy knowledge levels. This research is a descriptive study of the nature of a survey model. In this study, in which quantitative and qualitative research techniques were used together, mixed method was used in data collection and analysis. The study group of the research consists of 52 primary school teachers who teach the 1st grade. While schools were determined through the disproportionate stratified sampling, teachers were determined through simple random sampling. The analysis of the qualitative data was conducted via content analysis while the quantitative data were analyzed via independent group t-test and ANOVA in this study for which data collection was provided via a semi-structured interview form developed by the researchers. Research findings reveal that primary school teachers have low knowledge levels regarding early literacy and their knowledge levels do not vary depending on gender, the type of school they graduated from and professional seniority. In classroom teaching departments, courses with well-prepared content on early literacy should be put in place, effective in-service training activities should be organized on the subject and classroom teachers should be exchanged frequently with their preschool teachers.

**Keywords:** Literacy, Early Literacy, First Reading and Writing, Early Literacy Development, Early Literacy Instruction, Primary School Teacher

## 1. Introduction

Literacy skills form the basis of lifelong learning skills as a critical process in human development process. Literacy skills also play an important role in the formation of thought in the process of making and sharing meaning (Delican & Ateş, 2022). As well as a great number of ideas suggested about when and how children acquire literacy skills from past to present, the consensus shows that some prerequisite skills should be attained for the acquirement of literacy skills in children (Gillen & Hall, 2003; Morrow, 2014). All prerequisite knowledge, skills, and attitudes



regarding literacy, which are expected to be acquired before children start school, are named emergent literacy or early literacy in the literature (Clay, 1966; Sulzby & Teale, 1991; Whitehurst & Lonigan, 1998).

Children start school with awareness to a degree about the structure and functions of language based on their experiences gained related to language in their daily lives (Sulzby & Teale, 1991). The concept of early literacy can be defined as a skill set and knowledge base that develops during infancy and is enriched with discovery and educational opportunities throughout early childhood (Lonigan, 2004). Early literacy skills such as lexicology, phonemic and writing awareness, letter knowledge and listening with understanding predict the reading skills during the primary school (Altun & Erden, 2016). Early literacy is a skill that can be continuously developed through teaching and learning of basic academic and behavioral skills (Yazıcı & Kandır, 2018). Many studies have reported that early interventions on language and early literacy skills are important for preventing later reading difficulties at primary school (Majorano, Ferrari, Bertelli, Persici, & Bastianello, 2022). Early literacy is what children know about reading and writing before they learn to read and write. The purpose is not teaching reading, instead, it is laying the foundation, so that children have the necessary skills when they are developmentally ready to read (Wyse & Parker, 2012).

Although the formal first reading and writing start with the 1st-grade primary school, prerequisite skills that set up a substructure for the first reading and writing skill are generally acquired during the pre-school period when children start school as ready for the literacy teaching (Masny, 1995). The teaching of reading and writing starting from the very beginning of the 1st-grade is planned based on the assumption that children possess these prerequisite skills. Recent studies carried out to determine the difficulties that children experience in the process of acquiring first reading and writing skills in primary school and the reasons of these difficulties (Akyol, 2018; Akyol & Temur, 2008; Altun & Erden, 2016; Çelenk, 2013; Demirel, 2006; Juel, 1988; Stanovich, 1986; Torgesen & Burgess, 1998) reveals the importance of early literacy skills gained in preschool period in order to have a successful first reading and writing process suitable for the purpose.

Early literacy skills are a crucial foundation for future learning and development. Low early literacy rates are associated with negative factors such as social and behavioral problems and increased dropout rates (Kowalskia, Elliot, Guzman, Schuenke-Luciena, 2022). Children with the low early literacy skills are the most vulnerable to poor literacy outcomes (Kaminski, Powell-Smith, Hommel, McMahon, & Aguayo, 2015). Many studies have reported that early interventions in language and early literacy skills are important for preventing later reading difficulties at primary school (Majorano, Ferrari, Bertelli, Persici, & Bastianello, 2022). Literacy development starts early in life and is highly correlated with school achievement. The more limited a child's experiences with language and literacy the more likely he or she will have difficulty learning to read (Strickland & Riley-Ayers, 2006).

Early literacy includes all the knowledge, skills and attitudes that children have until they learn to read and write (Akyol, Şenol, & Yaşar, 2022). Early literacy skills that support the child's lifelong learning process and academic skills (Dickinson & Neuman, 2018) should be evaluated as a whole to effectively support them. Early literacy, which defines the prerequisite knowledge, skills and attitudes that children acquire in reading and writing before starting formal literacy teaching, is one of the basic skills that children should acquire to be successful literate (Sulzby & Teale, 1991; Whitehurst & Lonigan, 1998). Early childhood education aims to support children's whole development and their school readiness. Children develop a knowledge about reading, writing and learning before elementary school. This knowledge is called early literacy and it's a key factor for school readiness (Dere, 2019). Early literacy, which is one of the main predictors of reading skill in the early period (Kargın, Güldenoğlu & Ergül, 2017), indicates the existence of a literacy preparation process which should be followed well before the beginning of formal initial literacy teaching (Karaman & Aytar, 2016). Learning how to read is a complex process and contains wide range of skills such as oral language, vocabulary, identifying sounds, letters, and decoding (Altun & Sarı, 2018).

Early literacy skills contain social, environmental, cognitive, linguistic, and emotional forces (Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002). Vocabulary knowledge, letter knowledge, phonological awareness, writing awareness and comprehension skills are the most predictive skills in early literacy skills (Aarnoutse, Van Leeuwe & Verhoeven, 2005; Casey & Howe, 2002; Elliott & Olliff, 2008; Neuman & Dickinson, 2001; Whitehurst & Lonigan, 1998). Vocabulary knowledge, refers to the sum of words understood in reading, listening or writing and speaking (Çetin, 2020). Letter knowledge is the ability of children to understand that words are made of letters, that letter sounds are used when translating words into verbal language, and that different words are formed by combining different letters (Karaman & Aytar, 2016). Phonological awareness is the ability to distinguish the similarities and differences in the sounds that make up words (Bennett-Armistead, Duke, & Moses, 2005). Writing awareness is children's understanding of the function and form of writing and its relationship with verbal language (Justice & Ezell, 2001). Understanding is the inference or structuring of meaning from the text read by someone else or from the text that the child reads (Özdemir & Kiroğlu, 2019).

The results of the research show that early literacy skills are very important for first reading and writing skills starting in the first grade of primary school (Altun & Erden, 2016). Many studies have shown that children who start primary school without early literacy skills cannot make a good start to school and that these children face many problems in the process of acquiring their first reading and writing skills and these problems negatively affect future school life (Juel, 1988; Stanovich, 1986; Torgesen & Burgess, 1998). Children who have problems in the process of literacy are highly likely to experience problems in academic, social, behavioural and emotional aspects (Whitehurst, 2001). For this reason, it is important to take the necessary measures to improve children's early literacy skills before starting primary school to avoid problems in the initial literacy learning/teaching process.

Early literacy skills and initial literacy preparatory work can be considered as different paths to the same goal in the process of teaching literacy. Early literacy, usually acquired in the preschool period, is in parallel with preparatory studies to teach literacy in the 1st-grade of primary school (Taş, 2020). It can be said that the common aim of these two studies, which support each other, is to ensure that the first reading and writing process is passed smoothly and that a well-established teaching life with a good start is continued well. Broad agreement exists that teachers need professional knowledge for the successful mastering tasks that are typical for their profession (König, Hanke, Glutsch, Jäger-Biela, Pohl, Becker-Mrotzek, Schabmann & Waschewski, 2022). Therefore, preschool teachers and primary school teachers must have sufficient knowledge about the concept of early literacy. Although the concept of early literacy is mostly used in the preschool period, especially the primary school primary school teachers of the first grades are expected to be familiar with this concept in the preparation stage for the first reading and writing and to implement the applications required by this concept.

Researches have shown that a significant proportion of children start primary school without the basic early literacy skills necessary for learning, that these children with a bad start have difficulty in learning to read and write and that these difficulties persist throughout their school life (Stanovich, 1986; Torgesen & Burgess, 1998; Whitehurst, Arnold, Epstein, Angell, Smith & Fischell, 1994). These results require that primary school teachers should be aware of early literacy and complete this missing skill in the first weeks of the first year of primary school. For, teachers' awareness of early literacy is important for children to start to read and write more easily, to learn to read and write more easily and to have higher academic success (Dennis & Horn, 2011).

The concept of early literacy has a special importance especially for the 1st-grade teachers. It can be said that teachers will have a more successful and smoother first reading and writing process to the concept of early literacy. To investigate the knowledge levels of primary school teachers regarding the concept of early literacy; it is thought to be important in terms of revealing the knowledge level of teachers about early literacy, determining the reasons for low level of knowledge and determining the ways to increase their knowledge level. In addition, it can be said that this determination is important both in pre-service and in-service teacher quality and for a qualified first reading and writing teaching. This study is important in terms of revealing the problems related to early literacy

skills in education and teaching process, especially in the first reading and writing process in the first year of primary school, and providing educators, families, policymakers and legislators with an insight to produce effective solutions. The fact that no previous study has been encountered on this subject adds a special importance to this research.

In this study, to determine the level of knowledge of primary school teachers regarding the concept of early literacy, to determine whether this knowledge level differs according to the gender of teachers, the type of school they graduated from and their professional seniority, to reveal the importance of early literacy skills for primary school 1st-grade students and how teachers' knowledge levels of early literacy It is intended to determine that it can be upgraded. For this aim, answers to the following questions were sought:

1. What is the knowledge level of primary school teachers regarding the concept of early literacy?
2. Is there a meaningful relationship between the knowledge level of primary school teachers regarding the concept of early literacy and their gender, the type of school they graduate and their seniority?
3. What is the importance of early literacy skills for 1st-grade primary school students according to primary school teachers?

## 2. Method

### 2.1. Study Design

This study is a descriptive study of the nature of scanning model. In the scanning model, which aims to describe an existing situation as it is, the event, individual or object subject to research is defined in its own conditions and as it is (Karasar, 2019). In this research, where quantitative and qualitative research techniques are used together, simultaneous transformational mixed method was used in data collection and analysis. The mixed method is that the researcher combines qualitative and quantitative techniques, approaches and concepts within a study or successive studies (Creswell & Creswell, 2018; Sandelowski, Voils & Knaf, 2009).

### 2.2. Study Sample

The study group of this research consists of 52 classroom teachers who teach the 1st-grade of primary school. The schools were determined through the disproportionate stratified sampling. In disproportionate stratified sample, each after determining the number of samples selected from the stratum, an equal number of samples is selected ignoring the representation ratio in it (Schmidt & Hunter, 2014). Schools were grouped as low, middle and high level considering the administrative structure (province, district, and village), transportation facilities and socio-economic structure of the settlement where the school is located. A total of 52 teachers were selected from each group of schools by easily accessible sampling method. The most frequently used easily accessible or convenient sampling in qualitative research is based on available, fast and easy-to-reach items (Patton, 2005). The study was conducted in 9 schools, three of which were in each group. Demographic characteristics of the participants are given in Table 1.

Table 1: The demographic characteristics of the participants

<i>Characteristics of Participants</i>		<i>f</i>	<i>%</i>
Gender	Female	28	53.85
	Male	24	46.15

The type of school graduated	Education High School	9	17.31
	Class Teaching Department/Faculty of Education	24	46.15
	Other Departments of Faculty of Education	13	25.00
	Other Faculties	6	11.54
Seniority	0-5 years	7	13.46
	6-10 years	11	21.15
	11-15 years	10	19.23
	16-20 years	13	25.00
	21-25 years	6	11.54
	26-30 years	5	9.62

When Table 1 is examined, it is seen that the rate of participants in terms of gender is close to each other, the majority of the participants graduated from the Faculty of Education, Department of Class Teaching and the number of participants with 16-20 years of professional seniority is higher.

### 2.3. Data Collection Tools

Data were collected with a semi-structured interview form developed by the researcher. The first part of the form which consists of two parts includes the questions containing the demographic information of the teachers while the second part includes open-ended questions aimed to determine the knowledge of primary school teachers about the concept of early literacy and their views on the place of early literacy skills in the first reading and writing process. Semi-structured interview forms consist of certain questions and the participants give answers to these questions in the manner they want and express their thoughts clearly (Yıldırım & Şimşek, 2018). While preparing the interview questions, attention was paid to its suitability for purpose, understandability and meeting the need. The draft of the interview, which was formed by taking the opinions of two lecturers, four primary school teachers, and three preschool teachers, was tried on three primary school teachers and three preschool teachers who were not included in the sample and the problems encountered were solved.

### 2.4. Data Collection

In this study, interview technique was used to collect data. The following questions were asked to teachers: "How would you define the concept of early literacy?", "Could you evaluate your knowledge level about early literacy?", "Do you think that you are sufficiently knowledgeable about early literacy?" and "What is the place of early literacy skills in the first reading and writing process? The face-to-face interviews, which lasted approximately 15 minutes, were held in a room provided by the school administration.

In the study, the principles of scientific research and publication ethics were meticulously followed; for this purpose, the Ethics Committee Approval was taken from Ordu University/Turkey. The participants were informed in detail about the research and participation in the research was based on voluntariness. During the research process, the participants' voice was recorded, and notes were taken by obtaining their permission. The real names of the participants were not used in the research, and the names of the participating teachers were coded as T-1, T-2, ... T-52.

### 2.5. Data Analysis

The qualitative data collected in the research were analysed by content analysis method. Content analysis is defined as a systematic, reproducible technique in which some words of a text are summarized in smaller content categories with codings based on certain rules (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2022). Analysis

of data was conducted based on stages including coding and sorting of data, development of themes/categories, the arrangement of data according to codes and themes, validity and reliability analysis of data and interpretation of findings. In the last stage, the codes and themes obtained as a result of the analysis are presented as percentages and frequency to facilitate comparison and interpretation.

The reliability of the data obtained from the research was through an expert opinion, participant confirmation, peer expert review and inter-coders reliability processes (Bloomberg & Volpe, 2018; Baltacı, 2019; Creswell & Cheryl, 2017; Miles, Huberman &, Saldana, 2018; Silverman, 2006)). The validity and reliability of the qualitative dimension of the research were tested in the light of credibility, transferability, consistency and validity criteria (Yıldırım & Şimşek, 2018). In addition, the reliability level of the study was tried to be increased by demonstrating the research process in detail and keeping the raw data archived and ready for audit (Creswell & Creswell, 2018).

Teachers' definitions of the concept of early literacy were scored between 0 and 2, allowing a procedural analysis. There was an investigation into whether there was a significant relationship between gender, type of school and professional seniority variables and findings by grading "0" for incorrect answers, "1" for partially correct answers and "2" for correct answers. Independent group t-test was conducted to determine whether there is a significant relationship between teachers' gender and accurate definition of early literacy concept, while one-way analysis of variance (ANOVA) was conducted to determine whether there is a meaningful relationship between teachers' type of school and professional seniority and accurate definition of early literacy.

### 3. Findings

#### 3.1 Findings Related to the Knowledge Levels of Teachers Regarding the Concept of Early Literacy

In this sub-problem; findings related to how teachers define the concept of early literacy, how knowledgeable they are about early literacy, what are the reasons for their low level of knowledge about the concept of early literacy, what are the sources/ways of obtaining information about the concept of early literacy, and how their level of knowledge about the concept of early literacy can be increased place is given (Table 2-6).

Table 2: Definitions of teachers on the concept of early literacy

<i>Definitions</i>	<i>f</i>	<i>%</i>
Learning to read and write at an early age	18	34.62
Learning to read and write before primary school	13	25.00
Learning to read and write before other children do	11	21.15
Preparing the child before first reading and writing	5	9.62
Readiness for the first reading and writing	4	7.69
Early development of children	1	1.92

Table 2 shows that 34.62% of teachers defined the concept of early literacy as learning to read and write at early age, 25.00% of them as learning to read and write before starting primary school, 21.15% of them as learning to read and write before other children do, 9.62% of them as preparation for the first reading and writing, 7.69% of them as readiness and 1.92% of them as early development of children. The results showed that the concept of early literacy is defined correctly only by 17.31% of teachers. Some examples of the class teachers' definitions are presented below:

Early literacy means that the child is ahead in every way (T-3).

Early literacy is the child's readiness to read and write in the first grade (T-7).

Early literacy is the learning of children to read and write at an early age (T-17).

Early literacy is the development of children before their peers in many respects (T-21).

Early literacy is readiness to read and write (T.32).

Early literacy is the children's learning to read and write before their peers (T-42).

The self-assessment results of teachers' knowledge levels about the concept of early literacy are presented in Table 3.

Table 3: Knowledge levels of teachers regarding early literacy (self-assessment)

<i>Knowledge Level</i>	<i>f</i>	<i>%</i>
I have no idea	14	26.92
I have very little knowledge	20	38.46
I have little knowledge	11	21.15
I have knowledge	5	9.62
I have much knowledge	2	3.85

Table 3 shows that 26.92% of the teachers do not have the knowledge, 38.46% of them have very little knowledge, 21.15% have little knowledge, 9.62% have the knowledge and 3.85% have much knowledge about early literacy. From the table, it is seen that 86.53% of the teachers do not have enough knowledge about early literacy and 13.47% of the teachers have the knowledge about this subject.

The views of teachers (43) who were found to have low level of knowledge about the concept of early literacy (misidentified the concept of early literacy) regarding the reasons for their low level of knowledge are presented in Table 4.

Table 4: Reasons for low knowledge level

<i>Reasons</i>	<i>f</i>	<i>%</i>
I did not take a course on this subject at the university	17	39.53
Ministry of Education did not inform us about this subject	10	23.26
It has never drawn my attention	7	16.28
I did not find it necessary	5	11.63
I could not find time	3	6.98
This skill should be taught by preschool teachers	1	2.33

Table 4 shows that teachers did or could not acquire knowledge about early literacy as 39,53% of teachers did not take course on this subject at the university, 23,26% of them were not informed by Ministry of Education, 16,28% of them were not attracted by the subject at all, 11,63% of them did not find it necessary, 6,98% of them did not find time and 2,33% of them believe that this skill should be taught by preschool teachers. Some examples of the explanations given by teachers regarding the reasons for their low level of knowledge about the concept of early literacy are presented below:

I did not take any courses on this subject while studying at university. The courses given at the university have nothing to do with the profession anyway (T-8).

No training was given to us by the Ministry during the candidacy period or in the following years. In-service trainings were held for touristic purposes, but this topic was not available (T-12).

The concept of early literacy is useless to classroom teachers. This is the job of preschool teachers. That's why it didn't interest me much (T-21).

Teaching is a very demanding and timeless profession. In this intensity, I could not spare time to learn the concept of early literacy, which is not directly related to our field (T-33).

I think early literacy should be learned by preschool teachers. We directly teach reading and writing. I do not see it as a necessary subject (T-46).

The views of teachers (9) who have a high level of knowledge about the concept of early literacy (correctly define the concept of early literacy) on how they acquired this information are presented in Table 5.

Table 5: Teachers' sources/ways of knowledge acquisition regarding the concept of early literacy

<i>Sources/Ways</i>	<i>f</i>	<i>%</i>
I learned from my friend who is a preschool teacher	3	33.34
I learned during my postgraduate education	2	22.22
I learned during in-service training courses	2	22.22
I learned while preparing for career advancement exams	1	11.11
I was curious and learned through research	1	11.11

Table 5 shows that 33.34% of the primary school teachers had knowledge about the concept of early literacy from their friends who are pre-school teachers, 22.22% from post-graduate education, 22.22% during in-service training courses, 11.11% while preparing for career advancement exams, 11.11% with curiosity and research. Here are some examples of teachers' answers to how they acquired knowledge about the concept of early literacy:

I saw this concept in an article about kindergartens and asked a friend who works as a preschool teacher (T-7).

You have to research and learn many subjects while doing graduate education. I researched this subject after a teacher gave homework on this subject (T-10).

I learned the concept of early literacy at an in-service seminar I attended. Actually, the seminar was for preschool teachers, but I also attended (T-21).

I was preparing for exams to become a school principal. In a source I read, this concept was mentioned and there were questions about it in the book (T-29).

I research everything related to my profession. Because I need to improve myself. I learned about this concept in a research I did on the internet. Then I read a few articles about it (T-51)

The views of the participants on how to increase the knowledge level of teachers about the concept of early literacy are presented in Table 6.

Table 6: Teachers' opinions about how to increase their knowledge level of the concept of early literacy

<i>Opinions</i>	<i>f</i>	<i>%</i>
In the teacher training departments of universities, courses should be given in this area.	18	34.62
In-service training courses should be given on this subject	14	26.92
Seminars should be held	9	17.31
This subject should be taught during candidacy	5	9.62
Teachers with high knowledge levels should be rewarded	3	5.77
Teachers should be tested periodically on this subject	2	3.85
Teachers with low knowledge levels should be punished	1	1.92

Table 6 shows that 34.62% of the participants suggested a course related to early literacy in all education departments, 26.92% in-service training courses, 17.31% seminars, 9.62% education during candidacy, 5.77% rewarding teachers with high knowledge levels, 3.85% periodically tests applied to teachers, and 1.92% punishing teachers with low knowledge levels to increase knowledge levels of the concept of early literacy. Some examples of teachers' explanations about what should be done to increase the level of knowledge about the concept of early literacy are presented below:

The place to learn this concept is at the university. For this reason, useful courses related to the profession should be put in universities and teachers should graduate ready for their profession (T-2).

The Ministry should train teachers with in-service training. The Ministry should remove in-service training seminars from being touristic trips and make them more functional (T-12).

Candidacy training has turned into a completely formality. Such concepts and their applications should be given in candidacy training. Thus, the teacher on duty will have the opportunity to apply what he has learned (T-20).

I think teachers should be tested on professional competence frequently. In this case, all teachers follow the developments and learn such concepts related to their profession (T-44).

### 3.2. Findings Related To The Relationship Between Knowledge Levels Of Primary School Teachers Regarding Early Literacy And Their Gender, The Type Of School They Graduated And Professional Seniority.

Data revealing whether there exists a relationship between knowledge levels of primary school teachers regarding early literacy and their gender is given in Table 7.

Table 7: Results regarding the relationship between knowledge levels of teachers regarding early literacy and their gender

<i>Gender</i>	<i>N</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>t</i>	<i>p</i>
Female	24	6.92	2.98	1.30	.15
Male	28	7.77	3.56		

Table 7 shows that there is no significant difference between the level knowledge of primary school teachers about early literacy and their gender at .05 confidence level [ $t_{(52)} = 1.30, p > .05$ ]. Table 8 shows data revealing whether there is a relationship between the knowledge level of primary school teachers about early literacy and the type of school they graduated from.

Table 8. Results regarding the relationship between knowledge levels of teachers regarding early literacy and the type of school they graduated from.

	<i>Sum of Squares</i>	<i>Degree of Freedom</i>	<i>Mean Squares</i>	<i>F</i>	<i>p</i>
Intergroup	65.43	3	4.73	.52	.81
In-group	1305.63	49	14.99		
Total	1371.06	52			

Table 8 shows that there is no significant difference in the level of .05 trust between primary school teachers' knowledge level of early literacy and the type of school they graduated from [ $F_{(3-49)} = .52, p > .05$ ]. Table 9 shows data revealing whether there is a relationship between the knowledge level of primary school teachers about the concept of early literacy and their seniority.

Table 9. Results regarding the relationship between knowledge levels of teachers regarding early literacy and their seniority

	<i>Sum of Squares</i>	<i>Degree of Freedom</i>	<i>Mean Squares</i>	<i>F</i>	<i>p</i>
Intergroup	89.82	5	7.32	.63	.74
In-group	1297.69	47	17.01		
Total	1387.51	52			

Table 9 shows that there is no significant difference in the level of .05 trust between the knowledge level of early literacy of primary school teachers with their professional seniority [ $F_{(5-47)} = .63, P > .05$ ].



### 3.3. Findings Related To The Importance Of Early Literacy Skills For The 1<sup>st</sup>-Grade Primary School Students.

Teachers' views on whether having early literacy skills is important for primary school 1st-grade students are presented in Table 10.

Table 10: Teacher opinions on the importance of early literacy skills

<i>Opinions</i>	<i>f</i>	<i>%</i>
Prepares children for school	16	30.77
Facilitates the literacy learning process	11	21.15
Facilitates the work of teachers in the literacy teaching process	9	17.31
It increases academic success in the future	7	13.46
Supports students' areas of development as a whole	4	7.69
Not an important and necessary skill for elementary school	3	5.77
I'm not sure	2	3.85

In the examination made on Table 10; 30.77% of the teachers said that having early literacy skills prepares the children for school, 21.15% of them facilitate the literacy learning process, 17.31% of them early literacy skill facilitates the teachers' work in the literacy teaching process, 13.46% of them said that acquiring this skill will increase their academic success in the future, 7.69% of them said that this skill will support the development areas of students as a whole, 5.77% of them said that early literacy skill is not an important and necessary skill for primary school, 3.85% it is seen that they stated that they were not sure about this issue. Findings reveal that 90.38% of teachers emphasize the importance of acquiring early literacy skills for 1<sup>st</sup> grade primary school students. Some examples of teachers' views on the importance of early literacy skills are presented below:

Early literacy is a type of pre-literacy preparation. Therefore, I think that early literacy is very important especially for first graders (T-5).

Early literacy actually facilitates the work of teachers. Because a child who received early literacy education will learn to read and write more easily (T-9).

I can say that a student who comes ready for the first grade will experience a good literacy learning process. This will be very good for their academic success in the future (T-25).

I think early literacy should not be exaggerated. After all, it is the classroom teachers who will teach literacy. This concept may be important in preschool, but it does not work in the first grade of primary school (T-49).

## 4. Discussion and Conclusion

Considering the knowledge level of primary school teachers regarding the concept of early literacy, it was found that only 17.31% of the teachers defined the concept of early literacy correctly and 86.53% of the teachers stated that they did not have sufficient knowledge about early literacy. These results show that there is a lack of information about primary school teachers' theoretical background and content of early literacy. Although there are many reasons for this, it can be said that one of the most important reasons is that the universities' teacher training programs do not provide sufficient place or any place at all for early literacy teaching. The fact that teachers do not follow the developments in the field adequately and the in-service programs provided to teachers do not include the current developments adequately or place limited emphasis on early literacy also plays an important role in this low knowledge level. Some studies (Akdemir, 2013; Altun & Erden, 2016; Karaman, 2016; Küçükahmet, 2007; Şişman, 2017; Taşkaya & Uyar, 2017) support our interpretation in this direction. In the study conducted by Altun and Erden (2016), it was determined that most of the teachers do not have sufficient knowledge about early literacy. Ergül, Karaman, Akoğlu, Tufan, Sarıca and Kudret (2014) showed that teachers do not know the theoretical background and content of the concept of early literacy. Hindman and Wasik (2008) stated that teachers' inadequate and unqualified teaching for early literacy is based on their lack of knowledge about the

concept of early literacy. In the study conducted by Davis (2022), it was determined that teachers do not have enough knowledge about early literacy skills.

Teachers who participated in the study and correctly defined the concept of early literacy, 33.34% had information about the concept of early literacy from their friends who were preschool teachers, 22.22% of them from graduate education, 22.22% from the in-service training course, 11.11% while preparing for the career advancement examinations, 11.11% were curious and learned through research. These results show that teachers do not acquire knowledge about the concept of early literacy through a planned and regular education program and work but mostly through their efforts and informal ways. Considering that education is a purposeful planned, scheduled and regular activity, it can be said that teachers are not educated on an important issue such as early literacy. The demand for a planned, scheduled and regular institutional training is the common aspect of the teachers' suggestions to raise their knowledge level of early literacy. These recommendations reveal that teaching/informing about the concept of early literacy should be done in institutionally and formally, not through individual efforts and informal relations. In the study conducted by Crim, Hawkins, Thornton, Rosof, Copley and Thomas (2008) it was concluded that teachers should be trained in order to gain early literacy skills effectively.

In the study, it was found that there was no significant difference between the knowledge level of the concept of early literacy and gender. This is possibly a result of the same programs applied in the departments of university teacher training departments, the participation of all teachers to the same pre-service and in-service training activities without discriminating between women and men, and the same content determined by the ministry for school seminars educational activities. It is also possible that the application of pre-service and in-service training activities aimed at teacher training and teacher training to all teachers with the same content regardless of gender prevents the gender factor from affecting teachers' knowledge levels. Besides, teachers' occupational professionalism that excludes the gender factor, their responsibilities and obligations to educate students and acting as a non-emotional professional teaching consciousness in their occupational practices have also contributed to this result. This result obtained in the research is supported by other studies. In the studies conducted by Güner (2011), Işıkgöz, Yiğitsoy and Çiçekçe (2018), Karaman (2016), and Taşkaya and Uyar (2017), it was concluded that gender did not affect the knowledge levels of classroom teachers.

In the study, it was determined that there was no significant difference between the knowledge level of the primary school teachers about the concept of early literacy and the type of school they graduated from. Since the necessary information on early literacy could not be provided at the desired level through undergraduate programs, the departments or programs that teachers graduated from had no significant effect on their knowledge level. It is seen that as there is not an independent course on the concept of early literacy in classroom teaching undergraduate programs, pre-service teachers are not adequately trained in this subject before the service, this lack of pre-service is not solved within the service and accordingly, the teachers have heard/learned the concept of early literacy mostly from other colleagues and relatives in informal ways. Moreover, the fact that the majority of the teachers participating in the research stated that the lack of knowledge on this subject can be solved by putting courses in all departments that train teachers in universities and by providing in-service training courses and seminars, which also supports our explanations in this regard.

In the studies conducted by Taşkaya and Uyar (2017), Karaman (2016) and Güner (2011), no significant relationship was found between the competencies and knowledge levels of classroom teachers and the type of school they graduated from. One of the most important reasons for this inadequacy experienced by teachers is the lack of adequate teaching of early literacy in teacher training programs (Altun & Erden, 2016; Dickson & Caswell, 2007; Hsieh, Hemmer, McCollum & Ostrosky, 2009). Therefore, it can be said that the quality and quantity of the courses in teacher training programs from past to present are one of the important reasons for the problems related to the lack of knowledge of teachers (Akdemir, 2013; Küçükahmet, 2007; Şişman, 2017).

In the study, it was found that there is no significant difference between the knowledge level of the primary school teachers about the concept of early literacy and their seniority. Considering the reasons for the low knowledge level of teachers about early literacy and the procedures and principles of acquiring knowledge on this issue, the reasons why the seniority is not effective in this issue emerge. It is seen that most of the teachers have heard/learned the concept of early literacy mostly from other colleagues. Moreover, the explanations of the majority of the teachers participating in the research that the lack of knowledge on this subject can be solved by putting courses in all departments that train teachers in universities and by providing in-service training courses and seminars are parallel to our thoughts in this direction. The reason for this ineffectiveness can be explained by the fact that teachers do not acquire knowledge about the concept of early literacy either through pre-service or in-service through a planned and regular education activity, and they often acquire this knowledge through individual efforts and informal means. Besides, it can be said that the implementation of the same/similar programs in the teacher training departments of the universities for all teachers and the inclusion of all teachers in the in-service training activities which are determined by the ministry centrally with the same content have an impact on this result.

The results of the research reveal that 90.380% of the teachers believe that acquiring early literacy skills is important for primary school 1st-grade students. Most of the teachers stated that having early literacy skills prepared the children for primary school while it would also facilitate the learning and reading of the teacher and support the development areas of the students. In the study conducted by Altun and Erden (2016), the prospective teachers considered early literacy skills important because they supported children's readiness for primary school. Research shows that teaching and supporting early literacy skills favourably provides children with a strong and positive start to primary school (Balla-Boudreau & O'Reilly, 2002; Evangelou & Sylva, 2003; Israel, 2007; Taş, 2020). Many studies have shown that children who start primary school without early literacy skills cannot make a good start to school revealing that these children face many problems in the process of acquiring their first reading and writing skills and these problems negatively affect future school life (Juel, 1988; Stanovich, 1986; Torgesen & Burgess, 1998). For this reason, it is important to take the necessary measures to develop children's early literacy skills before starting primary school to prevent problems in the first reading and writing learning/teaching process and to support and develop these skills in the first reading and writing preparation process.

## 5. Recommendations

1. Undergraduate programs of class teaching should be revised to train primary school teachers who are knowledgeable about early literacy and thus, deficiencies should be eliminated.
2. In the primary school teaching departments, well-prepared courses on early literacy should be put in place and teachers should be provided with information about modern literacy methods and techniques based on scientific data instead of acquiring knowledge about early literacy skills.
3. With effective in-service training activities, teachers should be informed in detail about early literacy by experts.
4. Strong incentives should be created to enable teachers to follow developments in their professions, particularly early literacy.
5. It should be ensured that the teachers who will teach the 1st-grade of primary school come together with the preschool teachers frequently, and seminars and meetings should be organized for this purpose.

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# Investigation of Some Anthropometric and Motoric Characteristics of Paramedic Students

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## Abstract

**Aim:** This research aimed to analyze the vocational adjustment of paramedic students in health sciences in terms of some anthropometric and motoric features. **Material and Method:** The research is a cross-sectional study, which is one of the quantitative research methods aimed at paramedic students. The study group consisted of 60 ( $n_{\text{Male}}=34$ ,  $n_{\text{Female}}=110$ ) first-year students ( $n_{\text{Male}}=16$ ,  $n_{\text{Female}}=44$ ; male:  $19.63\pm 1.36$  years, female:  $19.57\pm 1.15$  years) receiving education at Kirsehir Ahi Evran University (KAEU) Health Services Vocational School in the First and Emergency Aid Program who agreed to participate in the research voluntarily. To determine the descriptive statistics of the study group, gender and age variables were collected through the direct data collection method. After this process, required measurements, including somatotype measurements, were performed to determine the height, body weight (BW), hand grip strength (HGS), and arm mass values. After determining descriptive statistics, the Wilcoxon comparison test and Spearman correlation statistical test were performed, and the significance level was taken as  $p<0.05$ . In addition, relevant ethical permissions were obtained for the research. **Findings:** In addition to some differences with reference to the gender variable (Table 2), several significant correlations between hand grip strength and upper extremity (Tables 3-5) were identified. Moreover, a highly significant positive correlation was found between relative arm force (RAF) and hand grip strength ( $r_{\text{RAF-HGS}} = .707$ ;  $p<0.001$ ). When their somatotype structures were analyzed, male students were determined to have balanced ectomorph (1.77-1.96-3.05), while female students had meso ectomorph (0.08-1.09-2.24) and overall (males & females) had meso ectomorph component (0.53-1.32-2.46). **Conclusion and Suggestions:** It was observed that the height values of the students were below some minimum value criteria for occupations such as police work, while their body mass index (BMI) values were within the normal range. Although the results were close to sedentary health professionals in terms of HGS, they were at a lower level than those of athletes. It is obvious that the students had different somatotype components regarding athletes. Based on this research, the conduct of further qualitative research on field workers is recommended as well as introducing some certain physical competence criteria in the recruitment of paramedic students.

**Keywords:** Morphological and Motoric Features, Paramedic, Vocational Adjustment

## 1. Introduction

Just like individuals make evaluations for choosing the appropriate profession for themselves, it is known that some professions recruit individuals by stipulating the individual's eligibility for the profession. Thus, two concepts, which are choice of profession and vocational adjustment, come forward. It is observed that studies on occupational choice are conducted through survey-type data collection tools (scale, questionnaire, etc.) (Onler &

Varol Saracoglu, 2010) that measure vocational adjustment within the quantitative research types. Here, *vocational adjustment* (Tureng, 2022), as stated in the relevant dictionary category, deals with the individual's perspective on the profession from a psychological aspect. In a study conducted from this perspective, Tosunoz et al. (2019) state that the vocational adjustment of those who choose a profession willingly is more effective. Using reverse logic, this can be interpreted that "those who are eligible for the profession will be more effective in the profession". Vocational adjustment, emerging as another concept, is based rather on the physical evaluation of the individual. Some professions such as police work, military service and firefighting can be given as examples. In the context of the study group, this research includes a paramedics-oriented investigation suggesting that high school graduates, Emergency Medical Technicians (EMT), and associate degree graduates are not subjected to any physical adequacy assessment prior to the start of their recruitment.

Following this conceptual framework, some terms and methods need to be addressed concerning physical evaluations. Strength, speed, and endurance make up the base of motor features (Sahin, 2006; Muratli et al., 2007; Ozdemir, 2009). The strength factor is stated to have a special importance among these features (Sevim et al., 1996). Concurrently, strength is, directly and indirectly effective in improving athlete performance (Aydos et al., 2004; Hekim and Hekim, 2015; Gunay et al., 2017). Hand Grip Strength (HGS) measurement is performed to determine the strength of individuals (Gencay et al., 2017). As one of the regional strength measurements, HGS is a reliable measurement method. HGS is also used to evaluate overall body strength as well as upper extremity performance (Erdogan et al., 2016; Kecelioglu and Akcay, 2019). Relative strength, one of the strength types, is described as the greatest strength that an individual can develop against their own body weight (BW) and is used to compare the strength of both individuals and athletes (Sevim, 2006; Katch et al., 2011). As a novel approach to determining relative strength, the Relative Arm Force (RAF) method is an important measurement tool (Marangoz, 2022a). Besides these motor features, anthropometric factors are highly effective in the correlation between development and motor performance (Akcakaya, 2009). Anthropometric techniques can be employed to evaluate the effects of body structure differences and physical training on anthropometric characteristics in all sports branches (Yildirim and Ozdemir, 2010).

Considering the above-given information, this research, focusing on paramedic students in health sciences, aimed to examine the vocational adjustment of the study group concerning some anthropometric and motor features. Thus, the secondary aim of our research was to provide recommendations for both the students studying in the field and the recruitment methods in Turkey.

## 2. Materials and Methods

### 2.1. Type of Research

This research, conducted as an example of the quantitative research methods regarding paramedic students, is cross-sectional. Besides, it includes comparative and correlational statistical tests.

### 2.2. Place and Time of Research

The study was conducted at Kirsehir Ahi Evran University (KAEU) Health Services Vocational School (HSVS) in the First and Emergency Aid Program (FEAP) in the spring semester of the 2021-2022 Academic Year in the KAEU Sports Science Faculty (SSF).

### 2.3. Study Group

The study group comprised 60 ( $n_{\text{Male}}=16$ ,  $n_{\text{Female}}=44$ ;  $N=60$ ) first-year students studying at KAEU HSVS in the FEAP ( $n_{\text{Male}}=34$ ,  $n_{\text{Female}}=110$ ;  $N=144$ ) who agreed to take part in the study voluntarily. In addition, as a result of the G\*Power analysis based on the study of Turkmen et al. (2010), which is considered relevant to our research, it was determined that 45 people would suffice as the study sample.



#### 2.4. Data Collection Tools and Features

The data representing gender and age variables were collected through the direct data collection method, and subsequently, the following measurements were made to determine the descriptive statistics of the study group.

##### 2.4.1. Height, Body Weight (BW) and Body Mass Index (BMI)

Height was measured through a stadiometer (Seca, Germany) with an accuracy of  $\pm .1$  mm (millimeter) for each student wearing light sports clothes and no shoes. The measurements were recorded in cm (centimeters) while their backs leaned on the wall, the heads were in the Frankfort horizontal plane, and the hair was pressed down onto the top of their heads (Norton, 2018).

In body weight (BW) measurement, the data were recorded in kg (kilogram) by measuring each student in light sportswear and with no shoes (Turkmen et al., 2010) using an electronic scale with  $\pm .1$  g (gram) precision (Tanita BC-418 Segmental, Japan).

Body mass index ( $BMI = kg \div height^2$ ) was calculated using these two measurements (Turkmen et al., 2010).

##### 2.4.2. Hand Grip Strength

Before the HGS measurement, time was given both for the trial measurement and warm-up. Then, the hand dynamometer (Baseline 12-086, USA) was adjusted in conformity with the proximal phalanx length of the middle finger so that the dominant arm stands at an angle of 10-15° to the body in the anatomical stance (Turan, 2019). Then, as the student was ready, two successive measurements within a 1-minute interval were performed, and the best result was recorded as HGS.

##### 2.4.3. Determination of Arm Mass

###### 2.4.3.1. Calculation of Upper Arm Mass

In the method calculated according to the Hanavan model, the distance between the acromion bone and the olecranon (radiale) bone and the values of the location yielding the largest girth measurement of this distance were used (Hanavan Jr., 1964; Miller & Morrison, 1975; Kwon, 1998; Norton, 2018). A segmometer (Cescorf, Brazil) was used for length measurements while width measurements were performed through tape measure (Lafayette Gulick, USA).

$$\underline{\underline{Upper\ Arm\ Mass\ Sum=0.007xBody\ Weight+0.092xUpper\ Arm\ Girth+0.050xUpper\ Arm\ Length-3.101}}$$

###### 2.4.3.2. Calculation of Lower Arm Mass

In the method calculated in accordance with the Hanavan model, the distance between the olecranon (radiale) bone and the ulnar styloid bone was determined, and the values of the place giving the largest girth measurement of this distance were used (Hanavan Jr., 1964; Miller & Morrison, 1975; Kwon, 1998; Norton, 2018).

$$\underline{\underline{Lower\ Arm\ Mass\ Sum=0.081xBody\ Weight+0.052xLower\ Arm\ Girth-1.65}}$$

###### 2.4.3.3. Calculation of Hand Mass

In the calculation method performed following the Hanavan model, wrist-girth and wrist-width values were used (Hanavan Jr., 1964; Miller & Morrison, 1975; Norton, 2018).

$$\underline{\underline{Hand\ Mass\ Sum=0.038xWrist\ Girth+0.080xWrist\ Widths-0.660}}$$

#### 2.4.4. Method of Calculation Relative Arm Force

The following method was used to determine the RAF:

- Arm (hand, lower arm, and upper arm) measurement was made.
- The arm mass total (AMS) was calculated with the arm mass computation program.
- HGS was measured.
- The relative arm force (weight of the arm [in kg] divided by the force value yielded on the hand grip tool) was found by division of HGS by AMS.

$$\text{Relative Arm Force} = \frac{\text{Hand Grip Strength}}{\text{Arm Mass}} \text{ (Marangoz, 2022).}$$

#### 2.4.5. Somatotype Measurement

The height, body weight, circumference, diameter, and skinfold thickness measurement values of the students were used to measure somatotypes. Girth measurement values were taken through a tape measure (Lafayette Gulick, USA) on the right side of the students from the biceps and calf areas in flexion (Heyward & Stolarczyk, 1996; Fox et al., 2012). Diameter measurements were performed through a caliper (Bicondylar Vernier-Holtain, London) sliding from the humerus and femur epicondyles (Callaway et al., 1988; Wilmore et al., 1988; Roche et al., 1996). Skinfold thickness measurement values were taken from triceps, subscapula, suprailiac, and calf (while sitting) zones on the right side of the student's standing body (Marangoz, 2019) through a skinfold caliper (Holtain, London). The "SOMATOTURK Calculation Program" developed by Marangoz and Ozbalcı (2017) was employed in the calculation of somatotypes.

#### 2.5. Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) 26 program was employed to analyze the obtained data. A normality test was applied to scale variables to decide on the analyses. Since the number of participants in the research was greater than 30 ( $n \geq 30$ ), the researchers ran a normality test, and the Kolmogorov-Smirnov normality test, which is appropriate for the current research, was performed (Cevahir, 2020; Alpar, 2020). Since the test result was found significant ( $p < 0.05$ ), nonparametric analyses were applied. A descriptive test (Table 1) was applied in descriptive statistics, while the Wilcoxon test (Table 2) was performed for comparative analysis, and the bivariate Correlate-Bivariate (Spearman) correlation test (Table 3, Table 4, Table 5) was run for correlation analysis. The significance value of the tests was taken as  $p < 0.05$ .

#### 2.6. Ethical Aspect of the Research

For this research, written permissions were obtained from KAEU SSF Dean's Office (Number: E-51788177-000-00000411037; 29.03.2022), KAEU HSVS Directorate (Number: E-45595862-000-00000405127; 08.03.2022) and KAEU Faculty of Medicine, Clinical Research Ethics Committee (Decision No: 2022-07/68 Date: 05.04.2022).

### 3. Results

Descriptive and inferential statistics of the study group are presented in the tables below.

Table 1: Descriptive statistics of the study group variables

Variables	Male (n=16)	Female (n=44)	Total (N=60)
	$\bar{x} \pm sd$	$\bar{x} \pm sd$	$\bar{x} \pm sd$
Age (year)	19.63±1.36	19.57±1.15	19.58±1.20
BW (kg)	68.38±10.43	60.41±10.09	62.53±10.70
Height (cm)	174.81±6.26	163.64±4.87	166.62±7.22
BMI (kg/cm <sup>2</sup> )	22.51±4.37	22.55±3.64	22.54±3.81
Upper Arm Girth (UAG) (cm)	27.84±3.36	26.38±3.10	26.77±3.21
Upper Arm Length (UAL) (cm)	37.22±1.69	33.26±1.85	34.32±2.52

Upper Arm Mass Sum (UAMS) (kg)	1.80±0.40	1.41±0.39	1.52±0.43
Lower Arm Girth (LAG) (cm)	25.81±1.59	23.63±1.75	24.21±1.96
Lower Arm Mass Sum (LAMS) (kg)	5.23±0.91	4.48±0.89	4.68±0.95
Wrist Girth (WG) (cm)	16.41±0.64	15.33±0.85	15.62±0.93
Wrist Widths (WW) (cm)	5.49±0.35	5.65±0.35	5.61±0.35
Hand Mass Sum (HMS) (kg)	0.40±0.04	0.37±0.06	0.38±0.05
Arm Mass Sum (AMS) (kg)	7.43±1.32	6.26±1.29	6.58±1.38
HGS (kg)	44.34±9.94	28.98±4.76	33.08±9.41
RAF (kg)	5.97±0.83	4.77±1.06	5.09±1.13
Endomorphy	1.77±0.94	0.08±0.14	0.53±0.90
Mesomorphy	1.96±1.94	1.09±1.13	1.32±1.42
Ectomorphy	3.05±1.53	2.24±1.32	2.46±1.41

N/n: Number of subjects;  $\bar{x}$ : Average; sd: Standard deviation; Upper Arm Girth: UAG; Upper Arm Length: UAL; Upper Arm Mass Sum: UAMS; Lower Arm Girth: LAG; Lower Arm Mass Sum: LAMS; Wrist Girth: WG; Wrist Widths: WW; Hand Mass Sum: HMS; Arm Mass Sum: AMS

The relevant data of the study group variables, which respectively are the age of the study group (male: 19.63±1.36 years; female: 19.57±1.15 years), BW (male: 68.38±10.43 kg; female 60.41±10.09 kg); height (male: 174.81±6.26 cm; female: 163.64±4.87 cm); BMI (male: 22.51±4.37 kg/cm<sup>2</sup>; female 22.55±3.64 kg/cm<sup>2</sup>); UAG (male: 27.84±3.36 cm; female: 26.38±3.10 cm), UAL (male: 37.22±1.69 cm; female 33.26±1.85 cm), UAMS (male: 1.80±0.40cm; female: 1.41±0.39 cm), LAG (male: 25.81±1.59 cm; female 23.63±1.75 cm), LAMS (male: 5.23±0.91 kg; female: 4.48±0.89 kg), WG male: 16.41±0.64 cm; female: 15.33±0.85 cm), WW (male: 5.49±0.35 cm; female: 5.65±0.35 cm), HMS (male: 0.40±0.04 kg; female: 0.37±0.06 kg), AMS (male: 7.43±1.32 kg; female: 6.26±1.29 kg), HGS (male: 44.34±9.94 kg; female: 28.98±4.76 kg), RAF (male: 5.97±0.83 kg; female 4.77±1.06 kg), Endomorphy (male: 1.77±0.94 kg; female .08±0.14), Mesomorph (male: 1.96±1.94; female: 1.09±1.13) and Ectomorphy (male: 3.05±1.53; female 2.24±1.32) are as depicted in Table 1.

Table 2: Comparison of anthropometric and motoric variables of the study group

Variables	Gender	n	z	p
Age (year)	Male	16	-.035	.972
	Female	44		
BW (kg)	Male	16	-2.657	.008**
	Female	44		
Height (cm)	Male	16	-4.863	.000***
	Female	44		
BMI (kg/cm <sup>2</sup> )	Male	16	-4.85	.628
	Female	44		
UAG (cm)	Male	16	-1.216	.224
	Female	44		
UAL (cm)	Male	16	-5.151	.000***
	Female	44		
UAMS (kg)	Male	16	-3.126	.002**
	Female	44		
LAG (cm)	Male	16	-3.810	.000***
	Female	44		
LAMS (kg)	Male	16	-2.809	.005**
	Female	44		
WG (cm)	Male	16	-4.325	.000***
	Female	44		
WW (cm)	Male	16	-2.377	.017
	Female	44		
HMS (kg)	Male	16	-1.898	.058
	Female	44		

AMS (kg)	Male	16	-3.042	.002**
	Female	44		
HGS (kg)	Male	16	-5.300	.000***
	Female	44		
RAF (kg)	Male	16	-3.778	.000***
	Female	44		
Endomorphy	Male	16	-5.801	.000***
	Female	44		
Mesomorphy	Male	16	-1.423	.155
	Female	44		
Ectomorphy	Male	16	-2.040	.041*
	Female	44		

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Upper Arm Girth: UAG; Upper Arm Length: UAL; Upper Arm Mass Sum: UAMS; Lower Arm Girth: LAG; Lower Arm Mass Sum: LAMS; Wrist Girth: WG; Wrist Widths: WW; Hand Mass Sum: HMS; Arm Mass Sum: AMS

Looking at Table 2, the variables BW ( $z = -2.657$ ;  $p < 0.01$ ), height ( $z = -4.863$ ;  $p < 0.001$ ), UAL ( $z = -5.151$ ;  $p < 0.001$ ), UAMS ( $z = -3.126$ ;  $p < 0.01$ ), LAG ( $z = -3.810$ ;  $p < 0.001$ ), LAMS ( $z = -2.809$ ;  $p < 0.01$ ), WG ( $z = -4.325$ ;  $p < 0.001$ ), AMS ( $z = -3.042$ ;  $p < 0.01$ ), HGS ( $z = -5.300$ ;  $p < 0.001$ ), RAF ( $z = -3.778$ ;  $p < 0.001$ ), Endomorphy ( $z = -5.801$ ;  $p < 0.001$ ) and Ectomorphy ( $z = -2.040$ ;  $p < 0.05$ ) turn out to be statistically significant.

Table 3: The relationship between anthropometric and motoric variables of male students

Variables	Age	BW	Height	BMI	UAG	UAL	UAMS	LAG	LAMS	WG	WW	HMS	AMS	HGS
BW (kg)	r .199													
Height (cm)	r .020	.054												
BMI (kg/cm <sup>2</sup> )	r .159	.913***	-.258											
UAG (cm)	r .282	.926***	-.024	.868***										
UAL (cm)	r -.008	.168	.255	-.002	.304									
UAMS (kg)	r .229	.915***	.071	.831***	.981***	.414								
LAG (cm)	r .234	.862***	.003	.817***	.931***	.355	.922***							
LAMS (kg)	r .243	.995***	.004	.929***	.942***	.169	.924***	.896***						
WG (cm)	r .044	.013	.274	.504*	.020	.171	.011	.007	.011					
WW (cm)	r .318	.353	.287	.241	.226	-.008	.221	.148	.332	.495				
HMS (kg)	r .473	.558*	.386	.419	.468	.140	.494	.426	.545*	.842***	.819***			
AMS (kg)	r .235	.973***	.059	.893***	.970***	.288	.965***	.931***	.979***	.679**	.349	.587*		
HGS (kg)	r .201	.622*	-.093	.640**	.695**	.509*	.733**	.787***	.658**	.548*	.051	.223	.690**	
RAF (kg)	r .014	-.009	.000	.044	.035	.378	.112	.136	.012	.077	-.102	-.174	.024	.689**

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Upper Arm Girth: UAG; Upper Arm Length: UAL; Upper Arm Mass Sum: UAMS; Lower Arm Girth: LAG; Lower Arm Mass Sum: LAMS; Wrist Girth: WG; Wrist Widths: WW; Hand Mass Sum: HMS; Arm Mass Sum: AMS

Looking at Table 3, a significant correlation was found between respectively BMI with height ( $r_{\text{BMI-Height}} = .913$ ;  $p < 0.001$ ), UAG with BW ( $r_{\text{UAG-BW}} = .926$ ;  $p < 0.001$ ) and BMI ( $r_{\text{UAG-BMI}} = .868$ ;  $p < 0.001$ ), UAMS with BW ( $r_{\text{UAMS-BW}} = .915$ ;  $p < 0.001$ ), BMI ( $r_{\text{UAMS-BMI}} = .831$ ;  $p < 0.001$ ) and UAG ( $r_{\text{UAMS-UAG}} = .981$ ;  $p < 0.001$ ), LAG with BW ( $r_{\text{LAG-BW}} = .862$ ;  $p < 0.001$ ), BMI ( $r_{\text{LAG-BMI}} = .817$ ;  $p < 0.001$ ), UAG ( $r_{\text{LAG-UAG}} = .931$ ;  $p < 0.001$ ) and UAMS ( $r_{\text{LAG-UAMS}} = .922$ ;  $p < 0.001$ ), LAMS with BW ( $r_{\text{LAMS-BW}} = .995$ ;  $p < 0.001$ ), BMI ( $r_{\text{LAMS-BMI}} = .929$ ;  $p < 0.001$ ), UAG ( $r_{\text{LAMS-UAG}} = .942$ ;  $p < 0.001$ ), UAMS ( $r_{\text{LAMS-UAMS}} = .924$ ;  $p < 0.001$ ) and LAG ( $r_{\text{LAMS-LAG}} = .896$ ;  $p < 0.001$ ), WG with BMI ( $r_{\text{WG-BMI}} = .504$ ;  $p < 0.05$ ), HMS with BW ( $r_{\text{HMS-BW}} = .558$ ;  $p < 0.05$ ), LAMS ( $r_{\text{HMS-LAMS}} = .545$ ;  $p < 0.05$ ), WG ( $r_{\text{HMS-WG}} = .842$ ;  $p < 0.001$ ) and WW ( $r_{\text{HMS-WW}} = .819$ ;  $p < 0.001$ ), AMS with BW ( $r_{\text{AMS-BW}} = .973$ ;  $p < 0.001$ ), BMI ( $r_{\text{AMS-BMI}} = .893$ ;  $p < 0.001$ ), UAG ( $r_{\text{AMS-UAG}} = .970$ ;  $p < 0.001$ ), UAMS ( $r_{\text{AMS-UAMS}} = .965$ ;  $p < 0.001$ ), LAG ( $r_{\text{AMS-LAG}} = .931$ ;  $p < 0.001$ ), ( $r_{\text{AMS-LAMS}} = .979$ ;  $p < 0.001$ ), WG ( $r_{\text{AMS-WG}} = .679$ ;  $p < 0.01$ ) and HMS ( $r_{\text{AMS-HMS}} = .587$ ;  $p < 0.05$ ), HGS with BW ( $r_{\text{HGS-BW}} = .622$ ;  $p < 0.05$ ), BMI ( $r_{\text{HGS-BMI}} = .640$ ;  $p < 0.01$ ), UAG ( $r_{\text{HGS-UAG}} = .695$ ;  $p < 0.01$ ), UAL ( $r_{\text{HGS-UAL}} = .509$ ;  $p < 0.05$ ), UAMS ( $r_{\text{HGS-UAMS}} = .733$ ;  $p < 0.01$ ), LAG ( $r_{\text{HGS-LAG}} = .787$ ;  $p < 0.001$ ), LAMS ( $r_{\text{HGS-LAMS}} = .658$ ;

$p < 0.01$ ), WG ( $r_{\text{HGS-WG}} = .548$ ;  $p < 0.05$ ) and AMS ( $r_{\text{HGS-AMS}} = .690$ ;  $p < 0.01$ ), RAF with HGS ( $r_{\text{RAF-HGS}} = .689$ ;  $p < 0.01$ ).

Table 4: The relationship between anthropometric and motoric variables of female students

Variables	Age	BW	Height	BMI	UAG	UAL	UAMS	LAG	LAMS	WG	WW	HMS	AMS	HGS
BW (kg)	r .174													
Height (cm)	r .070	.274												
BMI (kg/cm <sup>2</sup> )	r .098	.907***	-.093											
UAG (cm)	r .163	.593***	.056	.625***										
UAL (cm)	r .005	.352*	.455**	.198	.349*									
UAMS (kg)	r .130	.630***	.151	.618***	.953**	.562***								
LAG (cm)	r .027	.671***	.099	.668***	.720***	.326*	.759***							
LAMS (kg)	r .124	.682***	.191	.646***	.825***	.370*	.869***	.850***						
WG (cm)	r .079	.554***	.309*	.470**	.577***	.331*	.598***	.737***	.662***					
WW (cm)	r .068	.477**	.231	.406**	.421**	.210	.436**	.549***	.456**	.695***				
HMS (kg)	r .099	.560***	.298*	.465**	.516***	.291	.538***	.674***	.583**	.926***	.898***			
AMS (kg)	r .134	.676***	.171	.648***	.886***	.430**	.927***	.833***	.983***	.672***	.496**	.611**		
HGS (kg)	r -.018	.034	-.086	.069	.137	.064	.089	.091	.054	.216	.231	.264	.067	
RAF (kg)	r -.089	-.464**	-.185	-.431**	-.549***	-.316*	-.626***	-.515***	-.684***	-.323*	-.155	-.227	-.688***	.611***

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Upper Arm Girth: UAG; Upper Arm Length: UAL; Upper Arm Mass Sum: UAMS; Lower Arm Girth: LAG; Lower Arm Mass Sum: LAMS; Wrist Girth: WG; Wrist Widths: WW; Hand Mass Sum: HMS; Arm Mass Sum: AMS

Looking at Table 4, a significant correlation was found between respectively BMI with BW ( $r_{\text{BMI-BW}} = .907$ ;  $p < 0.001$ ), UAG with BW ( $r_{\text{UAG-BW}} = .593$ ;  $p < 0.001$ ) and BMI ( $r_{\text{UAG-BMI}} = .625$ ;  $p < 0.001$ ), UAL with BW ( $r_{\text{UAL-BW}} = .352$ ;  $p < 0.05$ ), Height ( $r_{\text{UAL-Height}} = .455$ ;  $p < 0.01$ ) and UAG ( $r_{\text{UAL-UAG}} = .349$ ;  $p < 0.05$ ), UAMS with BW ( $r_{\text{UAMS-BW}} = .630$ ;  $p < 0.001$ ), BMI ( $r_{\text{UAMS-BMI}} = .618$ ;  $p < 0.001$ ), UAG ( $r_{\text{UAMS-UAG}} = .953$ ;  $p < 0.001$ ) and ( $r_{\text{UAMS-UAL}} = .562$ ;  $p < 0.001$ ), LAG with BW ( $r_{\text{LAG-BW}} = .671$ ;  $p < 0.001$ ), BMI ( $r_{\text{LAG-BMI}} = .668$ ;  $p < 0.001$ ), UAG ( $r_{\text{LAG-UAG}} = .720$ ;  $p < 0.001$ ), UAL ( $r_{\text{LAG-UAL}} = .326$ ;  $p < 0.05$ ) and UAMS ( $r_{\text{LAG-UAMS}} = .759$ ;  $p < 0.001$ ), LAMS with BW ( $r_{\text{LAMS-BW}} = .682$ ;  $p < 0.001$ ), BMI ( $r_{\text{LAMS-BMI}} = .646$ ;  $p < 0.001$ ), UAG ( $r_{\text{LAMS-UAG}} = .825$ ;  $p < 0.001$ ), UAL ( $r_{\text{LAMS-UAL}} = .370$ ;  $p < 0.05$ ), UAMS ( $r_{\text{LAMS-UAMS}} = .869$ ;  $p < 0.001$ ) and LAG ( $r_{\text{LAMS-LAG}} = .850$ ;  $p < 0.001$ ), WG with BW ( $r_{\text{WG-BW}} = .554$ ;  $p < 0.001$ ), height ( $r_{\text{WG-Height}} = .309$ ;  $p < 0.05$ ), BMI ( $r_{\text{WG-BMI}} = .470$ ;  $p < 0.05$ ), UAG ( $r_{\text{WG-UAG}} = .577$ ;  $p < 0.001$ ), UAL ( $r_{\text{WG-UAL}} = .331$ ;  $p < 0.05$ ), UAMS ( $r_{\text{WG-UAMS}} = .598$ ;  $p < 0.001$ ), LAG ( $r_{\text{WG-LAG}} = .737$ ;  $p < 0.001$ ) and LAMS ( $r_{\text{WG-LAMS}} = .662$ ;  $p < 0.001$ ), WW with BW ( $r_{\text{WW-BW}} = .477$ ;  $p < 0.01$ ), BMI ( $r_{\text{WW-BMI}} = .406$ ;  $p < 0.01$ ), UAG ( $r_{\text{WW-UAG}} = .421$ ;  $p < 0.01$ ), UAMS ( $r_{\text{WW-UAMS}} = .436$ ;  $p < 0.01$ ), LAG ( $r_{\text{WW-LAG}} = .549$ ;  $p < 0.001$ ), LAMS ( $r_{\text{WW-LAMS}} = .456$ ;  $p < 0.01$ ) and WG ( $r_{\text{WW-WG}} = .695$ ;  $p < 0.001$ ), HMS with BW ( $r_{\text{HMS-BW}} = .560$ ;  $p < 0.001$ ), height ( $r_{\text{HMS-Height}} = .298$ ;  $p < 0.05$ ), BMI ( $r_{\text{HMS-BMI}} = .465$ ;  $p < 0.01$ ), UAG ( $r_{\text{HMS-UAG}} = .516$ ;  $p < 0.001$ ), UAMS ( $r_{\text{HMS-UAM}} = .538$ ;  $p < 0.001$ ), LAG ( $r_{\text{HMS-LAG}} = .674$ ;  $p < 0.001$ ), LAMS ( $r_{\text{HMS-LAMS}} = .583$ ;  $p < 0.01$ ), WG ( $r_{\text{HMS-WG}} = .926$ ;  $p < 0.001$ ) and WW ( $r_{\text{HMS-WW}} = .898$ ;  $p < 0.001$ ), AMS with BW ( $r_{\text{AMS-BW}} = .676$ ;  $p < 0.001$ ), BMI ( $r_{\text{AMS-BMI}} = .648$ ;  $p < 0.001$ ), UAG ( $r_{\text{AMS-UAG}} = .886$ ;  $p < 0.001$ ), UAL ( $r_{\text{AMS-UAL}} = .430$ ;  $p < 0.01$ ), UAMS ( $r_{\text{AMS-UAMS}} = .927$ ;  $p < 0.001$ ), LAG ( $r_{\text{AMS-LAG}} = .833$ ;  $p < 0.001$ ), LAMS ( $r_{\text{AMS-LAMS}} = .983$ ;  $p < 0.001$ ), WG ( $r_{\text{AMS-WG}} = .672$ ;  $p < 0.001$ ), WW ( $r_{\text{AMS-WW}} = .496$ ;  $p < 0.01$ ) and HMS ( $r_{\text{AMS-HMS}} = .611$ ;  $p < 0.01$ ), RAF with BW ( $r_{\text{RAF-BW}} = -.464$ ;  $p < 0.01$ ), BMI ( $r_{\text{RAF-BW}} = -.431$ ;  $p < 0.01$ ), UAG ( $r_{\text{RAF-UAG}} = -.549$ ;  $p < 0.001$ ), UAL ( $r_{\text{RAF-UAL}} = -.316$ ;  $p < 0.05$ ), UAMS ( $r_{\text{RAF-UAMS}} = -.626$ ;  $p < 0.001$ ), LAG ( $r_{\text{RAF-LAG}} = -.515$ ;  $p < 0.001$ ), LAMS ( $r_{\text{RAF-LAMS}} = -.684$ ;  $p < 0.001$ ), WG ( $r_{\text{RAF-WG}} = -.323$ ;  $p < 0.05$ ), AMS ( $r_{\text{RAF-AMS}} = -.688$ ;  $p < 0.001$ ) and HGS ( $r_{\text{RAF-HGS}} = -.611$ ;  $p < 0.001$ ).

Table 5: The relationship between anthropometric and motoric variables of male and female students

Variables	Age	BW	Height	BMI	UAG	UAL	UAMS	LAG	LAMS	WG	WW	HMS	AMS	HGS
BW (kg)	r .169													
Height (cm)	r .027	.366**												
BMI (kg/cm <sup>2</sup> )	r .125	.814***	-.159											
UAG (cm)	r .172	.660***	.101	.675***										
UAL (cm)	r .023	.427**	.650***	.046	.322*									
UAMS (kg)	r .143	.722***	.356**	.562***	.921***	.618***								
LAG (cm)	r .056	.744***	.386**	.553***	.740***	.529***	.844***							
LAMS (kg)	r .137	.770***	.338**	.619***	.831***	.452***	.895***	.885**						
WG (cm)	r .153	.596***	.522**	.332**	.548***	.553***	.676***	.791**	.699***					
WW (cm)	r .127	.272*	-.048	.377**	.274*	-.114	.193	.218	.253	.323*				

HMS (kg)	r	.187	.570***	.359**	.416**	.513***	.345**	.565***	.657**	.611***	.868***	.711***			
AMS (kg)	r	.136	.767***	.353**	.602***	.881***	.516***	.950***	.892**	.984***	.721***	.253	.627***		
HGS (kg)	r	.015	.336**	.393**	.090	.289*	.522***	.411**	.482**	.356**	.544***	-.092	.369**	.395**	
RAF (kg)	r	-.049	-.151	.195	-.332**	-.290*	.198	-.203	-.064	-.286*	.073	-.357**	-.082	-.254*	.707***

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Upper Arm Girth: UAG; Upper Arm Length: UAL; Upper Arm Mass Sum: UAMS; Lower Arm Girth: LAG; Lower Arm Mass Sum: LAMS; Wrist Girth: WG; Wrist Widths: WW; Hand Mass Sum: HMS; Arm Mass Sum: AMS

Looking at Table 5, a significant correlation was found between respectively height with BW ( $r_{\text{Height-BW}} = .366$ ;  $p < 0.01$ ), BMI with BW ( $r_{\text{BMI-BW}} = .814$ ;  $p < 0.001$ ), UAG with ( $r_{\text{UAG-BW}} = .660$ ;  $p < 0.001$ ) and BMI ( $r_{\text{UAG-BMI}} = .675$ ;  $p < 0.001$ ), UAL with BW ( $r_{\text{UAL-BW}} = .427$ ;  $p < 0.01$ ), height ( $r_{\text{UAL-Height}} = .650$ ;  $p < 0.001$ ) and UAG ( $r_{\text{UAL-UAG}} = .322$ ;  $p < 0.05$ ), UAMS with BW ( $r_{\text{UAMS-BW}} = .722$ ;  $p < 0.001$ ), height ( $r_{\text{UAMS-Height}} = .356$ ;  $p < 0.01$ ), BMI ( $r_{\text{UAMS-BMI}} = .562$ ;  $p < 0.001$ ), UAG ( $r_{\text{UAMS-UAG}} = .921$ ;  $p < 0.001$ ) and UAL ( $r_{\text{UAMS-UAL}} = .618$ ;  $p < 0.001$ ), LAG with BW ( $r_{\text{LAG-BW}} = .744$ ;  $p < 0.001$ ), height ( $r_{\text{LAG-Height}} = .386$ ;  $p < 0.01$ ), BMI ( $r_{\text{LAG-BMI}} = .553$ ;  $p < 0.001$ ), UAG ( $r_{\text{LAG-UAG}} = .740$ ;  $p < 0.001$ ), UAL ( $r_{\text{LAG-UAL}} = .529$ ;  $p < 0.001$ ) and UAMS ( $r_{\text{LAG-UAMS}} = .844$ ;  $p < 0.001$ ), LAMS with BW ( $r_{\text{LAMS-BW}} = .770$ ;  $p < 0.001$ ), height ( $r_{\text{LAMS-Height}} = .338$ ;  $p < 0.01$ ), BMI ( $r_{\text{LAMS-BMI}} = .619$ ;  $p < 0.001$ ), UAG ( $r_{\text{LAMS-UAG}} = .831$ ;  $p < 0.001$ ), UAL ( $r_{\text{LAMS-UAL}} = .452$ ;  $p < 0.001$ ), UAMS ( $r_{\text{LAMS-UAMS}} = .895$ ;  $p < 0.001$ ) and LAG ( $r_{\text{LAMS-LAG}} = .885$ ;  $p < 0.001$ ), WG with BW ( $r_{\text{WG-BW}} = .596$ ;  $p < 0.001$ ), height ( $r_{\text{WG-Height}} = .522$ ;  $p < 0.001$ ), BMI ( $r_{\text{WG-BMI}} = .332$ ;  $p < 0.01$ ), UAG ( $r_{\text{WG-UAG}} = .548$ ;  $p < 0.001$ ), UAL ( $r_{\text{WG-UAL}} = .533$ ;  $p < 0.001$ ), UAMS ( $r_{\text{WG-UAMS}} = .676$ ;  $p < 0.001$ ), LAG ( $r_{\text{WG-LAG}} = .791$ ;  $p < 0.001$ ) and LAMS ( $r_{\text{WG-LAMS}} = .699$ ;  $p < 0.001$ ), WW with BW ( $r_{\text{WW-BW}} = .272$ ;  $p < 0.05$ ), BMI ( $r_{\text{WW-BMI}} = .377$ ;  $p < 0.01$ ), UAG ( $r_{\text{WW-UAG}} = .274$ ;  $p < 0.05$ ) and WG ( $r_{\text{WW-WG}} = .323$ ;  $p < 0.05$ ), HMS with BW ( $r_{\text{HMS-BW}} = .570$ ;  $p < 0.001$ ), height ( $r_{\text{HMS-Height}} = .359$ ;  $p < 0.01$ ), BMI ( $r_{\text{HMS-BMI}} = .416$ ;  $p < 0.001$ ), UAG ( $r_{\text{HMS-UAG}} = .513$ ;  $p < 0.001$ ), UAL ( $r_{\text{HMS-UAL}} = .345$ ;  $p < 0.01$ ), UAMS ( $r_{\text{HMS-UAMS}} = .565$ ;  $p < 0.001$ ), LAG ( $r_{\text{HMS-LAG}} = .657$ ;  $p < 0.01$ ), LAMS ( $r_{\text{HMS-LAMS}} = .611$ ;  $p < 0.001$ ), WG ( $r_{\text{HMS-WG}} = .868$ ;  $p < 0.001$ ) and WW ( $r_{\text{HMS-WW}} = .711$ ;  $p < 0.001$ ), AMS with BW ( $r_{\text{AMS-BW}} = .767$ ;  $p < 0.001$ ), height ( $r_{\text{AMS-Height}} = .353$ ;  $p < 0.01$ ), BMI ( $r_{\text{AMS-BMI}} = .602$ ;  $p < 0.001$ ), UAG ( $r_{\text{AMS-UAG}} = .881$ ;  $p < 0.001$ ), UAL ( $r_{\text{AMS-UAL}} = .516$ ;  $p < 0.001$ ), UAMS ( $r_{\text{AMS-UAMS}} = .950$ ;  $p < 0.001$ ), LAG ( $r_{\text{AMS-LAG}} = .892$ ;  $p < 0.001$ ), LAMS ( $r_{\text{AMS-LAMS}} = .984$ ;  $p < 0.001$ ), WG ( $r_{\text{AMS-WG}} = .721$ ;  $p < 0.001$ ) and HMS ( $r_{\text{AMS-HMS}} = .627$ ;  $p < 0.001$ ), HGS with BW ( $r_{\text{HGS-BW}} = .336$ ;  $p < 0.01$ ), height ( $r_{\text{HGS-Height}} = .393$ ;  $p < 0.01$ ), UAG ( $r_{\text{HGS-UAG}} = .289$ ;  $p < 0.05$ ), UAL ( $r_{\text{HGS-UAL}} = .522$ ;  $p < 0.001$ ), UAMS ( $r_{\text{HGS-UAMS}} = .411$ ;  $p < 0.01$ ), LAG ( $r_{\text{HGS-LAG}} = .482$ ;  $p < 0.01$ ), LAMS ( $r_{\text{HGS-LAMS}} = .356$ ;  $p < 0.01$ ), WG ( $r_{\text{HGS-WG}} = .544$ ;  $p < 0.001$ ), HMS ( $r_{\text{HGS-HMS}} = .369$ ;  $p < 0.01$ ) and AMS ( $r_{\text{HGS-AMS}} = .395$ ;  $p < 0.01$ ), RAF with BMI ( $r_{\text{RAF-BMI}} = -.332$ ;  $p < 0.01$ ), UAG ( $r_{\text{RAF-UAG}} = -.290$ ;  $p < 0.05$ ), LAMS ( $r_{\text{RAF-LAMS}} = -.286$ ;  $p < 0.05$ ), WW ( $r_{\text{RAF-WW}} = -.357$ ;  $p < 0.01$ ), AMS ( $r_{\text{RAF-AMS}} = -.254$ ;  $p < 0.05$ ) and HGS ( $r_{\text{RAF-HGS}} = .707$ ;  $p < 0.001$ ).

#### 4. Discussion

This research was aimed at students who would start their careers as paramedics in KAEU and included the aim of examining the study group's physical-vocational adjustment. When the relevant literature was reviewed, it was observed that interest and attitude scales were applied to the participants in order to determine the vocational adjustment level in the profession choice-related research (Onler and Varol Saracoglu, 2010). Yet, one can hardly come across any study that measured physical variables such as the height and body weight of the participants. Therefore, the current research is considered to have a unique place in the literature with regard to its data. Moreover, the originality of this research, in a way, connotes its limitations as well.

Not only do the individuals choose the profession that suits them, but the security units employing professionals like soldiers and police officers also perform physical assessments to determine eligibility. Like the members of those professions, it is known that specifically EMTs (Emergency Medical Technicians) and paramedics take part in field work (accidents, patient pickup/drop-off from buildings with no elevators, and all situations where emergency assistance is required in extraordinary circumstances). Thus, it is thought that the members of these professions should also have specific physical competencies. The study by Turan (2019) conforms with this idea. Turan (2019) states that paramedic students do not have a healthy physical fitness and nutritional profile. That study also recommends increasing their physical activity levels.

Returning to the subject mentioned above, it will make sense to look at the physical qualifications in the pre-selection phase of the careers. The Police Vocational School 2022 application guide indicates that the height should be at least 167 cm for men and at least 162 cm for women. In addition, BMI values should be in the reference range of 18-27. In the research, the minimum (min) and maximum (max) heights measured for males were 160 cm and 182 cm ( $174.81 \pm 6.26$ ) for males; while the min and max values were measured as 155 cm and 175 cm for females ( $163.64 \pm 4.87$  cm). In addition, BMI was calculated as  $22.51 \pm 4.37$  kg/cm<sup>2</sup> in men and  $22.55 \pm 3.64$  kg/cm<sup>2</sup> in women. In terms of World Health Organization BMI values, it is seen that this research yielded values within the normal range. However, although the height in the police profession is not different in terms of mean values, some students do not comply with the min values required. Kok and Izgi (2020) state that although there are individual differences within the 0-22 age range, the bone age can be determined from the hand-wrist area. Furthermore, it is also noted that bone development continues until approximately 18 years of age in females and 21-22 in males (Koc and Yuksel, 2003). Thus, although the mean age ( $19.58 \pm 1.20$ ) in this research was at the point of self-preservation in terms of height, BW leads one to the conclusion that BMI may vary. Considering this information, it is considered that departments delivering such vocational education should bring a certain standard in the physical aspect. The study by Marangoz (2022b), stating to pay attention to physical characteristics in order to set a certain standard in military units, is in conformity with the findings of this study in terms of standardizing physical features from the institutions' perspective.

Since the differences observed in reference to the gender variable are within the expected value ranges, they have not been discussed in this research. In addition, specifically for female students, the absence of a significant correlation between the variables in terms of HGS was attributed to muscle structures (Koc and Yuksel, 2003). Therefore, fat densities should be checked besides BMI in women. Analyzing the study group from the gender aspect, the reason BMI is more related to BW is just that BW is one of the calculation formula variables and affects BMI. Again, considering the study group in terms of gender, apart from the association between RAF and HGS, the fact that they are generally associated with upper extremity length and mass totals is because RAF is an upper extremity performance evaluation method (Erdogan et al., 2016; Kecelioglu and Akcay, 2019). HGS was calculated as  $44.34 \pm 9.94$  kg in men and  $28.98 \pm 4.76$  kg in women. The studies conducted by Narin et al. (2009) and Turan (2019) are on healthcare professionals, and the findings of these studies are close to the HGS research results. Based on the research (Eler & Eler, 2018) on male racquet players (age  $\bar{x} = 23.82$  years; right HGS  $\bar{x} = 47.63$ ), the results obtained in this research lead to the conclusion that they are close to sedentary health professionals' values, but lower than those of athletes. Since it is a general acceptance that male students' HGS values are higher than those of female students, no comparison with the studies in the literature has been made. Sener et al. (2018) state that paramedics need to increase their physical activity levels to be successful in their profession. Thus, it is considered that paramedics should have better HGS values than sedentary individuals, although not as much as athletes.

When the somatotype structures of the study group were examined, the male students (1.77-1.96-3.05) were noted to have balanced ectomorph component while female students (0.08-1.09-2.24) had meso-ectomorph, and the overall group (male-female) (0.53-1.32-2.46) had meso-ectomorph. It is a general belief that athletes are more mesomorphic. The study by Marangoz and Mavi Var (2018) supports this opinion by stating that the somatotype structures of students studying in different departments of sports sciences have mesomorph components. Likewise, in a similar study, Marangoz and Koc (2021) stated that male students of the Department of Coaching Education were ectomorphic and female students were predominantly meso ectomorphic and balanced ectomorphic. Although there exist similarities between the studies, it is known that sports science students are subjected to a special talent test (parkour). From this point of view, paramedic students stand far from the athlete component, but close to sports science students. It should also be noted that biomechanically, segmental proportional distribution makes a difference in terms of work/performance and is ergonomically more important.

## 5. Conclusion and Suggestions

It was observed that some data obtained from the study group were below the minimum acceptance value of professions such as policing in terms of the height variable. On the other hand, it was noted that the data obtained in accordance with the BMI variable were compatible with the prerequisites of the policing profession. Although

the data obtained concerning the HGS variable are close to the data of sedentary healthcare professionals, they are yet at a lower level than those of the athletes. Additionally, it was observed that the somatotype components of the study group differed from those of the athletes.

Thus, it is recommended that

- In recruiting students to university paramedic departments, height and BMI requirements should be similar to those stipulated by the policing profession.
- Paramedics' HGS values should be better than those of sedentary individuals, although not as high as those of athletes.
- The somatotype structures of paramedics should be suitable for athletes or SSF students.
- Paramedics should increase their physical activities and improve their physical competencies.

Finally, in order to support this research conducted in a quantitative research design, it is also recommended that relevant qualitative studies should also be conducted to determine whether the healthcare professionals in the field have the required physical competence.

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# Democratic School Management and Social Capital

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## Abstract

Social capital is the constructive potential of motivation, initiative and activation that emerges in the context of trust, solidarity, collaboration and goodwill. The potential for social capital to generate benefits for both individuals and organizations makes it worth investigating in order to better understand the processes that bring it into existence. This research assumes that democratic sub-processes in the organizational context will contribute to the development of social capital. Democracy, as an ideal of humanity, can contribute to the development of social capital since it allows people to express their own ideas, takes them into account, offers negotiation conditions in line with ethical and fair principles, requires information sharing and gives confidence. Commitment to democratic values in school management can make individuals feel safe and facilitate relationships. Therefore, this research aims to investigate the effects of democratic practices such as critical participation, transparency, justice, equality and accountability on the development of social capital. Research findings offer important implications for the effects of democratic processes on social capital development.

**Keywords:** Social Capital, Democratic School Management, Equality, Justice

## 1. Introduction

The democratic ideal involves a discussion process in which each member is aware of the expectations, interests or demands of others regarding any issue or problem that concerns the collective. These processes, wherein different parties encounter overlapping or conflicting interests, can be resolved by establishing a fair cause-effect relationship. Democracy can be expressed as a collective group dealing with issues and solutions in a reasonable interaction environment where everyone is equal and works together to decide on steps to be taken on the issues at hand (Youngs, 2002). This interaction requires an internalized justice reference in order to consider others' interests and not to suppress them with political games. From an ideal perspective, democracy is a tool that encourages justice. And according to Mncube, Davies, Naidoo (2014), democratic processes also require ethics and empathy.

According to Young (2002), participation in decision-making processes is at the very heart of democracy. For this theory-level claim to function in real terms, practices that will ensure effective participation must be implemented. But participatory decision-making processes can be troublesome considering conflicting demands and long negotiation processes are innate to their existence. Despite having drawbacks, they are still respected in light of

the instrumental opportunities that are offered to participants. As a result of inclusion: freedom of expression, equal participation, criticism and questioning of management, the obligation of managers to explain their actions, and acting with reference to justice make democracy the best form of administration. These elements, which make up the internal values of democracy, prevent administrators from arrogantly misusing power.

Democratic principles imposed from outside the organization or from the top are not sufficiently reflected in organizational action (Kensler, 2015). In order for democratic principles to be a reference to organizational action, they must originate from within. This requires well-designed decision mechanisms. Such mechanisms strengthen information exchange, increase participation and advance democracy. The fact that every member has the opportunity to influence decisions does not mean that this power is equal for all members. In organizational conditions, some members may have more power to influence decisions for a variety of reasons. In a well-designed participation mechanism, members have the right to express their opinions freely, ask questions and receive information, and everyone is open to listening to others' opinions. Thus, all members are empowered and motivated to participation (Cloke, Goldsmith, 2002; Senge et al., 2012; Kensler, 2015). In addition, organizational mechanisms that operate in accordance with democratic principles encourage members to act democratically (Weber, Unterrainer & Höge, 2020). For example, governance, which is an organizational practice, makes different options, information, approaches or evaluations visible. Elements such as respecting others, talking freely, being fair and respectful are the internal values of democracy. That's why, when evaluated as an arena where different approaches, information and interests converge, governance practices should be supported with democratic values in order to function effectively (Grandori, 2016).

Organizational democracy can be used for instrumental reasons, such as increasing the quality, performance, duty responsibility, and organizational commitment of decisions (Butcher, Clarke, 2002; Harrison, Freeman, 2004; Matten, Crane, 2005; Redburn, Buss, 2006; Yazdani, 2006; Fenton, 2011; Wang, 2018; Bilge, Barbuta-Misu, Virlanuta, Guven, 2020), but can also be preferred because of its social value (Kimber, Ehrich, 2011; Raelin, 2012; Kensler, 2015). Organizational practices related to democracy are carried out in accordance with principles such as empowered participation, fair treatment, transparency, accountability, and the right to choose (Fenton, 2012). The atmosphere of trust created by adhering to these principles frees people from the tension of expressing their own opinion. Democratic organizations are aware that the collectivity created by individuals is a power potential for the organization (Luhman, 2007). Organizations try to create an understanding, atmosphere and practices that will empower their members to be inspired by their creativity, increase their commitment and confidence, thereby ensuring their participation in organizational processes (Widener, 2010). Similarly, the atmosphere of respect that develops with the democratic operation in schools creates solidarity and cooperation, and consequently encourages the sharing of ideas (Pažur, Domović, Kovač, 2020). In this sense, it can be said that the interest in organizational democracy is related to positive results such as organizational productivity, increased communication and information sharing, otherwise known as a happy working environment. Participation in decisions makes it easier for individuals to adopt decisions. In addition, information sharing and the belief that the processes work fairly, together with transparency, help people to support decisions that do not even comply with their own wishes. The resulting environment of trust and open communication catalyzes the development of individuals' negotiation, interaction, productivity and cooperation skills. Therefore, it can be said that democratic organizations are closely related to the construction of social capital (Levine, 2007; Marsh, 2005; Paxton, 2002; Safari, Salehzadeh, Ghaziasgar, 2018). According to Bizzi (2015), 'social capital refers to the set of interpersonal relationships which create value for individuals in organizations. (pp.181) When considered in the organizational context, social capital contributes to individuals' extra role performance (Bizi, 2015), increase of information resources and creativity (Machalek & Martin, 2015). The opportunity for cooperation and interaction provided by social capital increases the welfare of school principals (Beusaert, Froehlich, Riley & Gallant, 2021), creates trust in working relationships (Leat et al., 2006; Behtoui, Strömberg, 2020), contributes to the job satisfaction (Edinger, Edinger, 2018) and professional development of teachers, and creates important results such as student success (Demir, 2021). Considering the consequences that create value for the school community in different areas, building social capital is essential for school effectiveness. The practices of democratic organizations that create interaction, cooperation and solidarity are inherently triggering mechanisms that develop social capital. In this line of reasoning, it is important to reveal the relationship between democratic organizational practices and the development of social capital. For this purpose, this study aims to reveal the relationship between organizational

democracy and its sub-dimensions and school social capital. In the light of the findings obtained as a result of the research, important inferences can be made about democratic organizational processes that can contribute to the development of social capital. The following questions will be investigated in the research:

1. What is the organizational trust perception of the participants?
2. What is the social capital perception of the participants?
3. Are there relations between organizational democracy and its sub-dimensions and social capital and its sub-dimensions?
4. Do organizational democracy and its sub-dimensions predict social capital and its sub-dimensions?

## 2. Theoretical Background

### 2.1. Organizational Democracy.

We live in an age when individuals attach importance to issues such as freely expressing their opinions, being independent and having a sense of importance. These expectations, which can be summarized as the desire to be seen as valuable, are made manifest in both public and private life. Individuals come to work environments with similar demands. Managers are responsible for overseeing organizations in accordance with the values and expectations of the contemporary people in terms of individual-organization integration. Democratic organizations help create working environments that will meet these expectations (Alshurman, 2015). Organizational democracy can be defined as an organizational form that includes participatory decision-making systems and is based on working principles such as respect for human rights, egalitarianism, transparency, justice and cooperation (Stohl, Cheney, 2001, Fenton, 2002; Monyatsi, 2005; Yazdani, 2006; Anderson, 2009; Mncube, 2009; Bean, Lemon & O'Connell, 2013; Nkiinebari, 2014; Nabatchi, Leighninger, 2015; Rhoads, Valadez, 2016; Sun, Song, 2016; Verdorfer, Weber, 2016; Thomsen, Olsen, 2017; Heath, Ihlen, 2018). It is essential that the members of democratic organizations are able to take active roles in organizational functioning without facing discrimination or suppression of their views from members with more power.

Organizational democracy is based on freedom rather than authority and control. Moreover, it is an idea developed around the human potential of the organization to achieve organizational goals (Fenton, 2011). Providing broad-based participation with the institutionalization of the effects of the organization members is the most basic features of democratically structured organizations (Wegge et al., 2010; Battilana, Fuerstein, Lee, 2018). Increasing participation with the democratization of organizations increases stakeholder feelings of satisfaction, responsibility and commitment; regeneration and change accelerate; performance improves; discordant employee behavior decreases (Butcher, Clarke, 2002; Harrison, Freeman, 2004; Matten, Crane, 2005; Redburn, Buss, 2006; Yazdani, 2006; Fenton, 2011; Fenton, 2012; Wang, 2018; Bilge, Barbuta-Misu, Virlanuta, Guven, 2020). Moreover, thanks to democratic participation in these organizations, social, moral and human value-oriented decisions can be made (Tse, 2009; Weber, Unterrainer, Schmid, 2009).

The main elements of organizational democracy are broad-based participation, different perspectives and intensive communication. However, some stakeholders may be reluctant to participate in decision-making processes or question organizational processes (Rizvi, 2005). Perhaps managers may not want to share the executive power they have gained. According to Varman and Chakrabarti (2004), because of this list of reasons, it can be difficult to overcome the establishment of a democratic understanding within the organization. It is possible for the members to internalize an organizational process with the reference of democracy by creating democratic practices within the organization. In this case, it becomes important to advance organizational democracy with systems that will encourage or enforce decisions, organizational communication, power sharing and negotiation processes.

Focusing on the processes that will eliminate the communication barriers between members is the first step towards democratizing an organization, as it creates relationships that lead to an exchange of information, and facilitates the expression of opinions and questions (Hoffman, 2002; Holtzhausen, 2002; Normore, Jean-Marie, 2008, Safari, Salehzadeh, Ghaziasgar, 2017). Increasing the flow of information in a democratic working environment improves the institution's ability to adapt to changing conditions and to cope with internal and external pressures (Holtzhausen, 2002), in addition to helping teachers be aware of all activities at school (Tse, 2009). Similar to

other organizations, democratization of schools is achieved by being more participatory (Lima, 2007; Mncube, 2009; Kensler, 2015; Rhoads, Valadez, 2016). Administrators are responsible for the creation of democratic school organizations. It can be counted among the founding elements of democratic school organizations that school administrators value different views, are transparent in school activities, promote the culture of openness, and create an organizational climate where different views can exist simultaneously (Törnsén, 2009). This democratization process can be considered as a kind of paradigm change in which the principal evolves from one-man management to an open, participatory, polyphonic management (Monyatsi, 2005).

## 2.2. Social Capital

Educational organizations necessitate the human factor as the dominant determinant. Wherever there are people, a lack of respect, understanding, cooperation, interaction and trust leads to inefficiency. This requires the social capital phenomenon to be handled carefully in educational organizations (Töremen, Ersözlu, 2010). Social relations are at the center of social capital conceptualizations. The aim is to achieve common benefits and more perfect solutions with social capital. For this purpose, it can be defined as a collectivity-embodied, broad participation and negotiation process, in which members demonstrate cooperation and commitment to common goals and values (Bhandari & Yasunobu, 2009). Social capital refers to the values and performance-enhancing benefits developed through human relations, which are immediately applicable to the organization (Hador, 2017). Social capital is closely related to networking. The resulting pool of interaction creates opportunities for personal and professional development that arise from meeting new people and exchanging ideas (Johnson, 2016). Social capital also provides better organizational functioning due to increased cooperation and easy circulation of information within the organization. This informal learning environment creates space for organizational development. For this reason, it is important for organizations to explore channels that will allow them to increase their social capital (Joseph & Totawar, 2021). According to Ramezan (2016), if social capital is to be developed in an organized context, it is necessary to focus on the internal processes and functions of the organization. Factors that bring people closer to each other and facilitate communication are important producers of social capital. In this sense, fair treatment, open and transparent communication, reliable administration that emerges with organizational processes in line with the requirements of democracy can enable school staff to communicate with each other and create beneficial social relations.

## 3. Method

This research aimed to examine the relationship between collaborative climate and school mindfulness. A relational design was preferred because the research approach is quantitative in nature.

### 3.1. Sample and Data Collection

The research population consisted of primary, secondary and high school teachers from the Istanbul province in the 2020-2021 academic year. The sample of this research consisted of 510 teachers working in public schools. The 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.

Table1: Demographics of the participants

Gender	<i>f</i>	%
Female	265	52
Male	245	48
Total	510	100
Type of School	<i>f</i>	%
Primary School	104	20,4
Secondary School	140	27,5
High School	266	52,2
Total	510	100

Of all the participants, 52% (n=265) were female and 48% (n=245) were male. All in all, 52.2% (n= 266) of the participants were employed in high schools, 27.5% (n=140) in secondary schools and 20.4% (n= 104) in primary schools.

### 3.2. Data Collection Tools

The data of the research was used on two scales. The first of these scales was the Social Capital Scale developed by Kouvonen et al. (2006) and adapted into Turkish by Akyürek in 2021. The Social Capital Scale, which is a 5-point likert-type scale, consists of eight items. The Cronbach-alpha coefficient is .939 for the whole scale.

The second scale is the Organizational Democracy Scale developed by Geçkil and Tikici (2015). The Organizational Democracy Scale, which is also a 5-point Likert type scale, consists of five sub-dimensions: Participation-Criticism (8 items), transparency (6 items), justice (5 items), equality (6 items), accountability (3 items); that equates to a grand total of 28 items. The Cronbach-alpha coefficient is .956 for the whole scale, .918 for Participation-Criticism, .895 for transparency, .909 for the justice, .912 for equality, and .800 for accountability.

### 3.3. Data Analysis

The data obtained as a result of the research was analyzed using the Statistical Package for Social Sciences Windows 25.0. Percentages, averages and standard deviations of the scales were tested with descriptive statistics. The first task was examining the data to determine whether or not it was normally distributed. Table 2 shows the kurtosis and skewness values.

Table 2: Kurtosis and skewness values

Sub-scales	Kurtosis	Skewness
Social Capital	-.223	-.830
Participation-Criticism	-.735	.370
Transparency	-.640	.634
Justice	-.406	-.794
Equality	-.570	-.623
Accountability	-.470	-.649

Kurtosis and Skewness values between +1.5 and -1.5 (Tabachnick & Fidell, 2013) were considered normal distribution. As the sampling is adequate according to the law of large numbers and the central limit theorem (N=510), the analyses were continued with the assumption that the distribution was normal (Harwiki, 2013; Johnson & Wichern, 2002).

#### 4. Results

The school mindfulness level in accordance with the thoughts of participants was determined with descriptive statistics. The results are presented in Table 3.

Table 3: Correlation analysis results

Variable	M	Sd	1	2	3	4
1.Social Capital	3.878	.971				
2.Participation-Criticism	3.794	1.004	.412**			
3. Transparency	3.713	1.015	.684**	.496**		
4. Justice	3.718	1.070	.692**	.319**	.748**	
5. Equality	3.736	.988	.704**	.442**	.763**	.797**
6. Accountability	3.695	.982	.730**	.422**	.731**	.757**

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 social capital, 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 <sup>2</sup>
	Constant	.664	5.246	.000			
	Participation-Criticism	.061	1.911	.057			
Social Capital	Transparency	.131	2.750	.006	161.307	0.000	.615
	Justice	.134	2.793	.005			
	Equality	.199	3.894	.000			
	Accountability	.340	7.316	.000			

The findings provide insight into the importance of sub-dimensions of the democratic organization in social capital. Table 4 shows that social capital was significantly predicted by transparency ( $\beta=.131$ ), by justice ( $\beta=.134$ ), by equality ( $\beta=.199$ ) and by accountability ( $\beta=.340$ ) which together accounted for 61.5 % of the variance ( $R^2=0.615$ ,  $F=161.307$ ,  $p<0.00$ ). According to the findings of the research, participation-criticism does not affect the social capital. As transparency, justice, equality, accountability increase, social capital increases.

#### 5. Discussion

Social capital, an important concept in the field of organizational management, refers to the working environments in which relationships that create value for individuals and the organization are fostered. The development of working relationships based on mutual trust and solidarity is key to creating social capital in the organizational context. In this sense, social capital creates individual and organizational value and is closely related to the quality of working relationships (Salajegheh & Pirmoradi, 2013). The support, trust, tolerance, cooperation and even goodwill that individuals show towards each other is an important resource for the organization (Karahanna & Preston, 2013). Mistrust in relationships between individuals can lead to negative emotions and behaviors. This can cause loss of energy, burnout, or deviation from organizational goals for both individuals and the organization. However, as a characteristic of positive social interaction, social capital provides organizations with strategic advantages in terms of human resources that are fundamental to the organization accomplishing its goals. Therefore, it is very important to explore the organizational processes, regulations and mechanisms that develop social capital (Milana, Maldaon, 2015). Processes that are based on trust and that encourage participation are

important in terms of creating social capital in organizations. In this respect, it can be said that organizational democracy is related to sub-processes that support and reinforce the development of social capital (Aykanat & Yıldız, 2018). Organizational democracy's commitment to fair and equal treatment, which allows teachers to express themselves freely and comfortably, can facilitate positive work behaviors. Therefore, this study sought to examine the effects of equality, justice, transparency, accountability and critical participation (which are the sub-dimensions of organizational democracy) on social capital.

First, the effects of the criticism-participation sub-dimension of organizational democracy on social capital are discussed. According to the findings of the research, the criticism-participation sub-dimension has no effect on social capital. The participation and criticism dimension includes the processes by which individuals criticize and participate in decision-making. For this, tolerance towards criticism must be internalized since it is a trigger for participation in the organizational democracy literature (Geçkil & Tikici, 2017). According to Geçkil (2013), criticism is explained as the negative or positive evaluation of organizational activities and procedures by employees at all levels and the ability of employees to express their evaluations comfortably.

Although criticism means carefully analyzing organizational processes in order to perfect them, it certainly carries some negative connotations. Effective and constructive criticism in an organizational context elicits the perfection of decisions and practices through considerable intellectual tension. It also has the potential to provoke emotionally-charged responses. The simultaneously-triggered components of criticism and anger can hamper intra-organizational interactions (Fineman, 2000). Also, in some cases, criticizing the administrator or the institution can be interpreted as a negative reaction (Uygun, 2020). In social relations, criticism is understood as the breaking of consensus (Ge, Tian & Zhang, 2016). In the Participation-Criticism sub-dimension of organizational democracy, there are statements about the level of criticism that the administration encourages and tolerates. Although criticism is an organization's means of self-analysis for the purpose of perfecting its practices, the participants may not have considered the participation-criticism dimension as a factor that increases the quality of social relations due to the aforementioned negative effects.

According to the findings of the research, transparency, which is another sub-dimension of organizational democracy, increases social capital. Transparency is the ability to learn and monitor all aspects of the work, transactions and decisions made by those affected (Geçkil, Tikici, 2017). One of the important stages of democratization, transparency is related to information sharing and ease of access to information. Sharing information about decisions, practices or operations leads to increased trust (Erkkilä, 2020; Heald, 2017). It can undoubtedly reduce anxiety levels of school staff regarding what they will encounter (Ergün, 2020). Uncertainty and incomplete information circulate in organizations where management is not transparent. This leads to the emergence of gossip within the organization. On the other hand, positive communication networks are more likely to emerge in transparent organizations where information sharing is common. This causes the rumors to decrease and the relationships to become stronger (Yalçınsoy, 2019). Transparency can be considered a social ground that enables beneficial relationships to be established through trust, cooperation, support and solidarity (Jahansoozi, 2006). Social capital is not a property that can be created and saved in the process. While certain conditions exist, it can be lost in some cases. Norms, processes, or practices that strengthen interdependence, such as stable and trusting relationships, are the most important producers of social capital (Bagnasco, 2012). The findings of the study also confirm this. It is quite possible that administrative understandings that seek to avoid uncertainty, suspicion and rumors will result in social capital.

The third sub-dimension of the organizational democracy scale is justice. According to the research findings, justice within an organization is one of the enhancers of social capital. According to David (2021), "organizational justice describes the views of employees on the fairness of treatment within an organization." Justice expresses an implication that ultimately correct results will be produced. These outcomes include processes for what people receive, how they receive it, and how they are treated. It is indispensable as it helps to overcome two important problems that have the potential to arise in social relations. First, individuals want to be seen as valuable and to know that their interests are protected when they collectively strive for a goal. Justice gives people confidence in the face of these concerns. Secondly, the power differential which arises when people of varying degrees of intelligence, ability or knowledge come together must be considered. When those possessing more of certain types



of power are not restricted in their use of it, weaker members may feel exploited. Exploitation can cause both psychological and financial harm to the individual and the organization because it may discourage across-the-board participation in organizational processes. Employees feel less at risk when social relations in an organizational context are subject to principles of justice (Cropanzano & Ambrose, 2015). It is important that administrators make an effort towards justice and that members realize this. Certainly, the unjust organizational climate creates negative effects on the values, attitudes, behaviors and relationships of the employees (Liao, Rupp, 2005). When organizational members perceive managers to be fair in their day-to-day decisions, their confidence increases, conflicts decrease, and team performance improves (Yean, Yusof, 2016). Moreover, unfair practices are a major source of stress for employees (Pérez-Rodríguez, Topa, Beléndez, 2018). Fair management creates a positive image of the organization, which enriches internal communication (Barekat, Gilavand, 2017; Oh, 2018) and increases performance (Naway, Haris, 2017). Imamoglu, Ince, Turkcan & Atakay (2019) concluded in their research that adherence to the principles of fairness in the distribution of procedures and resources has an effect on the commitment and performance of employees. Adherence to the principles of justice has curative, anxiety-reducing and reassuring effects on social relations. In this sense, as the research findings support, fairness can be an important variable in creating social capital.

According to another finding of the research, equality has an increasing effect on social capital, similar to the variable of justice. Equality is defined as all individuals having the same rights and advantages (Geçkil, Tikici, 2015). Equality is closely related to the impartial and non-judgmental functioning of the processes (Verba, 2006). It is also one of the conditions that brings individuals closer together through eliminating discrimination. Social capital is related to the development of such conditions that bind people together. In this sense, people's skepticism towards each other, the need to defend themselves, and the marginalization of others undermine the development of social capital (Cozzolino, 2014).

Lastly, the study showed that accountability, which is the last sub-dimension of organizational democracy, positively affects the development of social capital. Accountability means acting with a sense of responsibility to deliver an open, fair, equal and transparent performance (Jensen & Kennedy 2005; Callahan, 2006; Bovens, 2006; Bovens, Schillemans, Hart, 2008; Bovens, Schillemans, Goodin, 2014). It is important to determine whether managers in democratic organizations are doing what they have to do. In this respect, the critical approach is the most characteristic feature of democracies. Criticism requires tools to make it possible to question, change, and interpret manager behavior, so that information regarding the actions of the managers can be obtained. Accountability makes it possible to acquire knowledge and thus criticism, and ultimately, democracy (Olsen, 2013). Accountability reveals the ethical standards and current order by questioning the casual beliefs and power relationships that guide the actions of an institution (Olsen, 2017). It fulfills the requirements of democratic management by contributing to the development of accountability, responsibility, performance and ethical behavior awareness (Callahan, 2006). In particular, the fact that people in the management take responsibility for decisions and actions positively affect the behavior of subordinates (Lindberg, 2013). It creates a sense of responsibility and helps to take into account the expectations and needs of school stakeholders (Salvioni & Cassano, 2017). Accountability is associated with the development of social capital in that it encourages consideration of norms such as morality, ethics or law (Mohammadi, Nezhad & Golmohammadi, 2020). In this sense, the participants may have perceived accountability, which is a requirement of democratic organizations, as a variable that improves relations due to its role in reducing unlawful or unethical practices.

School administration in accordance with democratic values develops a sense of trust in all school members and unites them around a purpose (Alshurman, 2014). This is because fulfilling the requirements of democracy in an organizational context can improve communication, collaboration and commitment of individuals (Ahmed et al., 2019). Research findings point to the roles of transparency, justice, equality and accountability in the democratic processes as being foundational in the development of human capital. These processes are important democratic tools that school administrators should apply when it comes both to realizing the ideal of democracy and enriching social relations.

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# The Relationship Between Principals' Technological Leadership Competence and School Effectiveness

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## Abstract

The study results revealed no statistically significant difference in teachers' perceptions of principals' technological leadership and school effectiveness in terms of teachers' gender, seniority, branch, working time at the current school, technological competence, and daily technology use. However, the findings showed a significant difference in the perceptions of technological leadership by age but not in the perceptions of school effectiveness. The analysis results revealed a strong or very strong correlation between the technological leadership and its sub-dimensions and the school effectiveness sub-dimensions. It was found that a positive increase in any sub-dimension of the technological leadership scale improved school effectiveness, and there was a significantly positive and very high relationship between school effectiveness and technological leadership. As technological leadership increased, so did school effectiveness. Accordingly, technological leadership explained 50.8% of the change in school effectiveness. Principals' technological leadership, mediated by teachers' technological literacy, affected teaching and school effectiveness.

**Keywords:** Effective School, Technological Leadership, Educational Institutions, Educational Manager, Instructional Leader

## 1. Introduction

We can call this era “the information age” because technology is constantly changing and developing in today's world. Technological innovations increase the amount, availability, and access to information. In this sense, developing excellent human resources to utilize information technologies best is a must. School principals have an important responsibility for effectively using technology in schools. These duties and responsibilities include acquiring technology, using communication technologies effectively, assisting teachers to acquire technological proficiency, and benefitting from communication technologies in school management (Şahin, 2015:2). To demonstrate technological leadership, school administrators must follow technological developments and utilize them effectively. Today, it is essential to use technology in education as in many other fields. Therefore, school administrators should be able to use technology effectively and guide teachers, students, and other school staff.

They should assist others to use technology, and thus support and enrich educational practice. The everyday use of information and communication technologies should be a means of fulfilling tasks and responsibilities. In other words, school administrators should always be willing to accept change and embrace their technological leadership roles in addition to their educational and instructional leadership. They should be well-versed in how to effectively and efficiently use technological tools in order to make sound educational decisions and adapt well to changes. School administrators' technological leadership has a key role in educational success and is also a condition for students' using technology in their academic life. School administrators' advanced technological leadership skills increase other colleagues' motivation to utilize technology in schools.

School administrators have technological leadership competence, emerging with rapid technological developments, and can meet the interests and needs of society. Those administrators can keep up with the rapidly changing technological societies of today. Although educational institutions are expected to keep up with innovations and changes to satisfy social needs, those challenging to adapt to technological development in recent years have been left behind. In this regard, the technological leadership role of educational managers has become increasingly important. Today, schools, whose importance is gradually increasing, are among the institutions open to change, where technology is widely used, staff cooperation, and practical applications are emphasized. Schools are the mainstays of an education system, and the quality of an education system depends on the quality of schools.

School administrators aim to operate and transform educational institutions to achieve predetermined goals and are responsible for effective school management and efficient resource use in the education system. The primary duty of school principals is to ensure effective teaching at school. A principal's effectiveness can be traced to students' academic success and social and affective development. It has been shown that the leading characteristics of effective principals involve assertiveness, courage, self-sacrifice, self-improvement, and proficiency in time management. The majority of educators acknowledge technology as an indicator of high-quality education. Therefore, teachers need to use technology tools effectively to facilitate people's access and use of information. For a school to function well, it must have a technological leader and infrastructure. There is a strong link between technological leadership and school effectiveness, just like the link between educational technology and teacher-student integration. Technological leadership is vital for the effective use of technology in educational institutions (Anderson and Dexter, 2005). School administrators should demonstrate technical leadership skills to prepare schools for the information and technology era and to promote school effectiveness. They should have technical skills that facilitate school reform to empower students. School administrators' technological competence contributes to prevalent technology use in education and student success (Chang, 2012).

Educational technology has become a branch of science thanks to the rapid changes in contemporary educational paradigms and technology. Changes in technology can be clearly observed in education as well, which makes practical modifications a must rather than an option. Technology has become one of the modern life necessities and is considered essential to enhance educational quality and efficiency. Additionally, school administrators should have the technical competence and knowledge to lead active use of technology by others. School administrators' technological leadership plays a vital role in school effectiveness (Bostanci, 2010: 1). In this sense, this study sought an answer to the following question: "How does school administrators' technological leadership contribute to school effectiveness?".

## **Method**

This study used correlation and regression analysis methods to examine teachers' perceptions of the "relationship between school administrators' technological leadership and school effectiveness" in Batman province and its districts. Correlation analysis methods determine the extent of the relationship between two or more variables. Besides, regression analysis methods show how independent variables affect dependent variables.

### *2.1. Universe and Sample*

The research population consisted of 8886 teachers working in Batman and its districts. The sample comprised 355 teachers from different branches and schools and was selected using a random sampling technique. A Google

form was sent to all school principals in Batman and its districts, and teachers were asked to fill it out. Within the scope of the research, 355 questionnaires were received back. The demographic characteristics of the participants are presented below.

Table 1: The demographic characteristics of the participants

	Features	Frequency (n)	Percent (%)
Gender	Female	123	34.6
	Male	232	65.4
Age	20-30	84	23.7
	31-40	151	42.05
	41-50	107	30.1
	51 years and older	13	3.7
Branch	Turkish Language/Turkish Literature	43	12.1
	Mathematics/Geometry	40	11.3
	Physical Sciences (e.g., physics, chemistry, biology)	23	6.5
	Social Sciences/History	28	7.9
	Foreign languages	30	8.5
	Art courses (e.g., painting, music)	11	3.1
	Vocational courses (e.g., motor, electric)	5	1.4
	Religious Culture and Moral Knowledge	20	5.6
	Physical Education and Sports	12	3.4
	Classroom Teaching	90	25.4
	IT Teaching	4	1.1
	Other (.....)	49	13.8
Seniority	0-5 Years	79	22.3
	6-10 Years	93	26.2
	11-15 Years	71	20
	16-20 Years	53	14.9
	21 years and above	59	16.6
Educational Status	Associate's degree	79	22.3
	Bachelor's degree	93	26.2
	Master's degree	71	20
	Doctoral degree	53	14.9
Years working with the current principal	0-2 Years	164	46.2
	3-4 Years	103	29
	5-6 Years	50	14.1
	7-8 Years	38	10.7
Technological competence	Low	11	3.1
	Intermediate	178	50.1
	Good	134	37.7
	Advanced	32	9
Daily Technology Use	None	5	1.4
	Less than 1 hour	56	15.8
	1-3 Hours	198	50.8
	More than 3 hours	96	27



## 2.2. Data Collection Tools

The data were collected using a personal information form, the "Technology Leadership Competencies Scale for Educational Administrators" developed by Banoğlu (2012) and the "Effective School Scale" developed by Seyfettin ABDURREZZAK and Celal Teyyar UĞURLU (2019) and validated by experts. The participants were informed about the study, sent an online questionnaire, and asked to express their opinions objectively. 355 teachers answered the instruments, and the data were analyzed using the SPSS 22.0 program.

### 2.2.1. Personal Information Form

A "Personal Information Form" was prepared to collect personal information about participants' "age, gender, branch, educational status, working time at the current school, seniority, technological competence, and daily technology use."

### 2.2.2. The Technology Leadership Competencies Scale for Educational Administrators

The scale was developed by Banoğlu (2012). It has five sub-scales, including "visionary leadership," "digital-age learning culture," "excellence in professional development," "systematic improvement," and "digital citizenship," and 32 items rated on a 5-point Likert scale ranging from "Always (5)", "Often (4)", "Sometimes (3)", "Rarely (2)," to "Never (1)". The internal consistency reliability coefficient (Cronbach's Alpha) was 0.943, the two-half reliability coefficients were 0.898 and 0.914, and the item-total discrimination index ranged from 0.449 to 0.675.

### 2.2.3. The School Effectiveness Scale

The tool was developed by Seyfettin ABDURREZZAK and Celal Teyyar UĞURLU (2019) and validated by experts to determine school effectiveness. The sub-dimensions in the scale are "principals," "teachers," "school environment and education process," "students," and "school environment and parents." The Cronbach's Alpha reliability coefficient was calculated as 0.95, suggesting that the "School Effectiveness Scale" was a valid and reliable measurement tool. It has five sub-dimensions and 31 items rated on a 5-point Likert scale ranging from 5 "Strongly Agree" to 1 "Strongly Disagree." The validity and reliability analyses were conducted for both scales. The results are presented in the "Findings" section below.

Table 2: Reliability Analysis Results of the *Technology Leadership Competencies Scale*

Scale and Sub-scales	Cronbach's Alpha	Item Number
Visionary Leadership	.972	12
Digital-Age Learning Culture	.946	3
Excellence in Professional Development	.973	8
Systematic Improvement	.937	3
Digital Citizenship	.957	6
<b>Technology Leadership Competencies Scale</b>	<b>.988</b>	<b>32</b>

The Cronbach's Alpha reliability coefficients of the *Technological Leadership Competencies Scale for Educational Administrators* and its sub-scales were calculated above 0.90, proving its high reliability (Cronbach Alpha 0.988).

Table 3: Reliability Analysis Results of the *School Effectiveness Scale*

Factor	Cronbach's Alpha	Item Number
Principals	.890	5
Teachers	.958	7
School Environment and Education Process	.926	5
Students	.950	7
School Environment and Parents	.918	7
<b>Total</b>	<b>.967</b>	<b>31</b>

The reliability values of the " School Effectiveness Scale" and its sub-dimensions were calculated as 0.890 and above, indicating high reliability and internal consistency.

#### 2.2.4. Data Collection Process

With the permission of the Provincial Directorate of National Education, the data were collected by sending the questionnaire and personal information form to the teachers working in schools in Batman city center and its districts. Participation was voluntary, the questionnaires were not analyzed for individual or organizational purposes, and personal information about the participants was not collected.

#### 2.2.5. Data Analysis Process

SPSS 22.0 software package was used to analyze the study data. The factor analysis, reliability analysis, descriptive statistics, difference test, correlation, and regression analyses were performed, respectively.

### 3. Findings

T-tests and ANOVA were applied to determine whether there was a significant difference between principals' technological leadership and school effectiveness according to teachers' answers.

Table 4: Mean Scores regarding Principals' Technological Leadership

Scale	N	$\bar{x}$	Sd
Technological Leadership Competencies Scale	355	3.321	.943

Table 4 shows the teachers' arithmetic means and standard deviations regarding principals' technological leadership. Accordingly, the principals had "moderate" technological leadership competency ( $\bar{x}$  =3.321; sd=0.943).

Table 5: T-Test Results regarding Principals' Technological Leadership According to Teachers' Gender

Scale	Groups	n	x	sd	t	p
Technology Leadership Competencies Scale	Female	123	3.195	.943	-.382	.724
	Male	232	3.235	.944		

Table 5 shows no statistically significant difference in principals' technological leadership competencies according to teachers' gender ( $p>0.05$ ).

Table 6: ANOVA Results regarding Principals' Technological Leadership Competencies according to Teachers' Age

Scale	Groups	n	x	sd	t	p
Technology Leadership Competencies Scale	20-30	84	3.233	0.997	3.38	0.018
	31-40	151	3.085	0.854		
	41-50	107	3.439	0.966		
	51 and older	13	2.947	1.12		
	<b>Total</b>	<b>355</b>	<b>3.221</b>	<b>0.943</b>		

According to the teachers' ages, principals' technological leadership competencies were statistically different ( $p<0.05$ ).

Table 7: ANOVA Results regarding Principals' Technological Leadership Competencies according to Teachers' Seniority

Scale	Groups	n	x	sd	t	p
Technology Leadership Competencies Scale	0-5 Years	79	3.2872	0.98993	1.387	0.238
	6-10 Years	93	3.1408	0.88513		
	11-15 Years	71	3.0792	0.88598		
	16-20 Years	53	3.2282	1.01181		
	21 years and above	59	3.4285	0.95971		
	<b>Total</b>	<b>355</b>	<b>3.2219</b>	<b>0.94336</b>		

There was no significant difference in principals' technological leadership competencies according to teachers' seniority ( $p > 0.05$ ).

Table 8: ANOVA Results regarding Principals' Technological Leadership Competencies according to Teachers' years working with the current principal

Scale	Group	N	x	Sd	F	P
Technology Leadership Competencies Scale	0-2 Years	164	3.28	0.91085	0.639	0.591
	3-4 Years	103	3.12	1.02669		
	5-6 Years	50	3.2	0.89705		
	7-8 Years	38	3.23	0.91742		
	<b>Total</b>	<b>355</b>	<b>3.22</b>	<b>0.94336</b>		

ANOVA test was conducted to find significant differences in principals' technological leadership according to teachers' years working with the current principal, and the results revealed no significant difference ( $p > 0.05$ ).

Table 9: ANOVA Results regarding Principals' Technological Leadership Competencies according to Teachers' Daily Technology Use

Scale	Group	N	x	Sd	F	P
Technology Leadership Competencies Scale	None	5	2.38	0.925	2.33	0.074
	Less than 1 hour	56	3.03	0.948		
	1-3 Hours	198	3.26	0.874		
	More than 3 Hours	96	3.28	1.05		
	<b>Total</b>	<b>355</b>	<b>3.22</b>	<b>0.943</b>		

According to the ANOVA results in the table above, the principals' technological leadership competencies did not differ by teachers' daily technology use ( $p > 0.05$ ).

Table 10: ANOVA Results regarding Principals' Technological Leadership Competencies according to Teachers' Technological Competence

Scale	Group	N	x	Sd	F	P
Technology Leadership Competencies Scale	Low	11	2.64	1.09	4.78	0.003
	Intermediate	178	3.15	0.903		
	Good	134	3.23	0.963		
	Advanced	32	3.71	0.859		
	<b>Total</b>	<b>355</b>	<b>3.22</b>	<b>0.943</b>		

The ANOVA test was performed to determine whether principals' technological leadership differed by teachers' technological competence. Accordingly, there was a significant difference in their technological leadership competencies in terms of teachers' technological competence. ( $p < 0.05$ )

Table 11: ANOVA Results regarding Principals' Technological Leadership Competencies according to Teachers' Branch

Scale	Group	N	x	Sd	F	P
Technology Leadership Competencies Scale	Turkish Language/ Turkish Literature	43	3.25	0.866	0.706	0.733
	Mathematics/Geometry	40	2.96	0.93		
	Physical Sciences (e.g., physics, chemistry, biology)	23	3.19	0.967		
	Social Sciences/History	28	3.17	0.913		
	Foreign languages	30	3.2	0.998		
	Art Courses (e.g., painting, music)	11	3.66	0.808		
	Vocational Courses (e.g., motor, electric)	5	3.43	0.849		
	Religious Culture and Moral Knowledge	20	3.18	0.561		
	Physical Education and Sports	12	3.13	1.12		
	Classroom Teaching	90	3.32	1.01		
	IT Teaching	4	2.83	1.25		
	Other	49	3.19	0.971		
<b>Total</b>		<b>355</b>	<b>3.22</b>	<b>0.943</b>		

There was no significant difference in principals' technological leadership competency according to teachers' branches ( $p > 0.05$ ).

Table 12: Mean Scores regarding *School Effectiveness Scale*

Scales	N	$\bar{x}$	Sd
School Effectiveness Scale	355	3.367	.766

The participants had moderate perceptions of school effectiveness ( $\bar{x} = 3.367$ ;  $sd = 0.766$ ).

Table 13: T-Test Results regarding School Effectiveness by Teachers' Gender

Scale	Groups	n	x	sd	t	p
School Effective Scale	Female	123	3.407	.778	.707	.657
	Male	232	3.346	.760	.702	

According to the participants' gender, there was no statistically significant difference in their perceptions of school effectiveness. In other words, female and male participants had equal perceptions of school effectiveness ( $p > 0.05$ ).

Table 14: ANOVA Results regarding School Effectiveness by Teachers' Age

Scale	Group	N	x	Sd	F	P
School Effectiveness Scale	20-30	84	3.341	0.808	1.438	0.231
	31-40	151	3.3	0.703		
	41-50	107	3.493	0.799		
	51 and older	13	3.282	0.873		
	Total	355	3.367	0.766		

It was observed that there was no statistically significant difference in teachers' answers to the school effectiveness scale items according to their ages ( $p>0.05$ ).

Table 15: ANOVA Results regarding School Effectiveness by Teachers' Seniority

Scale	Group	N	X	Sd	F	P
School Effectiveness Scale	0-5 Years	79	3.354	0.87202	0.806	0.522
	6-10 Years	93	3.2973	0.70045		
	11-15 Years	71	3.3158	0.73197		
	16-20 Years	53	3.4979	0.72016		
	21 Years and above	59	3.4429	0.80073		
	<b>Total</b>	<b>355</b>	<b>3.3677</b>	<b>0.76655</b>		

ANOVA was conducted to determine the degree of difference in teachers' perceptions of school effectiveness according to their seniority, and the results revealed no significant difference. That is, all groups had similar perceptions of school effectiveness ( $p>0.05$ ).

Table 16: ANOVA Results regarding School Effectiveness by Teachers' Year Working with the Current Principal

Scale	Group	n	x	sd	f	p
School Effectiveness Scale	0-2 Years	164	3.4024	0.77766	0.918	0.432
	3-4 Years	103	3.3858	0.79659		
	5-6 Years	50	3.2019	0.73772		
	7-8 Years	38	3.3871	0.66626		
	Total	355	3.3677	0.76655		

No significant difference was found in participants' perceptions of school effectiveness in terms of "working time at the current school" ( $p=0.432>0.05$ ).

Table 17: ANOVA Results regarding School Efficiency by Teachers' Daily Technology Use

Scales	Group	n	x	sd	f	p
School Effectiveness Scale	None	5	2.72	0.373	1.71	0.163
	Less than 1 hour	56	3.32	0.756		
	1-3 Hours	198	3.42	0.715		
	More than 3 Hours	96	3.31	0.871		
	<b>Total</b>	<b>355</b>	<b>3.36</b>	<b>0.766</b>		

There was no significant difference in participants' perceptions of school effectiveness in terms of their "daily technology use" ( $p>0.05$ ).

Table 18: ANOVA Results regarding School Effectiveness by Teachers' Technological Competence

Scale	Group	n	x	sd	f	p
School Effectiveness Scale	Low	11	3.07	0.834	1.36	0.377
	Intermediate	178	3.34	0.736		
	Good	134	3.37	0.835		
	Advanced	32	3.52	0.622		
	<b>Total</b>	<b>355</b>	<b>3.36</b>	<b>0.766</b>		

No significant difference was found in participants' perceptions of school effectiveness in terms of their "technological competence" ( $p>0.05$ ).

Table 19: ANOVA Results regarding School Effectiveness by Teachers' Branch

Scale	Group	N	X	Sd	F	P
School Effectiveness Scale	Turkish Language/ Turkish Literature	43	3.4	0.658	1.06	0.389
	Mathematics/Geometry	40	3.07	0.606		
	Physical Sciences (e.g., physics, chemistry, biology)	23	3.45	0.894		
	Social Sciences/History	28	3.39	0.88		
	Foreign languages	30	3.29	0.939		
	Art Courses (e.g., painting, music)	11	3.41	0.77		
	Vocational Courses (e.g., engine, electric)	5	3.11	0.605		
	Religious Culture and Moral Knowledge	20	3.28	0.553		
	Physical Education and Sports	12	3.28	1.05		
	Classroom Teaching	90	3.51	0.772		
	IT Teaching	4	3.02	0.838		
Other	49	3.39	0.701			
<b>Total</b>		<b>355</b>	<b>3.36</b>	<b>0.766</b>		

ANOVA was conducted to determine the significant differences in teachers' perceptions of school effectiveness according to their branches, and the results suggested no significant difference ( $F=1.06$ ,  $p>0.05$ ).

Table 20: Correlational findings on Principals' technological leadership and school effectiveness

	Technological Leadership	School Effectiveness
Technological Leadership	Pearson Correlation	1
	Significance (2-tail)	.713**
	N	.000
School Effectiveness	Pearson Correlation	355
	Significance (2-tail)	.713**
	N	355

Although there are several classifications in the literature, it is generally interpreted as (0-300) "weak", (310-490) "moderate", (500-690) "strong", and (700-10) "very strong" correlation (Tavşancıl,2006).

Table 20 shows the correlation analysis results of school effectiveness and technological leadership measures. Accordingly, there was a significant positive correlation between school effectiveness and technological leadership ( $r=0.713$  and  $p=0.000$ ).

Table 21: Correlational findings on Technological Leadership and School Effectiveness Sub-Dimensions

	A	B	C	D	E	F
Technological Leadership (A)	Pearson Correlation	1				
	Significance (2-tail)					
	N	355				
Principals (B)	Pearson Correlation	.741**	1			
	Significance (2-tail)	.000				
	N	355	355			
Teachers	Pearson Correlation	.541**	.589**	1		
	Significance (2-tail)	.000	.000			

	N	355	355	355			
School Environment and Education Process (C)	Pearson Correlation	.662**	.702**	.784**	1		
	Significance (2-tail)	.000	.000	.000			
	N	355	355	355	355		
Students (D)	Pearson Correlation	.523**	.513**	.551**	.603**	1	
	Significance (2-tail)	.000	.000	.000	.000		
	N	355	355	355	355	355	
Parents (E)	Pearson Correlation	.536**	.468**	.485**	.578**	.753**	1
	Significance (2-tail)	.000	.000	.000	.000	.000	
	N	355	355	355	355	355	355

The correlation analysis results indicated a moderate or strong positive correlation between technology leadership and school effectiveness sub-dimensions. For example, there was a significant positive and strong correlation between technological leadership and the *principals* sub-dimension of the school effectiveness scale ( $r=0.741$ ;  $p=0.000$ ); between technological leadership and the *teacher* sub-dimension ( $r=0.541$ ;  $p=0.000$ ); between technological leadership and the *school environment and the education process* sub-dimension ( $r=0.662$ ;  $p=0.000$ ); between technological leadership and the *student* sub-dimension ( $r=0.523$ ;  $p=0.000$ ) and lastly between technological leadership and the *school environment and parents* sub-dimension ( $r=0.536$ ;  $p=0.000$ ).

As seen in the table, there was a significant and strong correlation between the *principals* and *teachers* sub-dimensions of the school effectiveness scale ( $r=0.589$ ;  $p=0.000$ ). There was also a significant and very strong correlation between the *principals* and *school environment and education process* sub-dimensions ( $r=0.702$ ;  $p=0.000$ ). A strong and significant correlation was found between the "*principals*" and "*students*" sub-dimensions ( $r=0.513$ ;  $p=0.000$ ). Lastly, a statistically significant moderate correlation was found between the *principals* and the "*school environment and parents*" sub-dimensions ( $r=0.468$ ;  $p=0.000$ ).

Table 22: Correlational findings on School Effectiveness and Technological Leadership Sub-scales

		A	B	C	D	E	F
School Effectiveness	Pearson Correlation	1					
	Significance (2-tail)						
	N	355					
Visionary Leadership	Pearson Correlation	.640**	1				
	Significance (2-tail)	0					
	N	355	355				
Digital-Age Learning Culture	Pearson Correlation	.681**	.877**	1			
	Significance (2-tail)	0	0				
	N	355	355	355			
Excellence in Professional Development	Pearson Correlation	.693**	.870**	.903**	1		
	Significance (2-tail)	0	0	0			
	N	355	355	355	355		
Systematic Improvement	Pearson Correlation	.642**	.815**	.834**	.891**	1	
	Significance (2-tail)	0	0	0	0		
	N	355	355	355	355	355	
Digital Citizenship	Pearson Correlation	.712**	.805**	.814**	.852**	.808**	1
	Significance (2-tail)	0	0	0	0	0	
	N	355	355	355	355	355	355

Table 22 presents the findings related to the correlation between the school effectiveness scale and the sub-scales of the technological leadership competencies scale. Accordingly, there was a strong or very strong correlation between technological leadership and all sub-dimensions. For instance, there was a strong positive correlation between school effectiveness and *visionary leadership* ( $r=0.640$ ;  $p=0.000$ ). Similarly, a high positive correlation was found between school effectiveness and *digital-age learning culture* ( $r=0.681$ ;  $p=0.000$ ). A strong positive correlation was found between school effectiveness and *excellence in professional development* sub-scale, which is statistically significant ( $r=0.693$ ;  $p=0.000$ ). A similar strong positive correlation was also found between school effectiveness and *systematic improvement* ( $r=0.642$ ;  $p=0.000$ ). Lastly, there was a very strong positive correlation between school effectiveness and *digital citizenship* ( $r=0.712$ ;  $p=0.000$ ).

As understood from the table, there was a strong correlation between the sub-dimensions of the technological leadership competencies scale: between *visionary leadership* and *digital-age learning culture* ( $r=0.877$ ;  $p=0.000$ ); between *visionary leadership* and *excellence in professional development* ( $r=0.870$ ;  $p=0.000$ ); between *visionary leadership* and *systematic improvement* ( $r=0.815$ ;  $p=0.000$ ) and between *visionary leadership* and *digital citizenship* ( $r=0.805$ ;  $p=0.000$ ).

Table 23: Correlational findings on School Effectiveness Sub-dimensions and Technological Leadership Sub-scales

		A	B	C	D	E	F	G	H	I	İ
Okul Yöneticisi (A)	Pearson Korelasyon	1									
	Anlamlılık (2-kuyruk)										
	N	355									
Öğretmen (B)	Pearson Korelasyon	,589**	1								
	Anlamlılık (2-kuyruk)	,000									
	N	355	355								
Okul Ortamı ve Eğitim Süreci (C)	Pearson Korelasyon	,702**	,784**	1							
	Anlamlılık (2-kuyruk)	,000	,000								
	N	355	355	355							
Öğrenciler (D)	Pearson Korelasyon	,513**	,551**	,603**	1						
	Anlamlılık (2-kuyruk)	,000	,000	,000							
	N	355	355	355	355						
Okul Çevresi ve Veli (E)	Pearson Korelasyon	,468**	,485**	,578**	,753**	1					
	Anlamlılık (2-kuyruk)	,000	,000	,000	,000						
	N	355	355	355	355	355					
Vizyoner Liderlik (F)	Pearson Korelasyon	,672**	,494**	,603**	,455**	,477**	1				
	Anlamlılık (2-kuyruk)	,000	,000	,000	,000	,000					
	N	355	355	355	355	355	355				
Dijital çağ (G)	Pearson Korelasyon	,692**	,515**	,626**	,511**	,520**	,877**	1			
	Anlamlılık (2-kuyruk)	,000	,000	,000	,000	,000	,000				
	N	355	355	355	355	355	355	355			
Mesleki Gelişim (H)	Pearson Korelasyon	,724**	,500**	,632**	,530**	,530**	,870**	,903**	1		
	Anlamlılık (2-kuyruk)	,000	,000	,000	,000	,000	,000	,000			
	N	355	355	355	355	355	355	355	355		
Sistemik Gelişim (I)	Pearson Korelasyon	,657**	,490**	,576**	,494**	,479**	,815**	,834**	,891**	1	
	Anlamlılık (2-kuyruk)	,000	,000	,000	,000	,000	,000	,000	,000		
	N	355	355	355	355	355	355	355	355	355	
Dijital Vatandaşlık (İ)	Pearson Korelasyon	,738**	,560**	,672**	,505**	,530**	,805**	,814**	,852**	,808**	1
	Anlamlılık (2-kuyruk)	,000	,000	,000	,000	,000	,000	,000	,000	,000	
	N	355	355	355	355	355	355	355	355	355	355

According to the table, there was a significant and strong correlation between the “*principals*” sub-dimension and the “*visionary leadership*” sub-scale ( $r=0.672$ ;  $p=0.000$ ).



There was a significant and strong correlation between the “*principals*” sub-dimension and the “*digital-age learning culture*” sub-scale ( $r=0.692$ ;  $p=0.000$ ).

There was a significant and very strong correlation between the “*principals*” sub-dimension and the “*excellence in professional development*” sub-scale ( $r=0.724$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*principals*” sub-dimension and the “*systematic improvement*” sub-scale ( $r=0.657$ ;  $p=0.000$ ).

A significant and very strong correlation was found between the “*principals*” sub-dimension and the “*digital citizenship*” sub-scale ( $r=0.738$ ;  $p=0.000$ ).

There was a significant moderate correlation between the “*teachers*” sub-dimension and the “*visionary leadership*” sub-scale ( $r=0.494$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*teachers*” sub-dimension and the “*digital-age learning culture*” sub-scale ( $r=0.515$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*teachers*” sub-dimension and the “*excellence in professional development*” sub-scale ( $r=0.500$ ;  $p=0.000$ ).

There was a significant moderate correlation between the “*teachers*” sub-dimension and the “*systematic improvement*” sub-scale ( $r=0.490$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*teachers*” sub-dimension and the “*digital citizenship*” factor sub-scale ( $r=0.560$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*school environment and education process*” sub-dimension and the “*visionary leadership*” sub-scale ( $r=0.603$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*school environment and education process*” sub-dimension and the “*digital-age learning culture*” sub-scale ( $r=0.626$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*school environment and education process*” sub-dimension and the “*excellence in professional development*” sub-scale ( $r=0.632$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*school environment and education process*” sub-dimension and the “*systematic improvement*” sub-scale ( $r=0.576$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*school environment and education process*” sub-dimension and the “*digital citizenship*” sub-scale ( $r=0.672$ ;  $p=0.000$ ).

There was a significant moderate correlation between the “*students*” sub-dimension and the “*visionary leadership*” sub-scale ( $r=0.455$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*students*” sub-dimension and the “*digital-age learning culture*” sub-scale ( $r=0.515$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*students*” sub-dimension and the “*excellence in professional development*” sub-scale ( $r=0.530$ ;  $p=0.000$ ).

There was a significant moderate correlation between the “*students*” sub-dimension and the “*systematic improvement*” sub-scale ( $r=0.494$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*students*” sub-dimension and the “*digital citizenship*” factor in the sub-scale ( $r=0.505$ ;  $p=0.000$ ).

There was a significant moderate correlation between the “*school environment and parents*” sub-dimension and the “*visionary leadership*” sub-scale ( $r=0.477$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*school environment and parents*” sub-dimension and the “*digital-age learning culture*” sub-scale ( $r=0.520$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*school environment and parents*” sub-dimension and the “*excellence in professional development*” sub-scale ( $r=0.530$ ;  $p=0.000$ ).

There was a significant moderate correlation between the “*school environment and parents*” sub-dimension and the “*systematic improvement*” sub-scale ( $r=0.479$ ;  $p=0.000$ ).

There was a significant and strong correlation between the “*school environment and parents*” sub-dimension and the “*digital citizenship*” sub-scale ( $r=0.530$ ;  $p=0.000$ ).

The regression analysis results regarding the relationship between technological leadership and school effectiveness are shown in Table 24.

Table 24: Regression Analysis Results

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Estimates
1	.713 <sup>a</sup>	.508	.507	.53832

a. Predictors: (Fixed), Technological Leadership

According to the table,  $R^2 = 0.508$  (adjusted  $R^2 = 0.507$ ). Therefore, technological leadership, the independent variable, explained 50.8% of the variance of school effectiveness. In other words, a 50.8% change in school effectiveness was due to the effects of technological leadership variables.

Table 25: Regression Analysis Results

Model	Total Square	s.d.	Mean Square	F	Significance (Sig.)
1 Regression	105.715	1	105.715	364.795	.000b
Residue Total	102.297	353	.290		
	208.012	354			

The regression analysis (ANOVA) results are shown in Table 25. Accordingly, there was a statistically significant relationship between the dependent and independent variables at the 95% confidence interval ( $F=364.795$  and  $p<0.05$ ). It can be inferred that the model is statistically significant.

Table 26: Regression Analysis Results

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Significance(sig.)
1	Technological Leadership	1.501	.102		14.746	.000
		.579	.030	.713	19.100	.000

Dependent Variable: School Effectiveness

The regression model coefficients are shown in Table 26. The correlation between technological leadership and school effectiveness was statistically significant ( $p=0.000$ ), and the beta value was 0.713. Accordingly, technological leadership increased by 1 unit, and the school effectiveness increased by 0.713 units. In other words, adopting a leading role in technology in schools contributed to school effectiveness.

Table 27: Regression Model Summary of the Subscales

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Estimates
1	.736 <sup>a</sup>	.542	.535	.52251

a. Predictors: (Fixed), visionary leadership, digital-age learning culture, excellence in professional development, systematic improvement, digital citizenship.

Table 27 shows the results of the regression analysis that was performed to reveal the possible effects of the technological leadership sub-dimensions (i.e., "visionary leadership," "digital-age learning culture," "excellence in professional development," "systematic improvement," and "digital citizenship") on school effectiveness. Here,  $R^2 = 0.542$  (adjusted  $R^2 = 0.535$ ). In other words, the independent variables (i.e., "visionary leadership," "digital-age learning culture," "excellence in professional development," "systematic improvement," and "digital citizenship") explained 53.5% of the variance in school effectiveness (the dependent variable). That is, 53.5% of changes in school effectiveness resulted from the effects of the "visionary leadership," "digital-age learning culture," "excellence in professional development," "systematic improvement," and "digital citizenship."

Table 28: Regression Analysis Summary of Subscales (ANOVA Results)

Model	Total Square	s.d.	Mean Square	F	Significance (Sig.)
1 Regression	112.728	5	22.546	82.579	.000b
Residue Total	95.284	349	.273		

Table 28 shows the regression analysis results indicating a statistically significant relationship between the independent and dependent variables at the 95% confidence interval ( $F=82.579$  and  $p\leq 0.05$ ).

Table 29: Regression Model Coefficients of Sub-Dimensions

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Significance (sig.)
Visionary Leadership	-.032	.066	-.041	-.488	.626
Digital-age Learning Culture	.162	.070	.219	2.320	.021
Excellence in Professional Development	.134	.086	.175	1.570	.117
Systematic Improvement	-.002	.058	-.002	-.029	.977
Digital Citizenship	.318	.055	.420	5.768	.000

a. Dependent Variable: School Effectiveness

According to Table 29, the effect of digital citizenship (independent variable) on school effectiveness (dependent variable) was statistically significant ( $p\leq 0.05$ ), but no significant relationship was found between visionary leadership, digital-age learning culture, excellence in professional development, systematic improvement and school effectiveness ( $p>0.005$ ).

There was a significant relationship between the digital citizenship subscale and school effectiveness, with a normalized beta value of 0.420 ( $p=0.000$ ). In other words, each additional digital citizenship unit increased the school's effectiveness by 0.420 units. Adopting a digital citizenship approach in schools can positively increase school effectiveness.

#### 4. Discussion, Conclusion, and Recommendations

##### 4.1. Discussion

The study findings revealed the positive effects of technological leadership competence on school effectiveness. The principals who had advanced technological leadership skills positively affected school effectiveness. The results showed that the human-centered, supportive, and visionary sub-dimensions of technological leadership had a positive and significant effect on school performance. In contrast, communication and cooperation dimensions did not affect school effectiveness. The correlation analysis results indicated that technological leadership and its sub-dimensions positively and significantly affected school effectiveness. It can be inferred that improving the technological leadership skills of school administrators would significantly contribute to school effectiveness.

Technological leadership, an independent variable, explained 50.8% of the variance of school effectiveness, a dependent variable. In other words, 50.8% of the change in school effectiveness was due to the effect of technology leadership variables. It is considered that school effectiveness would increase in schools where principals adopt and implement human-centered, supportive, and visionary technological leadership. The technological leader of a school is expected to create a technology vision, meet the school's technological needs, establish a technology team, renew the school technology plan, and update technological tools at school, which would improve school effectiveness. Including educational technologies in the curriculums and the frequent use of educational software in teaching would improve digital-age learning culture and school effectiveness.

An improvement was observed in school effectiveness when teachers used educational technologies effectively and principals adopted a human-centered approach, which had a central place in technology leadership behaviors. The school's effectiveness also increased with the support of teachers when principals promoted all shareholders' involvement and equal benefit from educational technologies. In this sense, students should be informed about the effective use of educational technologies in schools. Besides, the equal access to digital tools and technologies at schools, taking steps to use the internet for only educational purposes, developing education policies for the legal, ethical, and safe use of technology, close monitoring of students' technology-related negative behaviors, and

taking countermeasures, the effective use of educational technologies by teachers and the adoption of a human-centered approach by principals would lead to positive outcomes in school effectiveness. School effectiveness also improved when principals addressed the issues surrounding equal access to technology and benefit from educational technologies by considering teachers' opinions and suggestions about the issue.

Additionally, it was concluded that the principals' promotive and supportive behaviors in educational technologies contributed to school effectiveness. Using technology to promote student development, following the recent innovations, creating an environment that meets students' technological needs, and supporting students' technology use would positively affect academic success and school effectiveness. As a result of the correlation and regression analysis, a strong or very strong significant correlation was found between the sub-dimensions of technological leadership and the sub-dimension of school effectiveness.

## 5. Conclusion

The arithmetic means and standard deviation scores related to principals' technological leadership competence indicated that they had moderate technological leadership behaviors ( $x=3.321$ ). In other words, in all statistical analyses of the variables, including gender, age, seniority, branch, technological competence, daily technology use, and working time at the current school, the teachers believed that principals had moderate technological leadership competencies. This finding overlaps with the findings of Biçer (2019), Durnalı (2018), Irmak (2015), Gençay (2018), Teke and Deniz (2020), Sağbaş (2019), Kırılıoğlu (2021), and Öztürk (2021). However, in their research, Smart (2019), Aktaş (2016), Çıkrık (2020), Dinç (2019), Görgülü, Küçükali and Ada (2013), Kurt (2019), Weng and Tang (2014) and Alkrdem (2014) found that school administrators had sufficient technological leadership.

The participating teachers' perceptions of school effectiveness were also "moderate" ( $x=3.367$ ). They found school effectiveness and its sub-dimensions "moderate."

According to the technological leadership competencies scale, teachers' perceptions of principals' technological leadership did not differ by their gender, which is consistent with several findings in the literature (e.g., Smart, 2019; Atılğan, 2019; Bülbül and Çuhadar, 2012; Çakır and Aktay, 2018; Eren and Şişman, 2010; Ertuğrul, 2014; Scales, 2014; Irmak, 2015; Gençay, 2018; Gürkan, 2017; Kırılıoğlu, 2021; Kurt, 2019; Teke, 2019).

It was observed that there was a statistically significant difference in participants' answers about technological leadership by age. However, there was no statistically significant difference in the answers about the school effectiveness by age. Bicer (2019) and Kırılıoğlu (2021) found that school administrators' technological leadership competencies differed by age criteria. On the other hand, Durnalı, 2018; Dinç, 2019; Sağbaş, 2019; Yumlu, 2020; and Çıkrık, 2020 determined no significant difference by age. Similarly, there was no statistically significant difference in the answers to the school effectiveness scale by teachers' age. It parallels the findings of Tarhan, 2008; Yumlu, 2020; Abdurrezzak, 2015; Atcioğlu, 2018. However, Şahin (2020) found a significant difference in school administrators' perceptions of school effectiveness by age.

There was no significant difference in principals' technological leadership competencies by teachers' seniority. Similarly, Ertuğrul (2014), Aşçı (2017), Cantürk and Aksu (2017), Çıkrık (2020), Dinç (2019), Görgülü, Küçükali and Ada (2013), Sağbaş (2019), Yumlu (2020), Alkrdem (2014) and Irmak (2015) also found no significant difference in technological leadership competencies between the opinions of inexperienced and experienced teachers. Seniority also did not significantly affect teachers' perceptions of school effectiveness. In other words, seniority did not play an effective role in teachers' opinions about school effectiveness. Similarly, in the studies conducted by Atcioğlu (2018), Atılğan (2019), Abdurrezzak (2015), Yumlu (2020), and Tarhan (2008), teachers' perceptions of school effectiveness did not change by their seniority. Thus, regardless of seniority, it was observed that teachers had similar perceptions about their schools' effectiveness.

There was no significant difference in participants' perceptions of principals' technological leadership or school effectiveness according to the teachers' working time at the current school. In other words, working time at the

current school did not play an influential role in teachers' belief in school performance or effectiveness, which overlaps with the findings of Atcıoğlu (2018), Irmak (2015), and Tarhan (2008).

There was no significant difference in participants' perceptions of principals' technological leadership or school effectiveness according to the teachers' daily technology use.

A significant difference was found in participants' perceptions of principals' technological leadership according to their technological competence. However, there was no difference in participants' answers about school effectiveness by their technological competence.

## 6. Recommendations

**For Practitioners:** A technological leader must first internalize the use of technology and be aware of their responsibility. In this sense, technology education at the undergraduate level is insufficient due to technology's constantly changing nature. Technological leaders should continually update themselves and follow the relevant literature. They should make a sound and elaborate plan to enhance the potential uses of technology in learning and teaching. The use of technology is not only a matter of hardware and the internet. The critical point is integrating technology into the curriculum. It entails regular tasks of following recent innovations, integrating technology into the school environment and system, and providing training and updating. It is known that a technology plan is a roadmap for implementing technology.

As technological leaders, principals and teachers should develop a vision for technology integration and implementation and promote technological changes in educational environments. Technological leaders should assist all students in using technology effectively in learning, experiencing new processes, and assessment. They should create effective and optimal learning environments to maximize learning outcomes. They should analyze technology and develop vocational training programs. They should assess the effects of those programs on students' learning. They should ensure students' and teachers' equal access to technological tools, models, and resources. They should always enhance professional, pedagogical, and technological knowledge and skills. Only in this way can they contribute to school effectiveness.

**For researchers:** It is a quantitative study limited to Batman province. Qualitative studies with different variables can be carried out comprehensively in other provinces. Also, this study examined the relationship between principals' technological leadership and school performance. Future studies can focus on related other variables in educational institutions other than schools.

**For policymakers:** Multiple factors affect school effectiveness. Principals' leadership characteristics are one of the important factors playing a role in school effectiveness. Since information technology is considered an indicator of progress worldwide, a leader's technology knowledge becomes more critical. Better technological leadership skills would facilitate the use of technological tools in schools. Therefore, principal appointment and promotion criteria should consider the adaptation skill to new technology. In this sense, policymakers should develop policies and procedures considering the mentioned issues, which would, in turn, increase school effectiveness.

In this age of rapid technological development, principals cannot disclaim their technological leadership roles. They should closely follow technological developments and be a pioneer in the integration of technology into the education process. They should be role models that promote technology integration, implement changes, and provide the necessary momentum for all stakeholders.

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# The Effect of Chairobic Dance Program on Cardiorespiratory Endurance in Faculty of Education Staff, Thaksin University

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## Abstract

The COVID-19 pandemic has impacted all aspects of daily life, especially exercise, where restrictions on location, time, and work can make exercise even more difficult. Hence, this study aims to create a Chairobic dance program dancing with a chair that uses few spaces, able to sit and dance in your chair. It was developed from the aerobics dance. In addition, to compare the effect of the Chairobic dance program on Cardiorespiratory endurance before and after training. The target group is 24 staff of the Faculty of Education at Thaksin University. The participants were trained through a Chairobic dance program created by the researcher for eight weeks (3 days/week, i.e., Monday, Wednesday, and Friday). They have to practice 45 minutes a day after work. The Cardiorespiratory endurance was tested using a 3-minute knee-up and down test and compared before and after eight weeks of training by the Pair t-test statistics. The results showed that in the Chairobic dance program created by the researcher, there is an IOC (Index of Item-Objective Congruence) in the range of 0.6 -1.00, which is acceptable and usable. In addition, the target group had better Cardiorespiratory endurance than before training. Therefore, It will be helpful for anyone interested in an alternative to exercise. This is because it takes up less space, is convenient to exercise, fun, and can develop Cardiorespiratory endurance.

**Keywords:** Cardiorespiratory Endurance, Chairobic Dance Program, Thaksin University

## 1. Introduction

Worldwide accepted exercising or physical activities results in healthy and able to maintain good physical fitness and prevents diseases caused by lack of exercise, such as obesity, high blood pressure, heart disease, etc. (Stark, 2017). Is the same as Thailand; the government of Thailand supports the people with health care and exercises regularly to healthy and lack disease. However, a previous study reported that in 2011 the rate of exercise or playing sports of Thai people aged 11 years above (a total population of 15,074,213 people) was only 26.1 percent. Specific to the working age range (25-59 years), only 19 percent had regular exercise or sports (National Statistical Office, 2011). This problem may increase the risk factors for ill health and disease related to physical inactivity.

Moreover, the world is facing the coronavirus disease pandemic 2019 (COVID-19). As of August 30, 2022, a report by [www.worldometers.info](http://www.worldometers.info) found that approximately 606 million people are infected worldwide. There are also cumulative deaths around the world of more than 6 million people. Also, Thailand has a COVID-19 pandemic disease; the total number of infections is around 4,647,685, and the cumulative death was 32,251 as of the same day. For these reasons, the government strictly controls and prevents the epidemic's spread, which inevitably affects well-being. Getting to places is difficult, and some areas are temporarily closed in order to prevent the spread of this disease, such as sports stadiums (Gazette, 2021). This problem affects most people who want to exercise at the stadium or playing field. Therefore, it may affect the health of people who cannot exercise.

Especially office workers that spend a long time sitting and working in a chair are less likely to have any movement or physical activity while working. In addition, most of the reasons for office workers' lack of exercise are time, no exercise equipment, and no space for movement (Charoenyingpaisan & Santad, 2019). Therefore, this research has come up with a new and alternative exercise method that can solve the problem of not exercising for these people. For the above reason, the researcher has created the Chairobic dance program adapted by aerobic dance, which has music as a rhythm. The practicing Chairobic dance program will be dancing by sitting in a chair only. The Chairobic dance program includes two words: Chair and Aerobic dance. The previous exploration found very few videos regarding dancing with a chair.

Furthermore, there is no empirical evidence involving the effect of dancing with a chair on improving physical fitness. In addition, the results of physical fitness tests in Cardiorespiratory endurance using the 3- minutes knee up and down test found that the staff of the Faculty of Education at Thaksin University is low and very low. Therefore, the researcher is concerned about this issue because it leads to their health and is urgently necessary to develop Cardiorespiratory endurance. For this reason, the researchers are interested in innovating and creating a new exercise program to solve problems for people who have to sit in the office with no time reason and no place to exercise, and to provide an alternative to the general public who want more variety of exercise.

### *1.1 Objectives of study*

1. To create the Chairobic dance program
2. To compare the effect of the Chairobic dance program on Cardiorespiratory endurance between before and after training eight weeks.

## **2. Method**

The experimental method was to collect data in this study. The target group is 24 Faculty of Education at Thaksin University staff willing to participate in this study. The experimental process was carried out through the training of a Chairobic dance program created by the researcher for eight weeks (3 days/week, i.e., Monday, Wednesday, and Friday). The training period a day is after work from 4.00 – 5.00 p.m.

In this study, two instruments were used: the 3-minute knee-up and down test for assessment of Cardiorespiratory endurance and the Chairobic dance program created by the researcher, which includes 14 feet and 16-hand steps. This program is separated into three steps; the first step is warm up for five minutes, the second step is to work out for 35 minutes, and the last five minutes is to spend time for the cool down. In addition, for the intensity progressive of this program, the researcher used a speed song of 140 beats per minute (bpm). During 1-4 weeks of training. Then, speed song 160 bpm. was used in 5-8 weeks of training.

Data analysis used the Index of Item-Objective Congruence (IOC) to assess the Chairobic dance program's content validity through five experts. Furthermore, a Pair t-test was used to compare the pre-test and post-test after eight weeks.

### 3. Results

To achieve the purpose of the study, the researcher has to report the results through objectives as follows; 1. to create the Chairobic dance program, the result found that it is high quality and can be real exercise. This is because five experts examined the Chairobic dance program and IOC values (Index of Item-Objective Congruence) in the range of 0.6 -1.00 which are accepted.

Table 1: Show the Index of Item-Objective Congruence (IOC) of Chairobic dance program

Chairobic dance program	Assessment of Five Experts					IOC Values	Finding
	1	2	3	4	5		
1. Marching is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
2. Forward V-Step is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
3. Mambo is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
4. Step Touch is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
5. Double Step Touch is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
6. Step Tap is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
7. Double Step Tap is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
8. Knee Up is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
9. Double Knee Up is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
10. Heel Touch is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
11. Double Heel Touch is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
12. Front Kick is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
13. Double Front Kick is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
14. 1 Hand up is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
15. 2 Hands up together is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
16. 1 hand front punch is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
17. 2 hands front punch together is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
18. 1 Hand up 45 degree angle is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
19. 2 Hands up together 45 degree angle is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
20. 1 Hand down 45 degree angle is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
21. 2 Hands down together 45 degree angle is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
22. 1 hand up side of the body 90 degree angle is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
23. 2 hands up side of the body together 90 degree angle is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
24. 1 elbow back is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
25. 2 elbow back together is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
26. 1 arm curl is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
27. 2 arms curl together is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted

Chairobic dance program	Assessment of Five Experts					IOC Values	Finding
	1	2	3	4	5		
28. 1 hand up parallel to the horizon is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
29. 2 hands up parallel together to the horizon is suitable for training	+1	+1	+1	+1	+1	1.00	Accepted
30. Warm – Ups 5 minutes	+1	+1	+1	+1	0	0.8	Accepted
31. Cool Down 5 minutes	+1	+1	+1	+1	0	0.8	Accepted
32. 20 positions (15 second each position) of warm up and cool down	+1	+1	+1	+1	0	0.8	Accepted
33. Workout 35 minutes	+1	+1	+1	+1	0	0.8	Accepted
34. Workout 8 weeks	+1	+1	+1	+1	+1	1.00	Accepted
35. Frequency on 3 day/week	+1	+1	+1	+1	+1	1.00	Accepted
36. Intensity of Training	+1	0	+1	0	+1	0.6	Accepted
- Week 1-4 of training 140 bpm/minutes in speed song							
- Week 5-8 of training 160 bpm/minutes in speed song							

2. To compare the effect of the Chairobic dance program on Cardiorespiratory endurance before and after training for eight weeks. This objective was examined by Pair t-test as follows the Table 2.

Table 2: Show the Mean, *SD*, and *P* value of pretest and posttest scores

Target Group	N	Mean	<i>SD</i>	t	<i>P</i>
Pre Test	24	111.41	17.98	-5.839	.001**
Post Test	24	140.41	26.31		

\*\**p* < .01

Table 2 demonstrated that the effect of the Chairobic dance program after eight weeks of training had better Cardiorespiratory endurance than before training (*p* < .01).

#### 4. Discussion

The first objective of this study found that the Chairobic dance program is high quality and can exercise. This is because five experts judged the Chairobic dance program and there is an IOC value (Index of Item-Objective Congruence) in the range of 0.6 -1.00 which is accepted. Pusee-On (2015) stated that the IOC value should be more than .50. Moreover, it was tried out after improvement based on five experts with a sample group that was not staff of the Faculty of Education to explore the barrier or problems and improve it before actually collecting data. Taherdoost (2016) confirms that the instrument's validity is important in developing the research instruments. Validity means validly verifying. In the context of research, validity refers to the Chairobic dance program's improvement in Cardiorespiratory endurance. Generally, an instrument created by the researcher with a high degree of validity implies that the findings are based on facts or evidence capable of providing justification (Mohajan, 2017). Content Validity (CV) is the minimum quality requirement for an instrument at the item development stage (Ismail, & Zubairi, 2022; Halek, Holle, & Bartholomeyczik, 2017). CV means "the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose" (Haynes, Richard & Kubany, 1995, p.238). Generally, it can be referred to that a test should be able to measure what it intends to measure as it has been highlighted by Turner and Carlson (2003, p. 164) that "An important component in test development is providing evidence that the items created are measuring the content or construct they are defined to measure." CV is done through expert judgment. In other

word, it can be obtained through the involvement of a group of subject matter experts thinking about the significance of individual items within an instrument (Creswell, 2012).

The study's second objective found that the Chairobic dance program after eight weeks had better Cardiorespiratory endurance than before training. This is because the Chairobic dance program created by the researcher is based on frequency, intensity, time, and type (F.I.T.T.) Fahey et al. (2019); Powers and Dodd (2020) stated that training or exercise that can develop physical fitness should be based on the F.I.T.T. principles. They confirm that training frequency with those who want to exercise or improve physical fitness must be practiced at least three days a week. Regarding the above matter, the researcher has created the Chairobic dance program based on frequency (F), which has been practiced three days a week (Monday, Wednesday, and Friday). Saratee's (2021) study regarding the interval training programs at different rest levels on the Cardiorespiratory endurance of male students in lower secondary schools. His study found that after training three days a week for eight weeks, the Cardiorespiratory endurance of participants was better than before training.

Moreover, the Chairobic dance program has increased the progressive intensity of training (I). The researcher designed the speed song during training at around 140 beats per minute (bpm) in 1-4 weeks. At the same time, training in 5-8 weeks increased the speed song to around 160 bpm. According to Fahey et al. (2019); Powers and Dodd (2020), if they want to improve their Cardiorespiratory endurance, their heart rate should be between 120-160 bpm. Also, the target heart rate can be calculated to be 60-80% of the maximum heart rate by the formula (220-age). In addition, the Chairobic dance program has continuously trained for 45 minutes (T), resulting in Cardiorespiratory endurance greater than before training. According to Sangkaew, Methethammawat, & Suppakannoraset's (2022) study of the effects of moderate intensity exercise on visceral fat among the Faculty of education staff at Thaksin university. The participants in his study will have to exercise 45 minutes per day, three days a week for 12 weeks. His research found that the visceral fat significantly differed before and after 12 weeks of a moderate-intensity exercise program  $p < 0.05$ . Fahey et al. (2019) confirm that continuous exercise for 30 minutes or above is aerobic exercise or continuous breathing exercise while exercising. It will help develop Cardiorespiratory endurance.

Furthermore, the type of exercise (T) in the Chairobic dance program helps to support and develop Cardiorespiratory endurance. This is because continuous dancing body movement for at least 30 minutes and the body's use of oxygen to burn energy will help to develop Cardiorespiratory endurance (Powers & Dodd, 2020). Cheng, Sun & Yeh's (2017) research studies the effects of an 8-Week Aerobic Dance Program on Health-Related Fitness in Patients With Schizophrenia. The study found a significant post-test value between the experimental and control groups.

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# The Perspective of the Mathematics Teacher Educator on the Design of Mathematics Teaching Method Courses for Elementary Teacher Candidates\*

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## Abstract

This study examines the perspective of a mathematics teacher educator (MTE) regarding the design and structuring of mathematics teaching method course in the elementary teaching education program. The research was designed as a single case study. The case was a teacher educator who has been delivering mathematics methods course for elementary teacher candidates for 10 years. The data were collected through an in-depth interview on items placed in a questionnaire. The thematic analysis method was used for data analysis. The focus of our analysis is on MTE's perspective as a course designer and practitioner for the mathematics teaching method course. Our findings show that this course has a nature in design and structuring and that the teacher trainer builds on these four arguments, namely value judgments, resources, big ideas, and professed practices while supporting the mathematics teaching development of prospective elementary teachers. Based on the findings, we discuss the interactions among these four arguments. In addition, it is examined whether there is a perspective in the design and structuring of the mathematics teaching course among teacher educators who deliver this course.

**Keywords:** Mathematics Teacher Educator, Teacher Education, Mathematics Methods Course, Course Design

## 1. Introduction

Elementary teacher candidates are expected to learn how to teach many fields in their preparation for the profession as well as to improve their ability to teach mathematics. The mathematics education society has long been concerned that elementary teacher candidates are not sufficiently prepared to teach mathematics effectively (van Es and Conroy 2009; Philipp et al. 2007, National Research Council 2001; Ball 1990). One of these concerns is related to the idea that mathematics teaching is a complex and multidimensional phenomenon for

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\* This paper is a byproduct of first author's PhD studies

prospective elementary teachers. In addition, the fact that prospective teachers lack the depth and flexibility of mathematical understanding and the beliefs they should have about mathematics teaching is an important cause of anxiety (Boaler and Humphreys 2005; Philipp, 2008;).

On the other hand, Ma (1999) states that elementary school mathematics is more complex than it seems. Therefore, the researcher emphasized that the content of mathematics method courses designed for prospective elementary school teachers and the teaching of this content by the instructors are very important in order to improve the mathematical knowledge and understanding needed by prospective teachers. Therefore, faculty members who take mathematics method courses for prospective primary school teachers play an important role in helping them obtain the information they need for teaching and have a positive attitude/belief in mathematics teaching. In this context, in a study conducted by Masingila et al. (2012), who gave the mathematics method courses in the classroom teaching program of the mathematics education community in the United States, it was examined how they designed these courses, and that these instructors knew little about their academic and teaching backgrounds. From this point of view, the process of designing and structuring mathematics methods courses given to prospective classroom teachers who take teaching courses for many branches has become the focus of our study.

## 2. Literature

We will share the literature on the research in two areas: (1) the professional roles and responsibilities of teacher educators and (2) the mathematics teaching course and its components.

### 2.1. Professional roles and responsibilities of teacher educators

Among the definitions of teacher educators is the statement made by the European Commission in 2013. In the statement made by the Commission, teacher educators were defined as "people who enable teachers or teacher educators to learn formally" (Commission, 2013, p. 8). This definition implies that teacher educators are not the only community interested in a single group over a single role. As a matter of fact, Chauvot (2008) emphasized diversity with the definition "teacher educators are a group of various professionals who are in different arenas and offer more than one role." Due to these people's responsibilities in the teacher training process, having knowledge about their roles, approaches, and practices in this process has become the focus of interest in educational research in recent years. As a matter of fact, these studies have contributed to the literature on what the profiles of teacher educators (TE) are, the nature of their work, and their professional development (Wilson & Franke, 2008; Jaworski, 2008b; Superfine & Li, 2014). Studies on MTEs focus on four main dimensions; knowledge of MTEs (Approva & Taylor, 2017; Superfine & Li, 2014), practices of MTEs (Doerr & Thompson, 2004; Taylor, 2013; Ghouseni & Herbtz, 2016;), professional development of MTEs (Campbell & Malkus, 2014), roles and responsibilities of MTEs (Jowarski & Huang, 2014; Li & Superfine, 2018).

As can be seen from the research conducted, one of the topics highlighted by the studies is the roles and responsibilities of mathematics teacher educators, and there are studies examining what the roles are (Bouckaert & Kools, 2018; Nilsson, 2017; Jennifer Way et al., 2020). Although the categories in these studies are created with different names, they actually refer to roles that have the same duties and responsibilities. When we look at the prominent ones among these roles, these are the roles of teacher educators; researcher, teacher, collaborator, curriculum designer, and practitioner.

As a researcher, mathematics teacher educator is faced with responsibilities such as knowing how to read, evaluate, criticize and use in his/her own studies and having expertise in researching his/her own practices to renew and improve his/her practices (Gerda Geerdink, Fer Boei, Martijn Willemse, Quinta Kools & Haske Van Vlokhoven, 2016 pp.3; Jennifer Way et al., 2020).

With the teacher role, the MTE is faced with responsibilities such as having the knowledge and benefiting from the practices necessary for teaching, not only mathematical knowledge but also designing how prospective teachers should learn mathematics in the future and teaching by reflecting on how they can use different teaching



strategies in classroom practices (Lunenberg, Korthagen, and Swennen 2007; Anthony, Averill, and Drake, 2018). With its collaborative role, MTEs are faced with responsibilities such as collaborative teaching and joint planning with colleagues, exchanging information about a subject, and creating learning opportunities for each other (Loughran, J. 2014; Anderson & Tully, 2020). It can be said that these roles of MTEs are part of the puzzle in forming teacher educator identities.

In addition to the roles we mentioned above regarding the professions of MTEs or TEs in general, it is possible to talk about the role of course designer and implementer (Beswick and Chapman, 2011; Lunenberg, Dengerink, and Korthagen, 2014; Marina Bouckaert & Quinta Kools, 2017). With the course designer role, a MTE has responsibilities such as designing and structuring courses at the university level. These courses include content courses (Li & Superfine, 2018; Approva & Taylor, 2019; Max & Welder, 2020) and methods courses (Kastberg, Tyminski & Sanchez, W. B., 2017; Lynch, 2017; Durkee, 2019).

When the studies are examined, it is seen that there is a focus on the course designer and implementer role of TEs (Hoydalsvik, 2017; Tannehill, 2016). Studies in the literature on the course designer and implementer role have shown that the content of method courses for mathematics teaching greatly improves the mathematics knowledge and mathematics teaching skills of teacher candidates (Spitzer et al., 2011; Bartell et al., 2013; Morris et al., 2009). In this respect, it becomes an important issue to learn about what is going on in these method courses and focus on what the building blocks of these courses are.

## *2.2. Mathematics teaching methods course and its components*

Strawhecker (2005) stated that "the main purpose of a method lesson is to tell prospective teachers how children learn various mathematical concepts and skills and how to teach children certain mathematical ideas" (p. 2). Mathematics method courses are designed to enable prospective teachers to learn how to facilitate their learning while structuring their knowledge about students. Prospective teachers try to understand how students learn developmentally and how students think about mathematics (Kastberg et al., 2013). In addition, Althaus (2018) states that prospective teachers should learn to "listen to students in a way that allows them to create a model of each student's mathematical knowledge."

One of the topics that researchers focus on is the effect of method courses on the beliefs and attitudes of prospective teachers towards mathematics teaching. As a matter of fact, there are studies showing that mathematics methods courses have a positive effect on prospective teachers' attitudes towards mathematics teaching (Ball, 2009; Bekdemir, 2010; Robinson & Adkins, 2002; Saran & Gujarati, 2013; Swars, 2005; Althaus, 2018). Certain aspects of teacher candidates' attitudes include mathematics teacher activity, identity, authority, and mathematics anxiety. Each of these areas was found to affect teachers' decision-making on personal and instructional competence issues, such as how much time should be planned for mathematics and what kind of tasks and activities students should be given, and accordingly, classroom practices. As a result of a study conducted by Hacıömeroğlu (2013), it was shown that the theoretical knowledge obtained by the elementary teacher candidates within the scope of the mathematics methods courses they took in the undergraduate program affected their personal competence levels of the candidates.

On the other hand, when we look at the studies on the mathematics method course, we see that there are studies on the importance of mathematics content information presented in the method courses (Burton, Daane, and Gleisen, 2008; Ford & Strawhecker, 2011). The research findings showed that "when prospective teachers take pedagogy for teaching content and mathematics at the same time, they have the potential to have clearer connections between mathematics subjects" (Fast and Hanks;2010, p.335)

When the literature is examined, it is seen that some of the studies on method courses focus on learning-teaching situations and mathematical pedagogical knowledge. Baumert et al. (2010), as one of the most important findings of the studies on mathematics methods course, stated that the variety of teaching strategies presented and mathematical representations, the size of the explanations pool depends largely on the depth of the conceptual understanding of the subject. Pedagogical knowledge specific to mathematics teaching is a

combination of "what one knows about mathematics, about students, about general pedagogy, and about mathematics learning" (Strawhecker, 2005, p.2). Caughlan et al. (2017) pointed out the importance of method courses as "special teaching practices to address the place where novice teachers encounter certain pedagogical problems in a discipline and as they intersect with the content that needs to be taught" (p. 270).

In addition to blending mathematics content and pedagogy, there are also studies on the promotion and use of mathematics methods courses, different types of materials, and manipulatives (Bamberger et al., 2010; Sara n & Gujarati, 2013). As a matter of fact, these studies state that the courses that enable prospective teachers to determine which manipulators and "when and how to use mathematics concrete models to support learning" are mathematics method courses (Ünlü, 2018, p. 68). In this respect, it is possible to say that mathematics methods courses help prospective teachers to have knowledge about materials and manipulatives that differ according to their grade levels.

In the light of these studies, mathematics methods courses could be considered to mediate the ability to have certain prominent elements such as belief and attitude, content knowledge and pedagogical knowledge, and the selection of appropriate course materials to teach mathematics effectively. Therefore, in order to understand how prospective teachers develop their mathematical knowledge and pedagogies necessary for effective teaching, it is very important to understand the design of these courses (McCrorry et al. 2009, McCrorry and Cannata 2011).

With this research, it is aimed to examine how a MTE structured this process as a course designer and practitioner in the creation of mathematics methods courses that will prepare prospective classroom teachers to acquire mathematics teaching competencies and competencies as much as possible before entering their own classes.

### *2.3. Mathematics teaching methods course for elementary teacher candidates*

According to CBMS (Conference Board of Mathematical Sciences) "primary school mathematics teaching needs both important mathematical knowledge and broad pedagogical skills" (p. 55), it is also not easy to teach without deep thinking and without paying attention to the complexity of elementary mathematics (Ball and Bass 2000; Bass 2005; CBMS, 1996; Seaman and Szydlik 2007). Deborah Zopf (2010) states that there are differences between mathematics teaching for primary school students and mathematics teaching for primary school students in terms of content, substance and purpose.

On the other hand, the courses given in the elementary teacher training curricula of universities around the world are generally grouped into four categories; (a) liberal arts, (b) mathematics and related content (academic mathematics, school mathematics, mathematics pedagogy), (c) educational sciences, and (d) pedagogy. Although these categories are similar, this situation differs from country to country in terms of the number and hours of courses given. In Turkey, where this study was conducted, a total of 48 hours of basic mathematics course is given for one semester (14 weeks/ 2 hours) in the elementary teacher training program. Regarding the teaching course, a total of 84 hours of mathematics teaching is given in both semesters (14 weeks/ 3 hours) in the third year.

## **3. Method**

### *3.1. Study Pattern*

This research adopts qualitative research methods as it aims to reveal how the MTE structured this process as a course designer and practitioner in the creation of the mathematics teaching method course that prospective classroom teachers took. Bernat and Gvozdenko (2005) emphasize that case study is qualitative in nature and contributes to an interpretive paradigm and state that it is a research approach that facilitates the discovery of a phenomenon in its context using various data sources (see also Baxter and Jack, 2008; Yin, 2009). Hence case study is an appropriate method to understand the perspective of a MTE in the process of structuring and implementing mathematics methods courses. As a matter of fact, the case study constitutes an appropriate

approach in terms of this research, as it is a clear definition of the phenomenon in the study and an effective research method for producing new hypotheses, models, and understandings about this phenomenon (Dörnyei, 2007).

### *3.2. Participant*

The present study was conducted with a MTE working in the faculty of education of a state university in Turkey. She has a bachelor's degree in science and literature of mathematics, and she completed her master's degree in mathematics education; she received the title of teacher educator in the field of program development. Esra (not her real name), who is currently an Associate Professor, has been teaching mathematics for 10 years. Since Esra has been teaching mathematics teaching methods courses for a long time and the mathematics methods course is a field of education course, the fact that the teacher educator has received education in both mathematics education and program development and education in his/her academic background are important parameters for this study. In addition, it is important to give the mathematics method course as a branch in the university where the teacher educator is located and to have different instructors enter other branches in order to see the cooperation factor, which is one of the focal points of the study. In addition, the accessibility of the teacher educator by the researcher and his voluntary participation in the process was effective in choosing her as a participant in the study.

### *3.3. Data Collection Tool*

Within the scope of the research, in order to reveal how MTE structured this process as a course designer and practitioner in the creation of mathematics methods courses, a questionnaire developed by the researchers and then a face-to-face interview was conducted to understand and elaborate the answers given by the participant to this questionnaire. Various stages were followed in the creation of the questionnaire, which was developed as a data collection tool. First of all, the relevant studies on the subject to be investigated were examined in the literature. We initially examined the literature on the submarine of the mathematics methods course. When the studies on mathematics method courses were analyzed, it was seen that there were studies on the importance of the course for classroom teacher candidates; the goal was real because it was a course, content, teaching methods, and measurement and evaluation structures. In addition to the content of the mathematics teaching methods course in the elementary teacher training program, it was noteworthy that the MTE who gave this course was also important in this course. From this point of view, we structured our data collection process with the concept map in Figure-1, which we created based on the mathematics method courses, TE and preservice teachers relationship network. Then, three mathematics education experts and a program development expert came together to discuss the focus of the data collection tool. Then, questions about the determined foci were created, the categories to be included in the data collection tool, and the suitability, representation, and comprehensibility of the questions under these categories were presented to the opinion of three field experts and a program development expert again, and their final form was given.

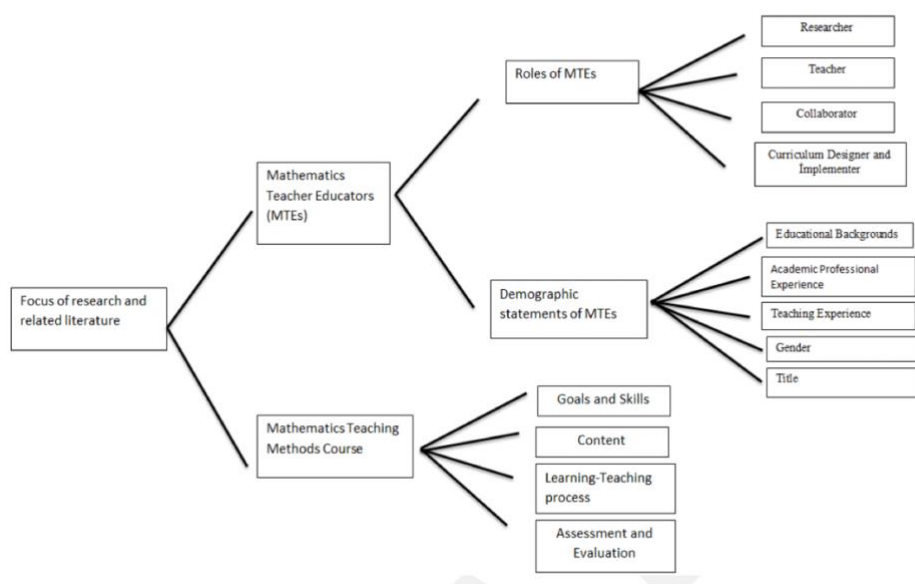


Figure 1. The focus of the features of the developed instrument

In this study, a case study design was adopted to see the existence of a perspective, what are the elements that mathematics teaching methods course design is based on in structuring and implementation, and what are the sources that affect these elements. Evidence for case study can come from different data sources such as documents, archive records, interviews, direct observation, participant observation, video-visual recordings, physical material (Yin, 2009). A single source of evidence or evidence is often not sufficient to sustain a case study; as in-depth explanations are needed to understand a particular situation, a large number of sources of evidence are often required (McGinn, 2010). In this context, during the data collection process, an e-mail explaining the purpose and scope of the research was first sent to the Esra with the protocol developed and she was asked to answer this protocol. In the second stage, a face-to-face interview was held with the participant in order to deepen the data obtained by looking at the answers given by the teacher educator. The semi-structured interview lasted two and a half hours. The interview was audio-recorded, which were then transcribed. In this study, data were collected through the protocol developed from the MTE, semi-structured interview and the documents obtained from her.

### 3.4. Data Analysis

The data collected in the study were analyzed using the thematic analysis technique because it allows theoretical flexibility, detailed reporting of patterns in the data and interpretation of the data (Braun and Clarke, 2013). Since the study is exploratory and the findings can be categorized into meaningful themes, this analysis method was considered suitable for the study. Thematic analysis is the search and extraction of general models found in data through multiple readings. Fereday and Muir-Cochrane (2006) defined thematic analysis as “a form of pattern recognition in data in which emerging themes become categories for analysis” (pp. 3-4). In this study, the guidelines provided by Braun and Clarke (2013) were followed in the analysis of the data. According to this guide, thematic analysis consists of six stages: familiarization of the data, creating initial codes, searching for themes, reviewing themes, defining and naming themes, preparing the report. First, the data were familiarized by examining the transcripts and documents many times until the data obtained from the participant was fully understood. Secondly, from the answers given by the participant regarding the content of the mathematics teaching lessons, codes were created to help interpret the data in a way that reflects a vision/ approach about what the lesson looks like. Later, the main themes and/or concepts that reveal the values that guide the MTE’s practice were investigated.

#### 4. Findings

It is important to note that the aim of this study is to explore the course design, the possible perspectives underlying this design, and how it shapes them in realization using the perspective of the MTE as a tool to understand the nature of the mathematics teaching methods course. As a result of the thematic analysis, a total of four themes emerged: sources, values, big ideas and professed practices. It is possible to say that the MTE structured the mathematics teaching developments of prospective elementary teachers on these four themes. As these themes are interactive with each other, it has been observed that the theme of value judgments has a strong effect on the other three themes.

##### 4.1. "Resources" Theme

One of the roles of teacher educators is that they are program/course designers. With this role, MTEs have advanced knowledge areas in more than one field they should have (Chauvot, 2009; Jaworski, 2008). Some of the areas of knowledge required to teach prospective teachers are strong mathematical knowledge (Chazan & Lewis, 2008; Superfine & Li, 2014), rich curriculum knowledge (Chauvot, 2008; Zbiek & Hirsch, 2008), knowledge of teaching strategies (Arbaugh, Nolan, Mark & Burns; 2012; Steele, 2008), knowledge of students' learning (Appova & Taylor, 2017); knowledge of tasks (Zaslavky, 2007), knowledge of goals (Superfine & Li, 2018), knowledge of teaching and learning (Heid & Lee, 2008), and knowledge of educational policy (Silver & Walker, 2008 ). It is an important issue how they obtain or develop the specialization process, that is, the necessary professional knowledge, in these categories of knowledge. As a matter of fact, the resources that the MTE apply form the basis of the perspectives they have in course designs and structures. Results of interviews with Esra educator, five different sub-theme regarding the source theme have been determined (Table-1).

Table 1: Sub-theme and quotations for the sources theme

Sub-theme	Description	Blockquote
<b>Professional Experience</b>	It is the academic and professional experiences of the teacher educator	<i>"In my mathematics method courses, I benefit from my previous years' experience during the delivery of the subjects and the presentation of the content of the course, I care about this."</i>
		<i>"Teacher candidates have many deficiencies in basic mathematics and even complaints. I say this based on experience in previous years. Within the scope of this course, I plan to eliminate these deficiencies. "</i>
<b>Collaboration with Members</b>	Teaching in other branches of the mathematics methods course are the decisions they make with teacher educators.	<i>"We made a change in mathematics teaching lessons this semester. We did not start from the first topic in the YÖK's (officially designed) topic ranking. We first started in the elementary school mathematics program. We switched places. We decided as a group. First of all, what is the program? recognize it, they have sent it down. What's on the schedule, what are the gains? We asked them to examine a textbook in this direction. We made such a change. "</i>
		<i>"When organizing the content of the mathematics teaching methods course, we pay attention to the group decisions first. We prepare common clusters of grades that I used in mathematics teaching lessons. "</i>
		<i>"We have a friend who gives each branch, but it's all we have in common. Sometimes we even go to class as partners. We</i>

		<i>deliberately coincide at the same time for 2 periods. We are always in dialogue, we are not disconnected at all, we know who works what. "</i>
<b>Study Area</b>	The source based on the field of research and/or the field employed by the teacher educator	<i>"Within the scope of this course, we attach importance to focusing on concept mistakes. My student studied misconceptions and our other teacher also had an article about step value. So, from our own academic studies. Again, within the scope of this course, we attach special importance to modeling because my student works. "</i>
		<i>"There are no representations here in the context of the skills I aim to develop in prospective teachers, and I emphasize this skill because both I and my student are working on it."</i>
<b>Academic Documents</b>	These are the books, articles and projects that the teacher educator follows in relation to mathematics teaching.	<i>"I give prospective teachers articles and theses about the course content. I use it in the development of the concepts I have given through these. In addition, there is Ziya Argün's book as a source in the preparation of the course, and we also benefit from it. In addition, the blue book prepared by Fatih Özmantar teachers (Mathematical Concepts with their Definitions and Historical Developments) is very good. "</i>
<b>Documents related to the curriculum</b>	These are the resources related to the curriculum that the teacher educator looks at.	<i>"I follow the primary school mathematics curriculum and primary school mathematics textbooks. I include it in my course content in the context of the topics here. "</i>

When Table 1 is examined, it is seen that the codes under the 'source' theme of the MTE play a role in the selection and presentation of the topics to be given in the mathematics method course. In addition, it has been observed that she applied to these sources during the course planning and implementation process. In this context, it is possible to say that the MTE attaches importance to theory and practice simultaneously when looking at the resources employed in the planning, design and implementation processes of the mathematics method course. In addition, it is seen that cooperation is taken into account while providing this unity. As a matter of fact, planning the content of the course with her fellows, taking into account the experiences of the past years and reading the literature were taken as indicators of this connection.

#### 4.2. "Value Judgments" Theme

Explaining the concept of value actually depends on one's belief in what value is. In other words, its definition is subjective (Southwell, 1995). Raths, Harmin, and Simon (1987) perceive value as that involves choosing, rewarding, and taking action, all of which are largely cognitive in nature. While Matthews (2001) defines values as the tools or foundations of behaviors, Halstead and Taylor (2000) refer to behavior as the principles that lead to behavior. Values are deep affective qualities that education aims to develop in mathematics teaching. Values are expressed as "beliefs in action" in one aspect (Bishop, FitzSimons, Seah & Clarkson, 1999). That is, one can have a few beliefs, but when faced with choices and in those choices, what one accepts becomes or reflects one's values. In this study, it is seen that the MTE conveys the existence of values taken into account in the design and application of mathematics methods courses to the teacher candidates. Results of interviews with the MTE, five different sub-theme regarding the value judgments theme have been determined (Table-2).

Table 2: Sub-theme and quotations for the value judgments theme

Value Judgments	Blockquote
<b>Designing and doing activities is a key point for teaching.</b>	<i>"Mathematics teaching methods courses aim to show prospective teachers how to teach mathematics to primary school students by running it on activities. Activities absolutely have to happen, absolutely. "</i>
<b>Content knowledge is important in mathematics teaching.</b>	<i>"It is important that mathematical concepts are used correctly. There is something about this. Sinan Olkun has a book. What is the rational number? what is the fraction? Is there a difference? We ask at the beginning of each lesson, and they know the difference. Children should definitely have field knowledge. In the meantime, we also teach mathematical errors in these lessons. We attach importance to this issue in relation to what mistakes are made. We attach importance to focusing on concept mistakes. It is important for prospective teachers to know these misconceptions about the subjects. "</i>
<b>Group (Coterie) meetings come as an effective priority in the structuring of the course.</b>	<i>After saying this interview, where we will try to understand your course design for your mathematics teaching methods course, the first sentence he says is as follows: We are conducting the lessons jointly. At the beginning of the semester, we talk about what we will do; our exams are common, our finals are common, what week the children will do, and our gains are common. They're all partners. There is no branch difference in us. We act by paying attention to the decisions of the group in the first place as to what will be done within the scope of this course and in what order we will go while presenting the content.</i>
<b>Previous experiences are important resources that shape the method course.</b>	<i>While deciding on the topics I have explained within the scope of this course, and we determine our experiences in previous years by benefiting from our field of study.</i>
<b>Attitudes and beliefs toward mathematics are important in effective teaching.</b>	<i>We say this at the beginning of the lesson because affective characteristics affect success by 25 percent. I am definitely talking about, what is anxiety, what is an attitude, I am talking about these in the first place. Because the fact that the counter audience has a positive attitude towards this course is a major factor in the effectiveness and quality of a mathematics course.</i>

Looking at the codes under the theme of value judgments, it is possible to see the existence of the perspective of the MTE on the method course. These judgments, which constitute the basic point of view, give us clues about what the MTE wants to bring to the fore in her practices. It is also seen that her belief in the experience she has in the background and the decisions she has taken with her colleagues while revealing the thoughts and practices that she wants to shine and find important. It has been seen that there are some value judgments that she attributes to the method course, not only in cognitive but also affective sense, and she also talks about value judgments about the effectiveness of content knowledge even though it is a teaching course.

#### 4.3. "Big Ideas" Theme

Big ideas in the field of mathematics are basic mathematics concepts that can be used continuously to teach various mathematics skills/processes. On the other hand, these ideas/thoughts provide reference starting points to students while learning new mathematics concepts/skills (Carnine, 1997 ; Kameenui & Carnine, 1998; Miller & Mercer, 1997; NCTM, 2000). Within the scope of this study, it is possible to mention the existence of big ideas that the MTE only attributes to the mathematics teaching methods course and targets within the scope of this course. These thoughts are the ideas that distinguish this course from other courses and that only teacher candidates can see and have within the scope of this course. Results of interviews with the MTE, four different sub-themes regarding the big ideas theme have been determined (Table-3).

Table 3: Sub-themes and quotations for the big ideas theme

Big Ideas	Blockquote
Concept Development	<p><i>after explaining a topic, making a concept map is the skill I want to gain in teacher titles at the end of this lesson. They don't know the nature of a mathematical concept.</i></p> <p><i>For example, we give an example case, they do not write a daily life problem related to dividing fractions, or they cannot do it. For example, they can not do it at all in the modeling of multiplication. For example, in noticing fraction errors, they do not know the fractional-rational number difference. The step value is very important, but if we do not emphasize it, they may have problems.</i></p>
Teaching Perspective	<p><i>Within the scope of this course, we attach great importance to problem solving. In addition, it is a problem-solving process as a teaching method-technique in the lessons we have done. When introducing the materials, for example, I give a problem. Let's use the tens of base blocks to make a tens change.</i></p> <p><i>As a resource, I try to benefit from those related to problem solving. There is one problem solving suitable for Timms. We are injured from there. This year, we are showing short and timss-style questions to teacher candidates. We wanted them to be informed. There is problem solving and there is a translation book. I look at them from time to time. We focus a lot on problem solving. It is like the main thing.</i></p>
Misconception	<p>Informing prospective teachers about the misconceptions in each topic in the content and in the catalog of the Council of Higher Education and at this point, improving the prospective teachers</p> <p><i>"... here we also give mistakes (the topics in the catalog of YÖK). We attach importance to what the mistakes are. We give importance to focusing on concept mistakes."</i></p> <p><i>"...for example, we definitely emphasize the types of errors in fractions."</i></p> <p><i>"... we benefit from the historical developments and misconceptions of the Blue Book Özmantar teachers regarding the misconceptions."</i></p>
Objectification	<p><i>... "I use materials for teaching mathematics and also have prospective teachers use them. There was even a postgraduate student with no thesis. He didn't know about this thing; he didn't know about fraction sets. He's a very old graduate. He didn't see it in college. We always have it in our lockers and we use it. For example, I am giving problems. Let's make a decimal change by using tens of base blocks. "</i></p> <p><i>"...Before doing micro teaching, I sometimes ask him/her to prepare a material and to determine a subject suitable for that material and to prepare a lesson plan and then show it to me and teach micro teaching accordingly. "</i></p>

Looking at the codes under the theme of big ideas, it is seen what ideas the teacher educator expects from the pre-service teachers and what they aim to achieve at the end of the course. At the end of this course, it is aimed for pre-service teachers to show a semantic development regarding mathematical concepts, to embody in teaching, to identify misconceptions and to have a perspective while teaching.

#### 4.4. "Professed Practices" Theme

These are the practices expressed by the MTE and/or made during the lesson obtained through inferences during the interview. Results of interviews with the MTE, five different sub-themes regarding the professed practices theme have been determined (Table-4).



Table 4: Sub-themes and quotations for the professed practices theme

Professed Practices	Blockquote
<b>Micro teaching</b>	<p>“...we do micro teaching. In fact, this semester, we did something, we did the lessons of two classes at the same time, we took two lessons at the same time, we gave feedback at the same time so that they could see more people. ”</p> <p>“... we pull in a real classroom environment and watch him here. It's like I turned around here and looked this way. First the group that makes the presentation, then the other teacher candidates, we are the last two teachers in the class, we interpret it. “</p>
<b>Material Utilization</b>	<p>...”I use materials for mathematics teaching and I also have it used by prospective teachers. There was even a non-thesis undergraduate student. He did not know this thing; he did not know the fraction sets. He graduated from the old school. He did not see it in the university. We always have it in our cabinets and we use it. For example, I give a problem. I say let's make a decimal change using tens of base blocks. ”</p> <p>“... I want them to prepare a material before doing micro-education and sometimes to determine a subject suitable for that material and to prepare a lesson plan and then show it to me and teach micro-education accordingly.”</p>
<b>Planning</b>	<p>We want prospective teachers to make lesson plans before micro teaching performances and before showing a material usage example. Regardless of my criteria in the evaluation, he/she will prepare a lesson plan in advance and show us this lesson plan. He/she needs to give us detailed information about what he/she will do. He/she can tell us after he/she passes the control. For example, when they do a small application, we say immediately prepare a lesson plan.</p>
<b>Doing an Task</b>	<p>We try to show it by working on the activities on how to teach mathematics. We definitely use the activity. For example, we show it and have it done in the classroom, like tangram in geometry. We also do geometry in folding etc.</p>
<b>Classroom Discussion Specific to the Concept</b>	<p>This level has a big advantage. They also get internships for what we tell them. And they say that when our teacher turns around and goes like this in class, our teacher did this, our teacher did this. At this point, I turn my observations into an opportunity and create an environment for discussion and expressing opinions in the classroom.</p> <p>The children who come to us have a good profile, but everything is tested with logic. When I ask classic questions, they get bad grades. Therefore, I create environments for them to learn conceptually.</p>

When we look at the subthemes, we see that it is consistent with the subthemes under the other 3 themes. As a matter of fact, it is stated that the MTE made activities in the practices she mentioned about the value judgment related to the activity design. As another example, she makes applications about using materials for the idea of concretization.

Within the scope of this study, it was investigated what are the elements that a MTE referred to in structuring and implementing mathematics methods course design, and whether there is a perspective. As a result of our analysis, it was concluded that the design of the mathematics methods course has a particular nature. It was concluded that there are four themes that make up this dynamic process and that these four themes interact among themselves.

## 5. Conclusion and Discussion

In this study, we tried to reveal how a MTE, as a course designer and practitioner, structures the mathematics method course. We found that the MTE has a dynamic in designing and implementing the teaching process. This has allowed us to focus on the local integration of a few constructs and assertions rather than networking theoretical perspectives.

As a result of the analysis of the data obtained from the interviews, it was seen that the MTE had a structure with 4 arguments in the background while designing and structuring mathematics method courses. From these

arguments, value judgments have a role in the design and structuring of the course as well as a decisive role in the emergence of the other three arguments. As a matter of fact, in the selection of the resources that the teacher educator refers to in the design and application of the course, values guide the teacher candidates in deciding what the ideas they will have within the scope of this course should be and which teaching practices they should be.

Dede (2013) concluded that decision-making is fundamentally influenced by values. Educational decision-making involves value judgments. In one aspect, these value judgments, which are expressed as the standards of the person, are related to what the person thinks to be right or wrong, good or bad, important or cannot be ignored, and consciously or unconsciously directs the practice of the person continuously (Carbone, 1987). Values in mathematics teaching are defined as deep affective qualities that are an indispensable part of the classroom environment (Bishop, 2002; Bishop, 2016; Bishop, FitzSimons, Seah and Clarkson, 1999; Dede, 2011; Seah & Wong, 2012). In this study, when the statements of the MTE regarding the design and structuring of the mathematics teaching methods course are examined, it is seen that the activity design (value-1), field knowledge (value-2), group meetings (value-3), previous experiences (value-4) and attitudes towards the course (value-5) have particular importance to her. Another argument that constitutes the nature of the design of the mathematics methods course by the MTE is the sources. It is possible to say that the values it has are also effective in the selection of these sources. As a matter of fact, the academic and professional experiences of the MTE and the fact that she says the decisions they made with the other instructors in the course as a source coincides with some of her values (value-3 and 4).

On the other hand, in the light of the interviews with the MTE, another argument that we suggest constitutes the nature of the mathematics methods course is the big ideas. These are the goals that the teacher educator expects and aims to develop in prospective teachers through mathematics teaching. It is seen that concept development, misconception, and concretization, which are among the great ideas of the teacher educator, are in parallel with some of the value judgments (value-1 & 2).

We can say that there is a similar effect in the mentioned applications that we obtained as a result of the interviews and presented as the last argument. Practices such as having activities and having class discussions about the concept again coincide with the values owned.

Apart from the above, we see that these four arguments have an interaction within themselves. For example, it is found that the idea of materialization overlaps with the application of material use and the idea of concept development overlaps with the practice of working with misconceptions.

Teachers' beliefs influence their perceptions, and value judgments, and this in turn affects the effectiveness of their practice in the classroom, either directly (Jones & Leagon, 2014) or through an indirect connection (Hutner & Markman, 2016). Therefore, it is emphasized that values are extremely important in the content and process of teaching (Gonzalez Thompson, 1984, pp. 105-127; Cohen, 1990; Thompson, 1992). For example, Wilkins (2008) found that value judgments regarding the effectiveness of questioning for 481 American primary school teachers were the strongest predictor of questioning teaching practices. Using structural equation modeling, Brown, Harris, and Harnett (2012) found that teacher feedback perceptions of primary and secondary school teachers were associated with feedback practices. In the light of all these, it is possible to say that teacher educators absorb a number of hidden values they have in their choices about resources, ideas and practices that will guide prospective teachers in teaching and learning certain mathematics content.

This study enabled us to see the existence of a perspective in the design and structuring of mathematics methods courses of MTE. It is important to know the values of the MTE, the resources he/she has applied, the goals related to the big ideas and the teaching practices he/she has made during the lesson in terms of seeing the character of the mathematics teaching that the teacher candidates have received. For example, if the teacher educator has a theoretical perspective and cares about the resources and practices he/she applies accordingly, he/she is structuring the teaching process with a theoretical perspective. On the other hand, the teacher educator who sees the group decisions as a value judgment is structuring the process with a perspective that cares about

implementing a common decision. It is possible to say that this situation gives a message about what mathematics teaching will look like in their classrooms.

Issues such as what should be taught, what should be polished, and what should be ignored in the method course, which has become an important point for teacher candidates, and whether there is a difference in the teaching practices of teacher candidates who take lessons from teacher educators with different perspectives in mathematics classes, we feel, warrant further research attention.

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# Investigation of Sports Sciences Faculty Students' Motivation for Participation in Physical Activity in Terms of Various Variables

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## Abstract

This research was carried out in order to examine the motivation of the students of the faculty of sports sciences for participation in physical activity in terms of various variables. In this context, the general survey model, which is consistent with the main purpose of the study was used in this quantitative study. The sample of the study consists of a total of 479 students, of which 214 are female and 265 are male. In the creation of the sample, it was benefited from convenience sampling method which is one of the non-probabilistic sampling approaches. Questionnaire form was used as data collection tool and this form consists of two parts. In the first part of the questionnaire, there is the "Personal Information Form," and in the second part, there is the "Motivation Scale for Participation in Physical Activity." The illustrative statistics of the raw data obtained through this form were firstly calculated by considering the data type. Then, the reliability of the scale dimensions related to the obtained data was investigated and the difference and correlation tests were used in statistical evaluations. Accordingly, significant differences were found in the variables of gender, mother education level and active sports status. However, there was no significant difference found in the scale dimensions within the scope of the father's education level, the place of residence with the family, the licensed sportsman status and the national sportsman status. In addition to this, it was observed that there were negative and low-level significant correlations between the age variable and individual causes and the motivation for participation in physical activity (total) dimensions. On the other hand, no significant correlation was found between personal income level and family income level variables and scale dimensions. As a result, the motivation of the students of the faculty of sports sciences for participation in physical activity within the scope of various variables is described as it exists.

**Keywords:** Sport Sciences, Student, Physical Activity, Motivation, Motivation for Participation in Physical Activity

## 1. Introduction

Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure (Caspersen, Powell & Christenson, 1985). According to another definition, any movement of the body

that results from skeletal muscle contraction and increases the total body energy expenditure above the resting state is accepted as physical activity (Yuede et al., 2018). In this context, various activities such as walking, running, mowing the lawn, gardening can be considered as physical activities. In addition, the physical activity intensity spectrum can be expressed as light-intensity physical activity (<3 MET), moderate-intensity physical activity (3-6 MET), and vigorous intensity physical activity (>6 MET) (Pate et al., 1995). In this respect, the correlation between a sedentary life and non-communicable diseases is considered to be important.

Non-communicable chronic diseases such as cardiovascular disease, cancer, diabetes and chronic respiratory disease are now considered a major public health problem. These diseases are the leading causes of death worldwide and account for more than 70% of deaths worldwide (WHO, 2020). In this context, it is thought that psychologic negativities are important as well as physiological negativities (Kim, 2022). In addition to their negative effects on quality of life, these diseases reduce productivity and cause workforce losses (Malta et al., 2020). In children and adolescents, these diseases negatively affect school readiness by creating negativities in various areas (social, emotional, language, cognitive and physical) (Bell et al., 2016). Therefore, students affected by these diseases are at higher risk of facing poor educational outcomes (Barnett et al., 2018). In addition, physical activities are one of the activities that contribute to the improvement of the health status of the individual by promoting a healthy lifestyle, disease prevention, personal satisfaction and self-actualization (Mehri et al., 2016). In this context, increasing physical activity and reducing sedentary life are important behavioral changes to improve lifelong health (Piercy et al., 2018). When these behavioral changes are considered on the axis of lifestyle, this is a kind of a type of living style that can be measured as healthy or unhealthy according to the personal behavior preferences of individuals (Almutairi et al., 2018). A health-promoting lifestyle includes self-directed behaviors that are an integral part of an individual's healthy lifestyle and aim to protect and improve the individual's health and well-being (Polat et al., 2016). In this respect, it can be said that a lifestyle that includes regular physical activities can have positive effects on both physiologic and psychological states (Kim, 2022).

When the explanations are considered in the context of individuals studying in sports sciences, it is thought that physical activities have an important place in both in-class and extra-curricular activities. In this respect, it is important to have information about the level of motivation of students in today's sports sciences for participation in physical activity and the variables that affect this motivation. In this context, when the relevant literature is examined, it is seen that there are a limited number of studies for students in sports sciences in Turkey (see Karaca, 2020; Ceylan et al., 2021). However, this research was carried out with expanded variables and data set in order to reach detailed results. Therefore, it is thought that the results of the research will contribute to filling the gap in the relevant literature. In the study, it was aimed to examine the motivation of the students of the faculty of sports sciences for participation in physical activity in terms of various variables.

## **2. Method**

### *2.1 Research Model*

In general, it is aimed to describe the existing situation related to the subject of the study by photographing in survey research (Buyukozturk et al., 2020). Therefore, this quantitative research was designed with the general survey model consistent with the main purpose.

### *2.2 Research Group*

Participants were selected from a total of 1135 students, 354 female and 781 male, at the Faculty of Sports Sciences of Bartın University. In this context, the sample of the research consists of a total of 479 students, of which 214 are female and 265 are male. In this framework, the sample was created using the convenience sampling method. Therefore, it is understood that the acceptable sample size for the research population has been reached (see Sekaran & Bougie, 2016).

### *2.3 Data Collection Tools*

The questionnaire form, which was created by considering the main purpose of the research, was applied face to face to the participants in the sample, on a voluntary basis. During the application phase of the questionnaire, necessary explanations were given to the participants and accordingly the participants were ensured to answer the form correctly. This questionnaire consists of two parts, the first part includes the “Personal Information Form” and the second part includes the “Motivation Scale for Participation in Physical Activity.”

### 2.3.1 Personal Information Form

In the Personal information form, there are expressions created to reach information such as status, participants' gender, age, personal income level, family income level (excluding personal income), mother's education level, father's education level, place of residence with the family, active sports status, licensed sportsman status and national sportsmanship.

### 2.3.2 Motivation Scale for Participation in Physical Activity

Tekkursun-Demir and Cicioglu (2018) developed the “Motivation Scale for Participation in Physical Activity” in order to measure the motivation of participants for participation in physical activity. Data on the development process of the scale were obtained from 308 high school students studying at Ödemiş Anatolian High School and Ödemiş Chamber of Commerce Anatolian High School in Ödemiş district of İzmir province in Turkey in the 2016-2017 academic year. The scale consists of 16 items and is in five-point Likert type. It consists of three sub-dimensions: individual causes, environmental causes and non-casuality. The validity of the scale was evaluated with exploratory and confirmatory factor analyses. As a result of the exploratory factor analysis, the scale form explains 54.69% of the total variance. As a result of the DFA, it was seen that the 3-factor structure of this 16-item scale was confirmed. In addition, internal consistency (Cronbach's Alpha) and Spearman Brown split-half reliability coefficients were used to determine the reliability of the scale. Cronbach's Alpha values of the dimensions of the scale range from 0.82 to 0.89. Spearman Brown two-half reliability coefficients take values between 0.75 and 0.82. As a result, it was understood that the scale is a reliable and valid measurement tool (Tekkursun-Demir & Cicioglu, 2018).

## 2.4 Data Analysis

IBM SPSS version 23.0 was used for data analysis. It was decided whether the data exhibited a normal distribution, by examining the skewness and kurtosis values. In this direction, descriptive statistics were calculated by taking into account the type of data obtained by using the questionnaire. In addition, t-Test and One Way ANOVA were used for statistical calculations of the obtained data, and Spearman Rank Correlation Analysis was used for correlation evaluations. In statistical evaluations, the level of relevance was determined as 0.05.

## 3. Findings

In this part of the research, the findings obtained as a result of the analysis of the relevant data were presented and interpreted in the form of tables.

Table 1: Frequency and Percentages of Variables

Variable	Group	f	%
Gender	Female	214	44,7
	Male	265	55,3
Actively Doing Sports	Yes	280	58,5
	No	199	41,5
Licensed Athletic Status	Yes	260	54,3
	No	219	45,7
National Sportsman Status	Yes	59	12,3
	No	420	87,7
Residence place with Family	Village	62	12,9
	Town	17	3,5
	County Town	176	36,7
	City Center	224	46,8



<b>Mother Education Level</b>	Not Literate	75	15,7
	Literate	23	4,8
	Primary School	202	42,2
	Secondary School	80	16,7
	High School	82	17,1
	University	17	3,5
<b>Father Education Level</b>	Not Literate	18	3,8
	Literate	21	4,4
	Primary School	162	33,8
	Secondary School	106	22,1
	High School	132	27,6
	University	40	8,4
<b>Total</b>	<b>479</b>	<b>100,0</b>	

When Table 1 is examined, it is seen that the number of men regarding the participants is higher than the number of women. In addition, it has been determined that the number of those who do sports actively is higher than the number of those who do not and the number of those who are licensed athletes is higher than the number of those who do not. However, the number of national athletes was lower than the number of non-athletes. In addition, it has been found that the majority of the participants resided in the city center with their families and the highest number of participants was in the primary school group in terms of parental education level.

Table 2: Age, Descriptive Statistics of Personal Income Level and Family Income Level Variables

Variable	n	Mean	Median	Standard Deviation	Minimum	Maximum	Skew	Kurtosis
Age	473	21,9	22	2,864	17	39	2,111	8,058
Personal Income Level (TL)	375	1211,58	700	1281,397	50	8000	2,989	10,189
Family Income Level (Excluding Personal Income - TL)	452	3492,85	3000	2264,73	200	25000	3,204	21,139

When Table 2 is examined, it is seen that the mean age variable of the participants is 21.9 and the standard deviation is 2.864, mean of personal income level variable is 1211.58 and standard deviation is 1281.397, the average of the family income level (excluding personal income) variable is 3492.85 and its standard deviation is 2264.73. In addition, it was assumed that these variables do not exhibit normal distribution in terms of skewness and kurtosis values (see George & Mallery, 2010).

Table 3: Reliability Analysis Results of Scale Sub-Dimensions

Dimensions	Cronbach's Alpha	Number of Items
Individual Causes	,736	6
Environmental Causes	,736	6
Non- casualty	,610	4
Motivation for Participation in Physical Activity (Total)	,772	16

According to Table 3, in terms of internal consistency coefficients (Cronbach's alpha) calculated within the scope of the research, individual causes ( $\alpha=0.736$ ), environmental causes ( $\alpha=0.736$ ), non-causality ( $\alpha=0.610$ ), and motivation for participation in physical activity (total) ( $\alpha=0.772$ ) dimensions were found to be reliable.

Table 4: Descriptive Statistics of Scale Dimensions

Dimensions	n	Mean	Median	Std. Deviation	Minimum	Maximum	Skew	Kurtosis
Individual Causes	479	4,6566	4,8333	0,43347	3	5	-1,439	1,919
Environmental Causes	479	4,0264	4,1667	0,75972	1,83	5	-0,585	-0,291
Non- casualty	479	1,3267	1	0,47669	1	3	1,583	1,906
Motivation for Participation in Physical Activity (Total)	479	4,4245	4,5	0,42263	2,94	5	-0,625	-0,02

According to Table 4, the mean score of the individual causes sub-dimension was 4.6566 and the standard deviation was 0.43347; the mean score of the environmental causes sub-dimension was 4.0264 and the standard deviation was 0.75972; the mean score of the sub-dimension of non-casuality was 1.3267 and the standard deviation was 0.47669; The mean score of the motivation for participation in physical activity (total) dimension was found to be 4.4245 and the standard deviation was 0.42263. In addition, it can be said that the individual causes of the participants in the context of the scale and their motivation for participation in physical activity are at a very high level, as well as a high level of environmental causes. However, it can be stated that the level of non-casuality is very low. In addition, in terms of skewness and kurtosis values, it is assumed that the scale dimensions exhibit normal distribution (see George & Mallery, 2010).

Table 5: Frequency and Percentages of Participants' Levels of Motivation for Participation in Physical Activity

Level	f	%
Too low	-	-
Low	-	-
Middle	1	,2
High	92	19,2
Too high	386	80,6
<b>Total</b>	<b>479</b>	<b>100,0</b>

When Table 5 is examined, it is seen that the majority of the participants (80.6%) have a very high level of motivation for participation in physical activity, while there are no participants in the too low and low groups.

Table 6: t-Test Results According to Gender Variable

Dimensions	Gender	n	Mean	Std. Deviation	df	t	p
Individual Causes	Female	214	4,6815	,45181	477	1,130	,259
	Male	265	4,6365	,41784			
Environmental Causes	Female	214	4,0569	,78574	477	,787	,432
	Male	265	4,0019	,73862			
Non-casuality	Female	214	1,2699	,43188	477	-2,357*	,019
	Male	265	1,3726	,50617			
Motivation for Participation in Physical Activity (Total)	Female	214	4,4594	,42736	477	1,629	,104
	Male	265	4,3962	,41745			

\*p<0,05

When Table 6 is examined, it is seen that there is a statistically significant difference in favor of men in the sub-dimension of non-casuality according to the gender variable ( $t_{(477)}=-2.357$ ;  $p<0.05$ ). On the other hand, it was determined that there was no statistically significant difference in the mean scores of individual causes, environmental causes and motivation for participation in physical activity (total) dimensions according to the gender variable ( $p>0.05$ ).

Table 7: Results of Correlation Analysis Between Age, Personal Income Level and Family Income Level Variables and Scale Dimensions

Variables	Individual Causes	Environmental Causes	Non-casuality	Motivation for Participation in Physical Activity (Total)
Age	r	-,004	-,134*	-,091*
	p	,933	,004	,049
	n	473	473	473
Personal Income Level	r	,016	-,043	-,034
	p	,761	,406	,643
	n	375	375	375
Family Income Level (Excluding Personal Income)	r	-,059	-,081	-,082
	p	,214	,084	,583
	n	452	452	452

\*p<0,05

When Table 7 is examined, it is seen that there are negative and low-level statistically significant correlations between the age variable and individual causes ( $r=-0.134$ ) and motivation for participation in physical activity (total) ( $r=-0.091$ ) ( $p<0.05$ ). However, no statistically significant correlation was found between the dimensions of

the motivation for participation in physical activity scale and the variables of personal income level and family income level (excluding personal income) ( $p>0.05$ ).

Table 8: ANOVA Results According to Mother Education Level Variable

Dimensions	Group	Mean	Std. Deviation	df	F	p	Significant Difference
Individual Causes	Not Literate (1)	4,7356	,44780	478	,925	,464	---
	Literate (2)	4,5725	,50957				
	Primary School(3)	4,6271	,44928				
	Secondary School (4)	4,6729	,44091				
	High School (5)	4,6545	,36738				
	University (6)	4,7059	,30917				
Environmental Causes	Not Literate (1)	4,0400	,73819	478	3,049*	,010	1>6
	Literate (2)	4,0652	,72777				3>6
	Primary School (3)	4,0924	,74590				4>6
	Secondary School (4)	4,0667	,72168				
	High School (5)	3,9329	,78779				
	University (6)	3,3922	,86791				
Non-casuality	Not Literate (1)	1,3033	,43553	478	,439	,821	---
	Literate (2)	1,3696	,51051				
	Primary School (3)	1,3280	,48847				
	Secondary School (4)	1,2781	,42096				
	High School (5)	1,3628	,51990				
	University (6)	1,4118	,52990				
Motivation for Participation in Physical Activity (Total)	Not Literate (1)	4,4650	,38558	478	1,595	,160	---
	Literate (2)	4,3967	,49090				
	Primary School (3)	4,4378	,42721				
	Secondary School (4)	4,4578	,40477				
	High School (5)	4,3796	,43599				
	University (6)	4,1838	,40593				

\* $p<0,05$

When Table 8 is examined, it is seen that there is a statistically significant difference within the framework of the environmental causes sub-dimension according to the mother's education level variable ( $F_{(478)}=3,049$ ;  $p<0.05$ ). These significant differences were between "Not Literate" and "University," "Primary School" and "University," and "Secondary School" and "University", and all of these differences were found to be against the university group. However, in the context of the mother's education level variable, it is seen that there is no statistically significant difference in the scores of individual causes, non-casuality and motivation for participation in physical activity (total) dimensions ( $p>0.05$ ).

Table 9: ANOVA Results According to Father Education Level Variable

Dimensions	Group	Mean	Std. Deviation	df	F	p	Significant Difference
Individual Causes	Not Literate (1)	4,6296	,55881	478	,693	,629	---
	Literate (2)	4,6667	,51099				
	Primary School (3)	4,6944	,41506				
	Secondary School (4)	4,6698	,38763				
	High School (5)	4,6263	,46649				
	University (6)	4,5750	,41164				
Environmental Causes	Not Literate (1)	4,0463	,95624	478	,791	,557	---
	Literate (2)	4,1667	,50553				
	Primary School (3)	4,0710	,75634				
	Secondary School (4)	4,0346	,75302				
	High School (5)	3,9975	,76056				
	University (6)	3,8375	,80904				
Non-casuality	Not Literate (1)	1,2639	,46552	478	2,311*	,043	There was no statistically significant difference between the groups after the Post Hoc Test (Hochberg GT2).
	Literate (2)	1,5000	,54199				
	Primary School (3)	1,2670	,41435				
	Secondary School (4)	1,3373	,50124				
	High School (5)	1,3182	,48655				
	University (6)	1,5063	,54151				
Motivation for Participation in Physical Activity (Total)	Not Literate (1)	4,4375	,53379	478	1,417	,217	---
	Literate (2)	4,4375	,38931				
	Primary School (3)	4,4703	,42029				
	Secondary School (4)	4,4298	,41910				
	High School (5)	4,4044	,41230				
	University (6)	4,2781	,42648				

\* $p<0,05$

When Table 9 is examined, it is seen that there is no statistically significant difference between the groups after the “Hochberg’s GT2” post hoc test, although it was determined that there was a statistically significant difference within the framework of the sub-dimension of non-casuality according to the father education level variable. Therefore, it was found that there was no statistically significant difference in terms of the scores of the dimensions of the motivation for participation in physical activity in the context of the father’s education level variable ( $p>0.05$ ).

Table 10: ANOVA Results According to the Variable of Residence Place with the Family

Dimensions	Group	Mean	Std. Deviation	df	F	p	Significant Difference
Individual Causes	Village	4,5430	,50762	478	2,725*	,044	There was no statistically significant difference between the groups after the Post Hoc Test (Hochberg GT2).
	Town	4,4902	,48402				
	County Town	4,6856	,41666				
	City Center	4,6778	,41521				
Environmental Causes	Village	3,9677	,85509	478	,458	,712	---
	Town	3,8824	,73069				
	County Town	4,0625	,74506				
	City Town	4,0253	,74810				
Non-casuality	Village	1,4597	,54734	478	2,056	,105	---
	Town	1,3824	,45171				
	County Town	1,3139	,46194				
	City Center	1,2958	,46560				
Motivation for Participation in Physical Activity (Total)	Village	4,3266	,48537	478	2,007	,112	---
	Town	4,2941	,36894				
	County Town	4,4521	,41735				
	City Center	4,4397	,40887				

\* $p<0,05$ 

When Table 10 is examined, it is seen that there is no statistically significant difference between the groups after the “Hochberg’s GT2” post hoc test, although it was determined that there was a statistically significant difference in the individual causes sub-dimension according to the variable of residence place with the family. Therefore, it was found that there was no statistically significant difference in terms of the scores of the scale of motivation for participation in physical activity in the context of the variable of residence with the family ( $p>0.05$ ).

Table 11: t-Test Results According to Actively Doing Sports Variable

Dimensions	Actively Doing Sports	n	Mean	Std. Deviation	df	t	p
Individual Causes	Yes	280	4,6994	,41360	477	2,580*	,010
	No	199	4,5963	,45421			
Environmental Causes	Yes	280	4,0637	,72064	477	1,274	,203
	No	199	3,9740	,81048			
Non-casuality	Yes	280	1,3071	,48113	477	-1,066	,287
	No	199	1,3543	,47019			
Motivation for Participation in Physical Activity (Total)	Yes	280	4,4594	,40776	477	2,153*	,032
	No	199	4,3753	,43905			

\* $p<0,05$ 

When Table 11 is examined, it is seen that there are statistically significant differences in favor of those who do sports actively in the dimensions of individual causes ( $t_{(477)}=2,580$ ) and motivation for participation in physical activity (total) ( $t_{(477)}=2,153$ ) according to the variable of doing sports actively ( $p<0.05$ ). On the other hand, it was found that there was no statistically significant difference in terms of the mean scores of the environmental causes and irrationality sub-dimensions according to the variable of actively doing sports ( $p>0.05$ ).

Table 12: t-Test Results According to Licensed Athlete Status Variable

Dimensions	Licensed Athlete Status	n	Mean	Std. Deviation	df	t	p
Individual Causes	Yes	260	4,6827	,41277	477	1,438	,151
	No	219	4,6256	,45583			
Environmental Causes	Yes	260	4,0660	,74003	477	1,243	,214
	No	219	3,9795	,78155			
Non-casuality	Yes	260	1,3346	,48635	477	,395	,693
	No	219	1,3174	,46590			
Motivation for Participation in Physical Activity (Total)	Yes	260	4,4471	,40560	477	1,280	,201
	No	219	4,3975	,44142			

When Table 12 is examined, it has been determined that there is no statistically significant difference in terms of the mean scores of the dimensions of the motivation for participation in physical activity according to the variable of licensed athlete status ( $p>0.05$ ).

Table 13: t-Test Results According to Variable of National Athletic Status

Dimensions	National Athletic Status	n	Mean	Std. Deviation	df	t	p																																
Individual Causes	Yes	59	4,5734	,48962	477	-1,576	,116																																
	No	420	4,6683	,42433				Environmental Causes	Yes	59	3,9831	,71699	477	-,468	,640	No	420	4,0325	,76615	Non-casuality	Yes	59	1,2881	,50175	477	-,664	,507	No	420	1,3321	,47344	Motivation for Participation in Physical Activity (Total)	Yes	59	4,3867	,44837	477	-,733	,464
Environmental Causes	Yes	59	3,9831	,71699	477	-,468	,640																																
	No	420	4,0325	,76615				Non-casuality	Yes	59	1,2881	,50175	477	-,664	,507	No	420	1,3321	,47344	Motivation for Participation in Physical Activity (Total)	Yes	59	4,3867	,44837	477	-,733	,464	No	420	4,4298	,41918								
Non-casuality	Yes	59	1,2881	,50175	477	-,664	,507																																
	No	420	1,3321	,47344				Motivation for Participation in Physical Activity (Total)	Yes	59	4,3867	,44837	477	-,733	,464	No	420	4,4298	,41918																				
Motivation for Participation in Physical Activity (Total)	Yes	59	4,3867	,44837	477	-,733	,464																																
	No	420	4,4298	,41918																																			

When Table 13 is examined, it has been determined that there is no statistically significant difference in terms of the mean scores of the dimensions of the motivation for participation in physical activity according to the variable of national athletic status ( $p>0.05$ ).

#### 4. Discussion and Conclusion

This study was carried out in order to examine the motivation of participating in physical activity of the students of the faculty of sports sciences within the framework of the research group in terms of various variables. In this direction, a questionnaire form was created in accordance with the main purpose of the study and the data obtained as a result of the sampling application of this questionnaire form were transformed into findings by applying different statistical analyzes. In this direction, a questionnaire form was created in accordance with the main purpose of the study and the data obtained as a result of the sampling application of this questionnaire form were transformed into findings by applying different statistical analyzes. In this framework, the results obtained on the basis of the findings were detailed by discussing in line with the relevant literature. In this respect, the individual causes of the participants in the context of the scale and their motivation for participation in physical activity are very high; It can be said that environmental causes are at a high level. However, it can be stated that the level of non-casuality is very low.

It was found that there was a significant difference in favor of men in the sub-dimension of non-casuality according to the gender variable of the participants. In other words, it has been determined that men's uncertainty about why they will do physical activity or what will happen as a result is higher than women's. This result shows some amount of consistency with the results of the studies made by Guvendi and Serin (2019), Celik (2020), Ceylan et al. (2021), and Altay and Koc (2022). However, it does not coincide with the findings of the study by Gumus and Koyuncu (2022). It is thought that this situation is due to the different educational characteristics of the participants.

It was found that there were negative and low-level significant correlations between the age variable and individual causes and the motivation for participation in physical activity (total) dimensions. In other words, as the age of the participants increases, individual causes and motivation for participation in physical activity (total) levels decrease. This result is consistent with the result of the study by Celik (2020). In addition, studies carried out by Guvendi and Serin (2019) and Ceylan et al. (2021), partially consistent with the findings of the studies.

No significant correlation was found between the variables of personal income level and family income level (excluding personal income) and the dimensions of the motivation for participation in physical activity scale. The result in the context of family income level does not coincide with the findings of the study carried out by Ceylan et al. (2021). On the other hand, the result in the context of personal income level is consistent with the findings of the study by Kucuk Kilic (2020).

It was found that there was a significant difference only within the scope of environmental causes sub-dimension according to the mother's education level variable. These significant differences were between "Not Literate" and

“University”, “Primary School” and “University”, and “Secondary School” and “University”, and all of these differences were found to be against the university group. In other words, the environmental cause scores of the participants whose mothers were university educated are lower than the scores of those who are illiterate, primary or secondary school. However, it was observed that there was no significant difference in terms of the scores of the scale of motivation for participation in physical activity in the context of the father’s education level variable. The result reached in the context of maternal education level is consistent with the result of the study conducted by Altay and Koc (2022). It is also partially consistent with the findings of the study by Kucuk Kılıc (2020). In addition, the result reached in the context of father’s education level is consistent with the findings of the studies conducted by Kucuk Kılıc (2020) and Altay and Koc (2022).

It was found that there was no significant difference in terms of the scores of the motivation scale dimensions of participation in physical activity in the context of the variable of residence with the family. This result is consistent with the result of the study by Ceylan et al. (2021).

It has been found that there are significant differences in favor of those who do sports actively in the dimensions of individual causes and motivation for participation in physical activity (total) according to the variable of actively doing sports. In other words, the individual causes and motivation for participation in physical activity (total) scores of those who do sports actively are higher than those who do not actively do sports. This result is partially consistent with the finding of the study by Karaca (2020). On the other hand, according to this variable, it was determined that there was no significant difference in the mean scores of the sub-dimensions of environmental causes and irrationality. In addition, it was found that there was no significant difference in terms of the mean scores of the dimensions of the motivation for participation in physical activity according to the licensed sportsman status and national athlete status variables.

In a study conducted by Arslan, Daskapan and Cakir (2016) to determine the physical activity levels of university students, it was found that 8.5% of female students and 28.1% of male students did enough physical activity. In a meta-analysis study by Plotnikoff et al. (2015) examining the effectiveness of interventions aimed at improving physical activity and nutrition-related behaviors in overweight university students, it was determined that interventions for life behaviors had positive results. In this context, it is thought that the concept of motivation has an important role in the positive results of interventions for life behaviors. In this direction, motivation; it is stated that it is a phenomenon that includes desires, needs, demands and impulses (Cuceloglu, 1996). In this context, it is thought that the concept of motivation has an important role in the positive results of interventions for life behaviors.

In this direction, motivation; it is stated that it is a phenomenon that includes desires, needs, demands and impulses (Cuceloglu, 1996). The individual’s motivation; it can be connected to internal processes such as personal needs, pleasure and curiosities of the hobbies it is related to. In addition, factors outside the individual such as reward, pressure, punishment can motivate the individual (Tekkursun-Demir & Cicioglu, 2018). In this context, individuals can be more easily motivated for different reasons (internal-external) (Ilhan, 2009). Therefore, considering that many factors can be effective on the motivation for participation in physical activity, it is understood that the results obtained within the scope of the research are probable.

As a result, in terms of various variables, the motivation of the students of the faculty of sports sciences to participate in physical activity is described as it exists. In this context, new information has been obtained that will contribute to the literature with the research findings. However, the findings of the study can be diversified by conducting qualitative, experimental and/or mixed studies on the research group with similar characteristics. Within the scope, different results can be obtained that can contribute to the literature.

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# Young Learners Preferences on Using Games and Songs for Learning English in EFL Context

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## Abstract

This study investigated young learner preference for using games and songs to learn English in the EFL context. Many ways have been found to assist young learners in acquiring English as a Foreign Language. The students' perceptions were taken from the questionnaire. The result showed that most students liked it better when the teachers used games and songs in teaching English in an EFL context. It is suggested that both games and songs can be utilized in teaching English to young learners in the EFL context.

**Keywords:** Young Learners, Games, Learning English, EFL Context

## 1. Introduction

The studies of using games and songs have invited many researchers to discover the contribution in teaching English to young learners, the so-called EYL (English for young learners) in the EFL context. First, previous studies have examined the efficacy of games in learning English for young learners in the EFL context Ahmed et al., 2022; Amal Shehadeh AlNatour & Dima Hijazi, 2018; Behnamnia et al., 2020; Ben El Moudden, 2021; Dashtestani, 2022; Fu et al., 2019; Hao et al., 2021; Kumar et al., 2022; Lin et al., 2020; Patra et al., 2022).

The efficacy of games occurs for some skills of language. Games bring a positive influence on vocabulary (Ben El Moudden, 2021; Dashtestani, 2022; Hao et al., 2021; Patra et al., 2022), grammar (Lin et al., 2020), writing (Fu et al., 2019; Dashtestani, 2022), pronunciation (Dashtestani, 2022), listening (Dashtestani, 2022; Kumar et al., 2022), speaking (Dashtestani, 2022), problem-solving (Ben El Moudden, 2021; Dashtestani, 2022), motivation (Dashtestani, 2022; Ahmed et al., 2022). These findings indicated that games helped learn English.

The previous research involved elementary school students called English for young learners (Behnamnia et al., 2020; Patra et al., 2022; Kumar et al., 2022). Although recent studies showed that students had shown positive responses for using the game in learning English, those studies applied varied research designs, applying

questionnaires (Ben El Moudden, 2021), interviews (Dashtestani, 2022), surveys (Dashtestani, 2022), case study (Behnamnia et al., 2020), experimental ones (Amal Shehadeh AlNatour & Dima Hijazi, 2018; Fu et al., 2019; Hao et al., 2021; Lin et al., 2020; Patra et al., 2022)

Second, previous studies have investigated the efficacy of songs in learning English for young learners in an EFL context (Al-efeshat & Baniabdelrahman, 2020; Nguyen & Nguyen, 2020), in ESL (Al-Smadi, 2020; Singh, 2020). Most those research examined the vocabulary skill (Agaj Avdiu, 2021; Al-efeshat & Baniabdelrahman, 2020; Islami, 2019; Lelawati et al., 2018; Nguyen & Nguyen, 2020; Putri et al., 2022; Rohmah & Indah, 2021; Sanjaya et al., 2022; Triwardani & Yuningsih, 2022; Yeni & Amelia, 2020), speaking (Yeni & Amelia, 2020; 2020; Putri et al., 2022), writing (Yeni & Amelia, 2020), reading (Yeni & Amelia, 2020), pronunciation (Agaj Avdiu, 2021; Al-Smadi, 2020; Putri et al., 2022; Yeni & Amelia, 2020), grammar (Al-Smadi, 2020; Yeni & Amelia, 2020), motivation (Al-Smadi, 2020; Ernawati et al., 2019; Singh, 2020), positive responds (Ernawati et al., 2019; Islami, 2019)

Song contributed significantly, especially to vocabulary mastery for children (Sevik, 2014). Songs used as learning media can provide joy in learning English for children (Shen, 2009; Hadian, 2015). Song help children easily obtain and remember new English vocabulary (Kuśnierek, 2016). The song is used as learning media to learn English vocabulary (Sukirmiyadi, 2017; Hadian, 2017; Almutairiri, 2017; Al-Azri, 2017). Some of the previous studies also showed that song contributed significantly, especially to vocabulary mastery for children (Sukirmiyadi, 2017; Almutairiri, 2017; Ma'rifat, 2017; Sevik, 2014).

Previous researches also proved the effectiveness and efficiency of using song as learning (Sukirmiyadi, 2017; Shen, 2017). It can be said that song helps educators teach children English vocabulary. The effectiveness and efficiency of song influence listening ability (Almutairiri, 2017). Song used as learning media can provide joy in learning English for children (Ma'rifat, 2017; Al-Azri, 2017; Shen, 2009; Hadian, 2015), which means that the findings of this current study are in line with those of previous research. This finding was supported by Ernawati et al. (2019). Children do like song as learning media. Regarding language acquisition, songs help children obtain and remember new English vocabulary easily (Kuśnierek, 2016). Prior studies have proven that songs used as learning media give children good pronunciation in the vocabulary they are learning (Al-Azri, 2017). The results of this research focus on the senses of sight, hearing, and correct pronunciation and the focus is not on the writing and spelling of the words being learnt (Almutairiri, 2017; Hadian 2017).

Few studies are concerned with investigating English vocabulary at the elementary level using games (Gutierrez Arvizu et al., 2020; Song & Lee, 2019; Soria et al., 2020). No matter their research design, they claimed that games were very useful in improving vocabulary. This research focused on students' preference for young Learners in EFL Context. This study aimed to find the preference of young learners of teachers' speaking English, using games and songs while learning in an EFL context.

## 2. Method

This research uses a survey method to study young learners' preference for learning English in elementary school. We selected a research sample using a cluster method. There are two clusters, namely public elementary schools and private elementary schools. Questionnaire was applied to examine students' preference on learning English. The questionnaire was addressed to the students in the Indonesian language to obtain an understanding from the students. The questionnaires in three questions asked about the frequency of using song and games in English learning. This study involved six elementary schools where the participant was the students and the teachers or English teachers of grade 4<sup>th</sup>. One school were private school, and five public elementary school. There were 569 students taking part in this study.

## 3. Results

Table 1 reports the results of question 1, the way of teaching used by the teachers, showing the percentage of teachers who were speaking English whilst teaching was 91%, using English songs was 56%, using games was

63%. It showed teachers' speaking (91%) when teaching helped and improve the students' listening ability (50%) in Table 1. This was also supported by the use of English songs by teachers (56%). In short, students' ability of listening was improved by the teachers' speaking English and the use of songs English.

Table 1: Survey items on students' perception of methods used by the teachers

My teachers speak English mostly when teaching English	Yes	91%
	No	9%
My teachers use English songs when teaching English	Yes	56%
	No	44%
My teachers use games when teaching English	Yes	63%
	No	37%

The table above showed a positive response from the students dealing with the use of English by their teachers. It was indicated that 91% of students answered that the teachers spoke English while teaching the English lesson, and only 9% said that their teacher used English for teaching. On the contrary, Song (2018) suggested that EFL teachers use code-switching rather than only English instruction to make students comprehend the target language. According to Said (2018), the teachers' ability in speaking is necessary to deliver the lesson. It is in line with Shyebani (2019), there is high correlation between students respond and teachers speaking.

Students' preferences of using games, songs, and other fun activities to study English reported that using English songs found 56% of students and using games was 63% of students. It can be inferred that many teachers applied songs and games in teaching English. The finding indicated that the young learners like better games than song although the different was not significant.

The previous studies proved that there were many beneficial outcomes by using games for young learners. There were two areas covered by the previous studies that was in line with the finding of the study. First area was relating to the English aptitude. Using games in teaching English also improved grammar (Lin et al., 2020), writing (Fu et al., 2019; Dashtestani, 2022), pronunciation (Dashtestani, 2022), listening (Dashtestani, 2022; Kumar et al., 2022), speaking (Dashtestani, 2022), problem-solving Ben El Moudden, 2021; Dashtestani, 2022). The second area was delating with aptitude such as motivation (Dashtestani, 2022; Ahmed et al., 2022), and positive influence (Boyinbode, 2018; Chen et al., 2019; Fithriani, 2021; Kohnke, 2020). In addition, Zhonggen (2018) said that gaming is better than traditional approach.

Besides the effectiveness of using games, songs also contributed significantly to learning English for young learners. Songs influenced positively, especially to vocabulary mastery for children (Sevik, 2014). This findings were in line with the studies recently which claimed that games bring the positive influence on vocabulary Ben El Moudden, 2021; Dashtestani, 2022; Hao et al., 202; Patra et al., 2022). Song used as learning media can provide joy in learning English for children (Fransischa, 2017; Shen, 2009; Hadian, 2015). In regard to language acquisition, songs help children to obtain and remember new English vocabulary easily (Kuśnierek, 2016). This is in line with the previous finding proposed by (Hao et al., 2021).

Students' perspective in using games in learning English for young learners. Some positive respond and negative respond. The studies which have examined the students' perception of EFL learning like positive respond (Abdelrady et al., 2022; Abdullah, 2020; Alghasab, 2020; Hussain Al-Qahtani, 2019; Bsharat et al., 2021; Ika Dhamayanti, 2021; Fithriani et at., 2019; Sheybani, 2019; Tragant & Vallbona, 2018; Wang et al., 2021; Behnamnia et al., 2020; BEN EL MOUDDEN, 2021), while other studies report the negative respond from students (Klimova & Polakova, 2020; Cabrera-Solano et al., 2019).

Both games and songs might contribute the similar improvement in acquiring English for young learners. The improvement occurred in speaking (Yeni & Amelia, 2020; Putri et al., 2022; Dashtestani, 2022), grammar (Al-

Smadi, 2020; Yeni & Amelia, 2020; Lin et al., 2020), writing (Yeni & Amelia, 2020; Fu et al., 2019; Dashtestani, 2022), pronunciation (Agaj Avdiu, 2021; Al-Smadi, 2020; Putri et al., 2022; Yeni & Amelia, 2020; Dashtestani, 2022), motivation (Al-Smadi, 2020; Ernawati et al., 2019; Singh, 2020; Dashtestani, 2022; Ahmed et al., 2022), improvement of vocabulary (Agaj Avdiu, 2021; Al-efeshat & Baniabdelrahman, 2020; Islami, 2019; Lelawati et al., 2018; Ben El Mouddeh, 2021; Dashtestani, 2022; Hao et al., 202; Patra et al., 2022).

There were six skills of language which were covered by using games and songs. They were vocabulary, grammar, writing, speaking, pronunciation, and motivation. But they were only two skills (listening and reading). Listening improvement was effective for using games while reading improvement was good for using songs. Wallace & Leong (2020) argued that songs and game are students favorite as an intrinsic motivation to learn English.

#### 4. Conclusion

Teaching young learners needs sufficient creativity from the teachers. The creativity method would be fruitful by applying games and songs since young learners loved and enjoyed games and songs. Further studies should explore the use of games and songs in improving EYL in EFL context. For example, facilitating students' preference in learning English as foreign language by using technology like table, electronic dictionary, mobile phone etc.

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# Needs Analysis for the Development of Mathematics Statistics I-Module Based on Schematic Representation

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## Abstract

The purpose of this study was to analyze the need to develop a teaching material needed in mathematics statistics lectures I. This study used a qualitative descriptive method oriented to the development of a product. The subjects of this study were fourth semester mathematics education students who were taking mathematics statistics course I and lecturers of the mathematics education study program at the Muhammadiyah University of Metro. The research instrument used a questionnaire distributed using a google form. Data analysis was carried out with the stages of data reduction, data presentation, and drawing conclusions. The results obtained in this study are: 1) 61.5% of respondents stated that in mathematics statistics I lectures the lecturers have not used e-modules.

**Keywords:** E-Module, Mathematical Statistics I, Schematic Representation

## 1. Introduction

In learning mathematics in 21st century, students are expected to be able to have four skills which are often referred to as the 4Cs, namely creativity, critical thinking, collaboration and communication skills. By mastering these four skills, it is expected to have good skills in problem solving (As'ari, 2016). As prospective mathematics educators, students of the mathematics education study program must also be required to master these four skills. Therefore, in the lecture process they must also be involved in learning that leads to the mastery of the four skills.

One of the learning resources that can facilitate students in developing 21st century skills is an electronic module (e-module). Electronic modules are independent teaching materials that are systematically arranged into the smallest learning to achieve certain learning objectives which are presented in electronic form that is self instruction, self contained, stand alone, adaptive, and user friendly which contains one learning material (Prasetyowati & Tandyonomanu, 2015). In addition, the electronic module can display text, images, animations, and videos through electronic devices such as computers. Electronic modules can reduce the use of paper in the learning process. Electronic modules can also be used as an alternative to efficient and effective learning, as well as interactive. The existence of e-modules is expected to be a new source of learning for students which are then expected to improve understanding of concepts and learning outcomes (Putra, et al. 2017).

The results of field observations show that the learning resources used in the study of mathematics statistics course I still contain general material and have not provided a guide in the use of representations in building concepts and solving mathematical problems. So it is very necessary to arrange electronic modules (e-modules) to facilitate students in building concepts and ability to solve mathematical problems in the field of mathematical statistics using mathematical representations, especially during the COVID-19 pandemic. Because during the COVID-19 pandemic, lectures are held online, so learning resources in electronic form are needed that are easy to access and use anywhere.

The electronic module of mathematics statistics I based on schematic representation is a module that contains materials of mathematics statistics I, which are arranged electronically and accompanied by steps for solving problems and inculcating concepts using schematic representations. Schematic representation is a very important tool for solving complex problems, because students can illustrate the content of the problem in schema form (Fagnant & Vlassis, 2013). according to Hegarty & Kozhevnikov (1999), Thevenot & Barrouillet (2015) By using a schematic representation, students can extract the main data and find out the relationships between the information presented in the problem.

## 2. Method

This study uses a qualitative descriptive method oriented to the development of a product. The subjects involved in this study were fourth semester mathematics education students who were taking mathematics statistics course I and lecturers in mathematics statistics courses I. Students and lecturers were asked to fill out a questionnaire containing questions related to the need for e-module development based on schematic representation. Data analysis used in this study includes three things, namely data reduction, data presentation, and drawing conclusions.

This study begins with data collection by collecting the results of the questionnaire from the research subject. Furthermore, the collected data is reduced by classifying, directing, and removing unnecessary things in order to obtain data that is ready to be concluded. Next, describe the data that has been classified by taking into account the focus and objectives of the research. Finally, conduct a final analysis and conclude the results of the research in the form of a research report.

## 3. Results and Discussion

The needs analysis is based on the existing conditions in the mathematics education study program, Muhammadiyah University of Metro. This analysis is needed to find out whether or not it is necessary to develop an e-module of mathematics statistics I based on schematic representation. This needs analysis is carried out by providing a questionnaire that utilizes the google form. The subjects involved in this study were fourth semester mathematics education students who were taking mathematics statistics course I and several lecturers in the mathematics education study program at the Muhammadiyah University of Metro.

The results of filling in the questionnaire obtained the following data:

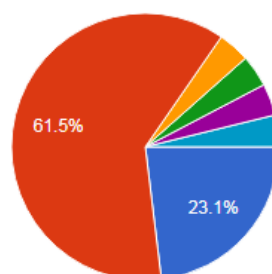


Diagram 1: What is the percentage of responses in the Mathematics Statistics I course already using the module?



Diagram 1 shows that 61.5% of respondents providing information on mathematics statistics I lectures have not used e-modules in the lecture process. In addition, information was obtained that in the lecture the lecturer used a summary of the material which was completed with student worksheets (Diagram 2). This is in accordance with the response of respondents who stated that the mathematics statistics lecture I used student worksheets.



Diagram 2: Percentage of responses what teaching materials are used in the course of Mathematics Statistics I.

The e-module that will be developed specifically contains materials in the scope of mathematical statistics I. This is done so that the resulting e-module will be more focused. Anderson (1987: 169-172) states that too much material in a lesson tends to reduce students' interest in learning and cause boredom.

Furthermore, it is very necessary to develop modules used in mathematics statistics lectures I. In accordance with the responses from respondents a number of 100% want the development of e-modules in mathematics statistics lectures I (Diagram 3). In line with the results of this study Ghavifekr & Rosdy (2015: 189) reveal that the use of information and communication technology (ICT) in the learning process aims to improve the learning methods and approaches that students want to achieve effective learning activities and to meet the challenges of 21st century teaching skills, namely creativity (creativity), critical thinking skills (critical thinking), cooperation (collaboration) and communication skills (communication).

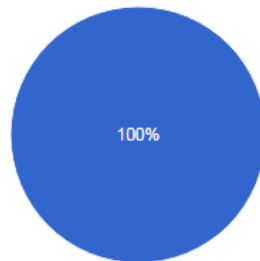


Diagram 3: Percentage of responses Is it necessary to arrange an e-module of mathematics statistics I as a lecture teaching material?

In this study, the e-module that will be developed is the e-module of mathematical statistics I based on schematic representation. The schematic representation was chosen with the consideration that it can provide assistance to students in the process of understanding concepts and solving problems (Diagram 4). This is in line with some research results (Anwar, et al., 2019) reveal that mathematical representations can be considered as an important source for reducing word problem difficulties so that student success in solving word problems increases. The use of mathematical representations can reduce difficulties and help students succeed in solving word problems. This is also supported by respondents who stated that the e-module that will be developed provides instructions with certain strategies.



Diagram 4: What is the percentage of response agree if the modules compiled provide instructions with certain strategies in solving problems.

#### 4. Conclusion

Based on the research carried out, the following results were obtained: 1) 61.5% of respondents stated that in mathematics statistics I lectures the lecturers had not used e-modules. 2) 100% of respondents stated that it was necessary to develop an e-module of mathematics statistics I which provided directions or strategies in understanding concepts and solving problems.

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# The Problems and Opportunities of Hybrid Education for School Management

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## Abstract

The teaching model in which students and teachers come together in a physically surrounded school environment face to face was the only teaching model until the 1990s. Technological developments first showed their effects in higher education in the 1990s and online teaching method started to become widespread. Today, it is not possible to ignore the benefits of face-to-face education in schools, but almost all educational institutions, from primary schools to universities, have switched to online distance education very quickly with the Covid-19 epidemic. Hybrid teaching is a teaching model that combines face-to-face and online teaching into a single whole. About half of the classroom sessions are held in classrooms at school, while the other half has students working online. While this sounds good, hybrid teaching requires a lot of planning to work properly. In this paper, the problems and opportunities of hybrid education for school management are studied under the light of literature. Although hybrid education has many benefit on the part of students and teachers as well as administrators, It also brings some problems that administrators have to tackle with. The literature about hybrid education forces education administrators to plan about technical needs, human sources, students and parents.

**Keywords:** Hybrid Education, Education Administrators, Face to Face Teaching, Online Education

## 1. Introduction

The teaching model in which students and teachers come together in a physically surrounded school environment face to face was the only teaching model until the 1990s. Technological developments first showed their effects on higher education in the 1990s and online teaching methods started to become widespread. Students could complete their online lessons simultaneously without physically coming to the classroom (Jones, 2019). In this period, education administrators saw that online teaching was more economical for students and could replace face-to-face education, and by the mid-1990s, more online courses began to be given. However, online education was not as effective as expected, as it was seen as a passive activity (Schaer, et al., 2010; Jones. 2019). Over time, a third teaching method, the hybrid teaching model, has emerged.

The Covid-19 epidemic, which started in China in 2019 and spread to all countries of the world and turned into a global epidemic, has brought some disruptions and confusion in education. However, during the epidemic, it encouraged all educational institutions to make faster decisions on hybrid learning, and accelerated the merging

of teaching and technology. As educators can predict, such rapid digitalization of learning has brought great opportunities and some significant disadvantages (Şahin, 2021). Considering the epidemic period when full-time face-to-face education is not possible, hybrid learning and distance education have emerged as a solution to continue education. We see that hybrid learning is becoming widespread in universities and other educational institutions day by day (Solihati & Mulyono, 2017).

When schools closed with the threat of the epidemic in late 2019, educators had to teach a group of students face-to-face while simultaneously teaching many of them remotely at home. In order to do this, they had to benefit from a blended learning model combining traditional face-to-face education methods with digital resources (Caulfield, 2011; Kiddle, Farrel, O'Leary & Mavridi, 2020). The hybrid education model is a method in which many education models are applied together and the advantages of different models are evaluated together to obtain a more successful education output. The hybrid learning model, which is generally included in the literature as blended education, appears as the use of online and face-to-face education (Vedubox, 2021). It is possible to see this model being implemented in Turkey and many other countries, especially at the primary education level in the 2021 academic year. By allowing students to take lessons in more diluted classes, it was ensured that they kept their distance, and on the other hand, face-to-face education was supported by online methods to achieve the objectives of education.

Although it is not possible to ignore the benefits of face-to-face education in schools, almost all educational institutions, from primary schools to universities, have switched to online distance education very quickly with the Covid-19 epidemic (Kemp & Grieve, 2014; Singh & Matthees, 2021). Hybrid teaching is a teaching model that combines face-to-face and online teaching into a single whole. About half of the classroom sessions are held in classrooms at school, while the other half has students working online. While this sounds good, hybrid teaching requires a lot of planning to work properly. But with good planning, we can take advantage of the strengths of the two teaching models. Hybrid education, blended education has different meanings from each other. While there is 50% face-to-face teaching in hybrid education, 50% virtual teaching continues. However, in blended teaching, most of the teaching activities take place face-to-face (Siegelman, 2019). In online teaching, online activities constitute the whole of the education, however, in the internet supported mixed teaching model, mostly face-to-face education is provided, and online education is included to a lesser extent.

Table 1: Online Learning Environments (adapted from College of Dupage, 2022, p. 2)

<b>Face-to-Face Training Model</b>	<b>Internet Supported / Blended Education Model</b>	<b>Hybrid Teaching</b>	<b>Online Education Model</b>
It is an education done entirely in the classroom environment.	Model used mostly in face-to-face education with little online activities	The teaching model in which teaching is conducted in equal proportions face-to-face and online (50 to 50)	The teaching model in which almost all of the teaching activities are done by online methods.



School administrators need to plan how both methods will feed each other in the long term, as well as how to benefit more from face-to-face and online methods in hybrid teaching.

Even if teachers and education administrators have foreseen this digitalization in education, it is not easy to answer the question of how much the training of teachers and the pedagogical approaches that need to be developed have supported and benefited the learning of students in this period. Although it does not seem possible for any model to replace face-to-face education, a strategic learning approach based on the effective use of educational technologies can support students' participation and provide achievement of objectives and help teachers and administrators overcome the problems they experience in the process of education.

Considering that issues such as digital inequality and inadequacy in student participation are the problems that remained during the epidemic period, the use of an integrated approach on a digital ground that prioritizes classroom learning activities may be beneficial for the effective continuation of educational activities. Indeed, there are simultaneous distance learning and classroom teaching opportunities for educators that provide high-quality teaching and learning opportunities, engaging students in learning inside and outside the classroom.

## 2. Method

This study aims to find out the benefit and problems of hybrid education which is getting widespread on the part of school administrators. The study is literature review research. As more and more schools are having distance education programs and hybrid education which have advantages for students, teachers and school administrators, the literature about hybrid education especially the advantages and problems arising on the part of school administrators are needed to be searched and tried to get together to have a holistic picture.

## 3. Benefits of Hybrid Education for School Management

It should be said that the hybrid teaching model, as an application that will relieve the physical competence of the school, makes significant contributions to school administrators. In terms of school management, it is seen that the physical planning of the school, the quality and quantity of the classrooms and laboratories to meet the needs, the lesson planning of the teachers are mostly proportional to the number of classrooms, that is, physical facilities. In this respect, hybrid teaching can reduce student density at school by supporting the physical infrastructure of the school (College of Dupage, 2022) as half of the courses will be held online. This means less physical environment is needed for school management and also means reducing financial expenses. Waste of resources in school cleaning, cleaning materials, lighting and heating expenses can be avoided.

Considering that education in hybrid education continues on two different platforms, using the advantages of both platforms stands as an important practice in terms of school management in helping the school to achieve learning goals of students. The school administrator is also responsible for the success of the school. From this point of view, the contribution of hybrid teaching to the success of the school has very important benefits for students and teachers. The following topics include the benefits of hybrid teaching for students and teachers.

### 3.1. Benefits of Hybrid Learning for Students

Hybrid learning helps students develop different self-learning skills. In this model, the student can develop himself/herself about what kind of information he/she needs and how he/she can find it (Vedubox, 2021). Hybrid learning has some benefits for students. Studies show that hybrid learning has significant advantages over face-to-face or completely online learning activities (Graham, 2019; Harding et al., 2005; Liu et al., 2016; Woods et al., 2004). It provides students with the opportunity to have a more intellectually satisfying and interesting learning experience (Woods et al., 2004), reinforces the concepts learned from textbooks in the classroom (González-Gómez et al., 2015), enables students to remember information longer and have more fun in lessons (Alvarez et al., 2013), improves students' motivation and commitment to the lesson (Ahmed & Osman, 2020), provides students with a great deal of independence in the learning process (Hung, 2015), improves interaction between teacher and students, and can easily reach the teacher and ask what they want to ask (Makhdoom et al., 2013).

In hybrid education, the student learns how to learn and takes a decisive role in his own learning. It provides an opportunity for personalized and independent learning. Using the beneficial aspects of face-to-face online teaching increases student success (O'Byrne & Pytash, 2015). In this education model in which classroom education and online education are carried out together, students acquire basic knowledge and skills at school. Online learning opportunity, on the other hand, gives students the opportunity to develop these knowledge and skills in accordance with their own learning pace. Online resources are richer than teaching resources that can be provided in the classroom. Considering the individual learning differences of the students, each student will have the opportunity to progress at their own pace and teachers will enable their students to develop their own learning skills.

Time management is an important issue in an individual's life. Effective use of time and achieving the desired success often depend on how you use your time. The hybrid learning model can help students use time more effectively with online education as they will not be at the school in some days. Time management is of vital importance, especially in adult education. Lifelong learning activities depend on the individual's effective use of time. In a traditional classroom, students spend most of their time by watching videos, taking notes, and reading texts. However, in hybrid teaching, such activities are given as online assignments and they can be used to analyze students' time at school more effectively, to explore and develop the subject in depth (College of Dupage, 2022).

The individual, who spends a significant part of his time working in the business environment, also benefits from educational activities in terms of his personal development depends on his effective use of time. For this reason, hybrid learning provides students with flexible time and space opportunities. It increases students' interactions with each other (Alayyar, Fisser & Voogt, 2012; Woods, Baker, & Hopper, 2004). Thus, students are provided with access to information and educational materials whenever they want. Students are no longer required to attend school five days a week. Students can also share their own content much more quickly thanks to Web 2.0 technology, and by creating online project groups with their peers, they can do more effective work beyond just reading texts or doing exercises.

Another benefit of hybrid learning for students is that there is no pressure from teachers or peers in face-to-face education for students to actively participate (Chin & Lin, 2008). Students often prefer to remain silent in face-to-face education because of the attitudes of their peers or the attitudes of their teachers. However, since there is no such pressure in online education, it is possible for students to participate more comfortably. In addition, some studies have reported that students' success increased in the hybrid teaching model (Kendall, 2002).

### *3.2. Transition to Hybrid Learning for Teachers*

What is the state of hybrid learning now? Where should educators position themselves to be effective in hybrid learning activities? It is useful to answer such questions. Especially with the epidemic, we can say that many teacher had problems regarding the effective use of technology in education. Many teachers had trouble adjusting to the new situation. The lack of classroom-centered education revealed that traditional methods are no longer valid.

Educators put in a tireless effort in this process. They had to adapt to hybrid education and struggle with ever-changing conditions. In this sense, IT and school administrators had to support teachers' adaptation efforts, maintain computers and materials, find solutions to technical problems and ensure the continuation of education at the end of the day. However, on the other side of the coin, there were students who lacked technological tools, computers and knowledge. Also teachers had problems in accessing information technologies (Şahin, 2021). Only 20% of the world's population had access to broadband broadcasts. 30% of the students who provided access also experienced fatigue and learning difficulties. In addition, there were problems with the content of the materials to be used in online education (UNICEF, 2022).

Educators need to fully understand the wealth of reliable educational technologies and rely on this technology that supports them in many areas even before the pandemic. Teachers and students routinely used digital materials provided by educational technologies even before the epidemic (Kessler & Hubbard, 2017). However, the richness that educational technologies add to educational activities and the value they add to classroom activities became more noticeable during the epidemic period. Instead of resisting educational technologies and innovations, educators, that is, teachers, can use educational technologies that will support their lessons and increase the motivation of students by combining them with their experiences. Teachers obtained new tools and educational materials with educational technologies. While this gives them the opportunity to organize more effective teaching activities, it allows them to create opportunities to tackle issues such as problems in accessing educational technologies, inequality, and to ensure that students continue to receive high-quality education.

With the Covid-19 pandemic, teachers, school administrators and policy makers in charge of education globally had to make structural changes in learning environments, teacher and student roles, responsibilities and educational

organization. The transition to a hybrid learning environment or fully online education has required dedicated work for teachers and school administrators. Teachers had to renew themselves and take a position suitable for the new situation in order to maintain their educational activities and to communicate effectively with parents and education administrators in educational institutions located in villages and rural areas, where most of them have reached retirement age and where opportunities such as the internet are limited.

#### **4. Challenges of Hybrid Education for School Management**

In order to create an environment suitable for hybrid learning, studies carried out to maintain educational activities in compulsory situations such as epidemics and war require teachers and school administrators to work with devotion as well as students and produce solutions to many different unforeseen problems. Today, there is a demand for the creation of more hybrid learning environments and it is seen that this demand is increasing day by day. The opening of distance education programs by more universities and the continuation of some courses in universities with distance education and face-to-face methods can be considered as a result of demands from students. We see that educators trust educational technologies more than ever before (Şahin, 2021). However, do teachers, administrators and students in educational institutions really have enough awareness? Have teachers received adequate training on how to support students remotely online? It may be useful to consider the problems that school administrators have to find solutions for under three different headings: technical infrastructure, training and harmonization of human resources, and problems with students and parents.

##### *4.1. Technical and Financial Issues*

A good planning and cooperation are required for the effective use of hybrid teaching education technologies. Apart from these, national and international developments may affect education and training processes. For example, the Covid-19 epidemic, which broke out at the end of 2019, affected educational activities in all countries of the world (Korucu and Kabak, 2020). However, even during the epidemic period, countries had to continue education. Many countries have had to replan their education processes. For this reason, school administrators need to make good planning and cooperate with teachers, families and other stakeholders on technical issues. It has been observed that especially private schools, which have digital infrastructure, sufficient technical materials and employees and teachers who can maintain them, continued the education process by moving their educational activities to online platforms in this period (Alpago, 2020; Şahin, 2021).

The adaptation of educators and students to the new situation that emerged with the epidemic caused flexibility in teachers and students. In this new situation that occurred due to the epidemic, the use of previously untested methods and materials has been brought to the agenda (Borenstein et al., 2020). School administrators have important duties in adapting the school, teachers and students to new situations. Establishing the technical infrastructure that will serve as a bridge between the teacher and the student, the computer, the internet, the planning of the classroom environments or studios where the lessons will be held, and the provision of appropriate materials, while using limited resources, can become important problems that school administrators have to deal with.

Although the epidemic and the transformation of education to distance education have brought many problems, it has increased the use of the hybrid method after the epidemic. In this sense, school administrators have an important role in the maintenance of technical materials needed in schools, their purchase, the training of teachers regarding their use, the development of materials suitable for the new system and the planning. However, it does not seem possible for the investments made by education administrators with limited financial resources to find a response in the society and to provide the financing of education without the support of the state or parents in private schools. For this reason, education administrators need to find financial support in order to solve technical infrastructure problems. Although it was planned to make the schools open to the public by considering the use of school areas for public benefit activities for financial support, it must have been foreseen that this would bring a financial burden to schools and educational institutions rather than financial support in a short time, so this project was shelved before it was put into practice. In addition, apart from epidemics and students with special needs, the laws are for face-to-face education in public schools.



#### *4.2. Human Resources and Effective Material Issues*

When the curriculum given in the education faculties of the universities that have undertaken the task of training teachers is examined, it is seen that there are generally courses with Computer and Communication Technologies or similar names. However, when the contents of these courses are examined, it is seen that there are courses for the use of some purely technical programs at a basic level. In addition to these courses, it is seen that another course called material development or material design is given to teacher candidates. Although it is thought that the teachers who graduated from the faculty of education have knowledge about basic-level distance education systems, it is seen that they are not given training on using the distance education system purchased in a school where hybrid education is provided or the programs in which online synchronic lessons are taught. The teacher candidates are also lack the ability to plan their lessons in a hybrid education model.

It is necessary for teachers and related employees to receive in-service training on the use of materials and educational technologies to be used in hybrid teaching, to have a computer programmer responsible for solving the problems that may be encountered in the school, and to organize seminars regularly for the development of the technical infrastructure of both teachers and students. It will be beneficial for teacher candidates to receive practical training on educational technologies in providing appropriate human resources. Teachers are the visible face of the school and it is the school administrator's responsibility to provide the technical infrastructure that shows them well.

Hybrid education and face-to-face education should be planned to complement each other. Students' participation in online activities can only be achieved with entertaining and motivating teaching materials that will appeal to them. Coming to the classroom by reading only the books or materials given in the virtual environment will not be much different from the teaching in the classroom. For this reason, Miller (2012) offers some suggestions to increase the effectiveness of online materials. First, collaborative study groups and virtual classroom meetings can be beneficial and motivating for the students. Sometimes virtual classroom meetings are held and the teacher can present all the content. Students can watch the videos of these recorded virtual lessons whenever they want. In addition, student groups can be formed and joint studies can be carried out in cooperation. In order for these studies to be effective, they must be meaningful to the students.

Miller (2012) suggests creating learning needs in order to enable students to participate more effectively in hybrid education. Students should need information while working on the project in authentic projects face-to-face or in virtual classrooms. This will enable them to do the given materials and assignments, and to search for the information. It is recommended that students be asked to reach certain goals for online activities, and that they can use mobile learning tools to benefit more from hybrid learning. However, in order to design different materials from the usual materials of the traditional classroom environment, teachers need to learn to prepare virtual materials through in-service training.

The Ministry of National Education is trying to prepare teachers and students for a hybrid learning environment with the course contents prepared. The Education and Informatics Network (EBA) continues to develop the course material that could be used by teachers in both in face-to-face education and in distance education. On the other hand, we can see that some private schools support face-to-face education with online materials with programs they have developed or purchased.

#### *4.3. Student and Parent Problems*

It should not be forgotten that hybrid education has a student and parent dimension beyond the school dimension. No matter how ready the school is for hybrid education, it is possible to encounter problems when hybrid education is not properly explained to students and parents. Families should be supported technically against hybrid education, especially at the basic education level. Technology literacy levels of students are also an important factor to be considered. In order for students to access online course content, there must be sufficient technological infrastructure from their homes, parents must be willing to prepare this infrastructure or the school must provide this infrastructure to the family. Many families may insist that their children's academic education be limited to

school. It may be necessary to persuade these families, to explain the benefits of hybrid teaching and the flexibility it will provide.

Depending on their age group, students may have problems using basic communication tools and online materials. In this sense, family members who will guide them at home should have sufficient knowledge and skills about hybrid teaching and the materials used.

## 5. Conclusion and Suggestions

Hybrid classroom instruction should not replace virtual activities as part of the learning environment or as a substitute for face-to-face classroom sessions. Instead, in hybrid teaching, virtual environments and online materials should be used as a support for students to learn better. First of all, for teachers, virtual environments should be seen as auxiliary pedagogical tools that students can use to acquire target behaviors. Flexibility in online activities allows students to learn continuously and at their own pace. Constant access to online materials helps students benefit from flexible learning.

The hybrid classroom application benefits teachers and students in two ways: First, it facilitates the sharing of teaching and learning materials with students prior to the classroom activity. Before participating in face-to-face training, students access and read the materials online and come prepared to the lesson by getting information about the course content. This helps to complete many time-consuming activities during the lesson in advance. Another benefit for teachers is that they save time by giving homework online and providing feedback via online methods.

In the information and internet age of the 21st century, in which technological developments are experienced very rapidly, educational technologies, information and communication systems are constantly developing. Concepts such as distance education, hybrid learning, and blended education, which emerge as a result of the adaptation of technology to education, enrich learning environments and bring with them some administrative problems. It is beneficial for educational institutions, teachers and education administrators to be more flexible in adapting to the developing technology. While the hybrid teaching model is an advantage for teachers who can easily adapt to change, it can be described as a new and unnecessary invention for traditionalist teachers and administrators who do not want to chase change.

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# Analysis of the Activities in the Primary School Turkish Textbooks in Terms of Creative Thinking Skills

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## Abstract

In this research, it is aimed to examine the activities in the primary school Turkish textbooks in terms of creative thinking skills (fluency, originality, flexibility). The document analysis method was used in this research, which was designed with a case study, one of the qualitative research methods. Primary school Turkish textbooks approved by the Ministry of National Education constitute the basic documents/data sources of the research. In this study, in which the data obtained were subjected to descriptive analysis, the activities in the textbooks were examined in detail in terms of whether they were related to creative thinking skills and which sub-dimension of creative thinking skill. For this purpose, a "creative thinking skill activity form" was developed by the researchers. In the research, it was determined that there are 905 activities in primary school Turkish textbooks, only 120 of these activities are related to creative thinking skills, the majority of the activities determined are for the flexibility sub-dimension, there is no systematic situation in the distribution of activities in terms of number and content, and the activities are original and up-to-date. It has been determined that they are not sufficient for gaining and developing creative thinking skills.

**Keywords:** Turkish Course, Turkish Textbook, Creativity, Creative Thinking Skills, Activity

## 1. Introduction

Creativity; it is defined as developing a new idea, presenting an original product and producing solutions to problems (Argun, 2012; Emanuel & Challons-Lipton, 2012; Hançerlioğlu, 2004; Isbell & Raines, 2003; Temizkan, 2011; Yazıcı & Topalak, 2013;) is defined as. Creativity, which is also defined as being sensitive to problems, faults, deficiencies and seeking solutions to them (Torrance, 2018), also means putting forward ideas and solutions in the face of any problem or negative situation. Creativity is a way of thinking that includes idea generation, flexible approach and original processes to produce solutions to problems with imagination and an innovative perspective (Dilekçi & Karatay, 2022). It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects to achieve goals (MEB, 2019).

Creativity is the ability to imagine something that does not exist, to do something in different ways than anyone else, and to develop new ideas. In other words, creativity is seeing something that everyone sees in the same way and has similar thoughts about, and being able to produce different thoughts about it. Creativity, which expresses being able to go beyond the existing patterns (Sağlam, Erbasan & Çiftçi, 2022), is to look at events, situations and objects differently and to exhibit a different approach. Creativity is to look critically and make new suggestions, to be different, to be new, original and extraordinary, to see the problem and to draw new conclusions from different solutions (Emir, 2001; Emir & Bahar, 2003; Gök & Erdoğan, 2011).

Creative thinking can be defined as thinking that leads to new ideas by considering various possibilities and possibilities as a game, carefully, without any pressure and without giving importance to the benefit of the moment (Özcan, 2000). Creative thinking skills, including the ability of individuals to change, combine, reuse a basic idea and product in different environments, or to produce new and different products and information based on their own thoughts, to look at events differently, to make inventions, to develop detailed ideas, to develop unique and unique solutions to problems It includes sub-skills such as finding ideas and solutions, looking at an idea or product from many different angles (Bal, 2014). Creative thinking means that predictions or inferences are new, original, ingenious, clever and rare for the individual (Arık, 1990). Creative thinking skills, which are based on exhibiting meaningful and productive behaviors instead of learned and repetitive behaviors, enable individuals to develop their problem-solving and decision-making abilities.

Fluency, flexibility and originality can be considered as sub-dimensions of creative thinking skills. Fluency; multi-idea generation, flexibility; developing different perspectives on the subject, originality; It refers to presenting a unique, original idea that has not been put forward before (Torrance, 2018). In this case, it can be said that creative thinking has the flexibility to focus on the purpose and adapt appropriate ways of thinking, the originality to produce a different way of thinking, and the fluency to produce plenty of thoughts, solutions and alternatives on the subject being studied. In this case, creativity can be assessed by proficiency in these three skills. Creative thinking consists of preparation, data collection, incubation, enlightenment and validation stages. Preparation refers to the stage when the problem is realized, data collection is the stage where information and tools related to the problem are collected, the cognitive issue is processed for the solution of the incubation problem, enlightenment refers to the stage where an idea suddenly appears in the cognition about the solution, and verification is the stage where the solution idea is tested and its validity and reliability are decided for the solution of the problem (Aytaç, 2005).

Educational systems are of great importance for individuals to acquire creative thinking skills. Education-teaching process structured with correct and sufficient approaches, teaching environments with wide and rich opportunities, teachers who are aware of the importance of creative thinking skills, the richness and diversity in the methods and techniques used, lessons aimed at improving students' reading and research habits, solving problems, and producing new things. The existence of programs has an important place in the development of creative thinking skills (Yenilmez & Yolcu, 2007).

The individuals of the 21st century are productive, open to new ideas, enterprising, flexible and adaptable, who can think critically, have creative thinking, can solve the problems they encounter, cooperate with others, have high communication power, provide access to information by using technology effectively, have advanced social and cultural skills. They are expected to be (Eryılmaz & Uluyol, 2015). Today, the primary goals of education systems are to raise individuals who can adapt to different conditions, have a flexible mindset and questioning ability, are creative, warm to criticism and multi-dimensional thinking, and can produce effective solutions to the problems they encounter (Kutlu & Schreglmann, 2011). In order to achieve this goal, it is important to train students with creative thinking skills and to prepare an environment for the development and use of this skill.

In the examinations made on the curricula; in the 2006 Turkish Course Curriculum, creative thinking is among the basic skills (MEB, 2006); in the 2015 Turkish Course Curriculum, it is aimed to raise individuals who think creatively (2015); in the 2018 Turkish Course Curriculum, there are achievements to develop creativity skills (MEB, 2018); in the 2019 Turkish Course Curriculum, it is understood that originality and creativity are the basic skills expected from teachers (MEB, 2019). It can be said that raising individuals who can think creatively and

produce creative solutions in accordance with the needs of the age and society is among the primary goals of education systems, and that creative thinking skills are included in curricula and practices. Because curricula are very important elements of the education process that directly affects the development and development of a country, determines its future, fuses people's traditions and contemporary values in harmony, and focuses on all developed and developing countries with great sensitivity. In accordance with the trends of the age we live in; The desire to raise a generation that is better equipped in terms of social, cultural and technological aspects ensures that curricula are at the center of the education process (Taş & Minaz, 2022).

The materials used in teaching students the knowledge, skills and values in the curriculum are very important. It is known that the most used resources in the learning and teaching processes in schools are textbooks (Adıgüzel, 2010; Karaca, 2011; Kılıç & Seven, 2002). The textbook can be defined as one of the basic elements that explains the contents of the curriculum in a plan and order, directs the students to the objectives of the course and informs them (MEB, 2008). Textbooks; They are important because they present the content of the curricula according to the teaching principles and they are the most used and the easiest materials. Textbook; It is defined as a printed work that includes various examples, exercises, texts and other learning-related activities, facilitating the acquisition of gains and information that make up the content of the course (MEB, 2012). The ability to maintain their functions in educational environments by being easily updated in the light of developments makes textbooks indispensable resources that are frequently used in educational environments (Güzel & Şimşek, 2012).

Textbooks, which are one of the most widely used tools of the learning-teaching process, have managed to be at the center of many educational activities of teachers, as they maintain their place in teaching environments despite today's technological materials (Önal & Kaya, 2006). The fact that most teachers make arrangements regarding learning-teaching activities according to textbooks increases the importance of textbooks (Kızılcıoğlu, 2003). The fact that they allow students to see as a whole what they will learn and what they will teach and how they will teach, and that they are easy to use and accessible reinforce the indispensability of textbooks. In addition, the most preferred educational material of the books is that the acquisitions in the program are found collectively, the activities related to the acquisitions are determined, the methods, techniques and approaches related to the transfer of the acquisitions are explained, the acquisitions are supported with texts and visuals, measurement-evaluation methods and forms are included (Taş, 2022).

In the literature, pre-school, primary, secondary and secondary school students (Akıllı, 2012; Akkanat, 2012; Albayrak, 2005; Aydoğan, 2008; Baltacı, 2013; Erol, 2010; Kılıç, 2011; Konak, 2008), teacher candidates who continue their education at university (Aktamış & Can, 2007; Gülel, 2006; İşler & Bilgin, 2002; İşlenen & Küçük, 2013; Zeytun, 2010), teachers of various branches (Aish, 2014; Benckenstein, 2016; Edinger, 2008; Kumaz, 2011; Merriman, 2015; Scott, 2015) there are many studies on identifying and developing creative thinking skills. The absence of studies revealing the distribution of activities in primary school Turkish textbooks in terms of creative thinking skills (fluency, originality, flexibility) adds importance and originality to this study. Textbooks (Ulusoy, 2015), which are indispensable for the education and training process and the most used educational resource by teachers and students in this process, convey many skills through the texts, activities and visuals they contain (Kurtdele-Fidan & Gedik, 2019). For this reason, it is important to reveal the extent and how creative thinking skills take place in the textbooks that teachers and students use as the main source (Kuş, Meray & Karatekin, 2013).

Using textbooks as primary resources by teachers and students and trying to teach students basic skills mostly through the activities included in these books; It makes it important to determine the situations in which the activities in the textbooks enable the creative thinking skill, which is one of the important skills of today, to be determined. It is thought that this research is important in terms of realizing the training of gaining creative thinking skills in a more effective way and demonstrating the effective usability of Turkish textbooks in terms of gaining/developing creative thinking skills. This importance enabled the activities in the primary school Turkish textbooks to be handled multidimensionally in the context of creative thinking skills. In this study, the activities in Turkish textbooks aimed at improving creative thinking skills were determined, and the activities determined were examined in detail and the distribution of the activities according to the fluency, originality and flexibility sub-dimensions of creative thinking skills was revealed.

In this study, which aims to reveal the distribution of the activities in Turkish textbooks in terms of creative thinking skills (fluency, originality, flexibility), answers to the following questions were sought:

1. How many activities aimed at gaining/developing creative thinking skills are included in the primary school 1st grade Turkish textbook, and how is the distribution of these activities according to the sub-dimensions of creative thinking skills (fluency, originality and flexibility)?
2. How many activities aimed at gaining/developing creative thinking skills are included in the primary school 2nd grade Turkish textbook, and how is the distribution of these activities according to the sub-dimensions of creative thinking skills (fluency, originality and flexibility)?
3. How many activities aimed at gaining/developing creative thinking skills are included in the primary school 3rd grade Turkish textbook, and how is the distribution of these activities according to the sub-dimensions of creative thinking skills (fluency, originality and flexibility)?
4. How many activities aimed at gaining/developing creative thinking skills are included in the primary school 4th grade Turkish textbook, and how is the distribution of these activities according to the sub-dimensions of creative thinking skills (fluency, originality and flexibility)?

## **2. Method**

### *2.1. Research Model*

This study was designed with a case study, one of the qualitative research methods. Case study; it is an in-depth and longitudinal examination of the data obtained and analyzed through observation and document review (Glesne, 2015). In this research, primary school Turkish textbooks were analyzed as documents in order to examine the activities in the primary school Turkish textbooks in terms of gaining/developing creative thinking skills.

### *2.2. Data Collection*

The document analysis method was used in this study to determine the distribution of the activities in Turkish textbooks in terms of creative thinking skills (fluency, originality, flexibility). Document analysis can be used as a stand-alone information source that creates all the data, or it can also be used as an additional data source that contributes to the main data collection method (Mertkan, 2015). Written materials are considered as documents; photographs, pictures and videos also make up the documents (Güzel-Candan & Ergen, 2014). Textbooks can also be used as data sources in educational research (Kurtdele-Fidan & Gedik, 2019). In this context, 1st Grade Turkish Textbook (MEB Publications), 2nd Grade Turkish Textbook (Ada Publications), 3rd Grade Turkish Textbook, which has been decided to be used as a textbook for five years since 2018 by the Ministry of Education Board of Education and Discipline. (MEB Publications) and 4th Grade Turkish Textbook (MEB Publications) constitute the basic documents/data sources of the research.

### *2.3. Analysis of Data*

The data obtained from primary school Turkish textbooks were subjected to descriptive analysis. Descriptive analysis is a technique based on the systematic and clear description of the data obtained within the framework of predetermined themes (Yıldırım & Şimşek, 2018). Since it is stated in the literature that the creative thinking skill consists of three sub-dimensions, namely fluency, originality and flexibility, in this study, the activities in the primary school Turkish textbooks were examined in detail in terms of whether they are related to the creative thinking skill and if so, which sub-dimension they are related to. For this purpose, a "creative thinking skill activity form" was developed by the researchers. In the form, criteria that reveal the relationship between activities and creativity are presented. It has been determined that the activities aimed at generating ideas, developing different perspectives or producing an original product are aimed at improving the creative thinking skills of the students. In the form, the activity related to the creative thinking skill was coded in which theme, which text it was related to, and which activity it was, and it was also determined which sub-dimension of the creative thinking skill of the activity was coded. In these coding with numbers, the first number represents the theme, the second number represents the text, and the third number represents the activity. For example; 2.3.7. icons mean the 7th activity of the 3rd text of the 2nd theme.

#### 2.4. Validity and Reliability

In order to ensure validity in qualitative research, data is recorded in detail, the process is explained in detail, and the results are reported carefully (Yıldırım & Şimşek, 2018). The activities in the Turkish textbooks were analyzed and coded according to the criteria in the "creative thinking skill activity form." In order to preserve the impartiality of the researcher, the coding process was made by 2 different experts and it was aimed to reach a consensus on which of the activities in the books are aimed at gaining/developing creative thinking skills and which sub-dimensions of these activities are related to creative thinking skills. This transaction was revealed with the agreement percentage formula and a consensus was achieved at the rate of 91%. This result is accepted as a sufficient result to ensure reliability (Miles, Huberman, & Saldana, 2020). Codes that did not overlap with each other were re-evaluated, discussed and agreed upon. The overlap of the analyzes made by the experts shows that the results obtained are reliable.

### 3. Findings

#### 3.1. Findings regarding the examination of the activities in the primary school 1st grade Turkish textbook in terms of Creative Thinking Skills

Table 1 shows the activities in the primary school 1st grade Turkish course book aimed at gaining/developing creative thinking skills and the distribution of these activities according to the sub-dimensions of creative thinking skills (fluency, originality and flexibility).

Table 1: Distribution of activities related to creative thinking skills in the primary school 1st grade Turkish textbook

Efficiency	Fluency	Originality	Flexibility
5.1.1.	X		
5.1.5.		X	
5.2.1.			X
5.3.2.	X		
5.3.5.			X
5.4.4.			X
6.1.1.	X		
6.1.3.			X
6.2.3.		X	
6.3.2.			X
6.3.6		X	
6.4.2.	X		
6.4.6.			X
7.2.1.			X
7.2.7.	X		
7.3.5.		X	
7.4.4.	X		
7.4.5.		X	
8.1.4.			X
8.2.3.			X
8.3.7.			X
8.4.5.	X		

In the examination made on Table 1; 22 of the 149 activities in the primary school 1st grade Turkish textbook are for creative thinking skills; it is understood that 7 of these activities are for fluency, 5 for originality and 10 for flexibility.



### 3.2. Findings regarding the examination of the activities in the primary school 2nd grade Turkish textbook in terms of creative thinking skills

Table 2 shows the activities in the primary school 2nd grade Turkish course book aimed at gaining/developing creative thinking skills and the distribution of these activities according to the sub-dimensions of creative thinking skills (fluency, originality and flexibility).

Table 2: Distribution of activities related to creative thinking skills in the Primary School 2nd Grade Turkish textbook

Efficiency	Fluency	Originality	Flexibility
1.1.1.			X
1.1.4.		X	
1.3.4.			X
1.4.4.		X	
2.1.1.	X		
2.2.5.			X
2.3.2.			X
2.4.6.	X		
3.1.1.			X
3.2.2.	X		
3.3.1.		X	
4.1.1.			X
4.2.4.	X		
4.4.2.		X	
5.1.5.			X
5.3.4.		X	
6.1.5.			X
6.3.3.		X	
6.3.5.			X
6.4.4.	X		
7.3.2.	X		
7.3.6.			X
7.4.2.		X	
8.1.2.	X		
8.2.5.			X
8.4.1.	X		

In the examination made on Table 2; 26 of the 177 activities in the primary school 2nd grade Turkish course book are about creative thinking skills; it is understood that 8 of these activities are for fluency, 7 for originality and 11 for flexibility.

### 3.3. Findings regarding the examination of the activities in the primary school 3rd grade Turkish textbook in terms of creative thinking skills

Table 3 shows the activities in the primary school 3rd grade Turkish course book aimed at gaining/developing creative thinking skills and the distribution of these activities according to the sub-dimensions of creative thinking skills (fluency, originality and flexibility).

Table 3: Distribution of activities related to creative thinking skills in the primary school 3rd grade Turkish textbook

Efficiency	Fluency	Originality	Flexibility
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1.1.3.			X
1.2.7.		X	
1.3.2.	X		
2.1.4.			X
2.1.8.		X	
2.2.3.	X		
2.2.7.			X
2.3.7.		X	
2.4.4.	X		
3.1.3.			X
3.2.4.		X	
3.3.4.	X		
3.3.5.			X
3.4.6.		X	
4.1.6.			X
4.2.2.			X
4.3.6.		X	
4.4.3.	X		
4.4.4.			X
5.2.3.	X		
5.2.3.	X		
5.3.6.			X
6.1.5.	X		
6.3.6.			X
7.1.7.			X
7.3.3.			X
7.3.8.	X		
7.4.1.	X		
8.1.3.		X	
8.1.7.			X
8.2.3.	X		
8.3.3.	X		

In the analysis made on Table 3; 32 out of 257 activities in the primary school 3rd grade Turkish textbook are related to creative thinking skills; it is understood that 12 of these activities are for fluency, 7 for originality and 13 for flexibility.

#### *3.4. Findings regarding the examination of the activities in the primary school 4th grade Turkish textbook in terms of creative thinking skills*

Table 4 shows the activities in the primary school 4th grade Turkish course book aimed at gaining/developing creative thinking skills and the distribution of these activities according to the sub-dimensions of creative thinking skills (fluency, originality and flexibility).

Table 4: Distribution of activities related to creative thinking skills in the primary school 4th grade Turkish textbook

Efficiency	Fluency	Originality	Flexibility
1.1.3.	X		
1.1.4.		X	
1.3.7.			X
1.3.8.		X	
2.1.3.	X		
2.1.4.		X	

2.2.3.			X
2.2.6.			X
2.3.5.		X	
2.4.4.		X	
3.1.4.			X
3.2.3.	X		
3.2.5.	X		
3.3.7.		X	
3.3.8.			X
3.4.1.	X		
3.4.8.			X
4.2.5.	X		
4.2.8.			X
4.3.4.	X		
4.3.8.			X
4.4.6.			X
5.1.6.	X		
5.1.8.			X
5.2.9.			X
5.3.6.	X		
5.4.6.		X	
5.4.9.			X
6.1.4.	X		
6.1.6.		X	
6.2.5.			X
6.4.3.	X		
7.1.4.			X
7.1.8.		X	
7.2.4.	X		
7.3.4.			X
7.4.7.		X	
8.1.3.	X		
8.2.9.		X	
8.3.4.	X		

In the analysis made on Table 4; 40 of the 322 activities in the primary school 4th grade Turkish textbook are related to creative thinking skills; 14 of these activities are for fluency, 11 for originality and 15 for flexibility.

#### 4. Discussion and Conclusion

In the study, it was determined that there are 905 activities in total in primary school Turkish textbooks, and only 120 of these activities are related to creative thinking skills. This shows that the activities related to gaining and developing creative thinking skills in the primary school Turkish textbooks meet approximately 13% of the total activities in the books. It has been determined that this rate is approximately 14% in the first grade Turkish textbook, approximately 15% in the second grade Turkish textbook, approximately 12% in the third grade Turkish textbook, and approximately 12% in the fourth grade Turkish textbook. In addition, it was determined that the majority of the activities identified were for the flexibility sub-dimension of creative thinking skill, and the fluency and originality sub-dimensions were not sufficiently taken into account in terms of activities.

It has been understood that there is no systematic situation in the distribution of the activities related to creative thinking skills in the books, both in terms of number and content. The results obtained in many previous studies also support our research findings. In the study conducted by Dilekçi and Karatay (2022), it was determined that the activities in Turkish textbooks do not have the characteristics of systematically improving creative thinking

skills. In the studies conducted by Bayrak-Özmutlu and Kanık-Uysal (2021) and Temizkan (2014), it was concluded that the activities in the textbooks differ from each other in terms of number and quality, and that these activities do not fully contribute to the development of creative thinking skills. Boyraz and Türkcan (2022), in their research, reached the conclusion that the materials and activities used in transferring the content of Turkish textbooks do not prompt students to think; Esemen and Sadioğlu (2021) and Doğan and Özgür (2019) concluded in their studies that there are very few activities to support critical reading skills in primary school Turkish textbooks. In the studies carried out by Sağlam, Erbasan and Çiftçi (2022), and Sarıkaya (2021), it was concluded that the learning outcomes and activities in the context of creative thinking skills were rarely included in the textbooks, which supports our research findings.

In the research, it was understood that the activities in the primary school Turkish textbooks were similar in content and were not original. Therefore, it has been revealed that activities related to creative thinking skills generally concentrate on the flexibility sub-dimension of creative thinking skill, and originality sub-dimension is the least considered sub-dimension. The conclusion that the activities in the books are similar to other studies (Bayrak-Özmutlu & Kanık-Uysal, 2021; Çeçen & Kurnaz, 2015; Dağ, 2007) supports our research results. In the research, similar activities in the textbooks were used to predict the content of the text based on the visual and title of the text, to find the title of the text, to predict the continuation of the text, to find the unknown words, to write the text based on the visual, to interpret the visual, to sort the mixed sentences, to find the synonyms and antonyms of the words. Finding, using words in sentences, writing on any subject, rewriting the text/poem in the notebook, writing beautifully, paying attention to the rules of spelling, completing the unfinished text/poem, designing a game, producing solutions to social problems, animating the text. In the studies conducted by Dilekçi and Karatay (2022) and Barası and Erdamar (2021), it was determined that there was no consistency in the distribution of the activities, that the activities were similar to each other, that they were less interesting and not up-to-date. In the studies conducted by Bayrak-Özmutlu and Kanık-Uysal (2021) and Ungan and Buçan (2022), it was determined that uniformity, similarity and unbalanced distribution in activity types are among the obstacles to creative thinking skills.

Turkish lessons based on creative reading improve students' creative thinking skills (Yurdakal, 2018), creative reading and writing increase students' ability to generate ideas, provide them with a flexible perspective and provide original ideas (Hızır, 2014), and using intelligence games in lessons improves creativity. (Terzi, 2019), it is clear that both the teaching methods and the contents of the textbooks should be prepared, planned and applied in a way that supports this skill. It is important that the activities in Turkish textbooks are prepared based on the creative thinking approach (Öztürk, 2007), the thinking-based inquiry method (Tok, 2008) and the cooperative learning method (Soysal, 2019) as a teaching method. According to Dilekçi and Karatay (2022), traditional teaching methods should be abandoned and textbooks should be reviewed in terms of this skill in order to develop creative thinking skills.

It can be said that education systems generally prioritize content teaching, transfer of academic knowledge and exams instead of improving students' skills, preventing the development of students' creative skills (Aslan, Aktan, & Kamaraj, 1997). The perception that creativity is a special talent that is not found in everyone can also negatively affect the process of gaining and developing this skill (Dilekçi, 2021). The main thing is the fact that creative thinking is a skill that can be developed in all children (İşler & Bilgin, 2002). Therefore, it is important to carry out activities based on creative thinking and to engage in such practices in order to improve students' creativity. Considering that textbooks are the most used teaching material in schools, it is important that textbooks are prepared with a creativity-oriented approach in terms of content and activities.

## 5. Recommendations

1. Activities in Turkish textbooks should be revised in the context of creative thinking skills, and this skill should be distributed in a proportional and balanced way.
2. The activities in the textbooks should be reconsidered in terms of content and visuality in the context of gaining creative thinking skills.

3. In order for children to acquire and develop creative thinking skills, book contents and activities should be enriched in terms of teaching methods and techniques.
4. The activities in the textbooks should be designed in a way that balances fluency, flexibility and originality skills.
5. The activities should be differentiated in the context of creative thinking skills and students should be enabled to think effectively in order to produce solutions for different situations.
6. The activities in the textbooks should be prepared in a multidimensional way that will develop the creative powers, interests and imaginations of the students.
7. In line with the opinions of field experts, activities that will enable and develop creative thinking skills should be increased in number and type.
8. It is thought that the studies in which the reading texts in Turkish textbooks are examined in terms of giving students creative thinking skills and the studies that reflect the views of classroom teachers on the activities in Turkish textbooks to help them gain creative thinking skills are thought to contribute to the field.

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# International Students' Sponsorships at University of Technology and Applied Sciences (UTAS), Rustaq, Oman: A Case Study

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## Abstract

The flow of knowledge resources among nations is interconnected with global political, economic and cultural relationships. One major component of academic interaction is the international exchange at the level of higher education. This paper outlines the existence of international students within the Omani Program for Cultural and Scientific Cooperation (OPCSC) at the University of Technology and Applied Sciences-AL-rustaq, College of Education and explores the merits of the program. Through group interview with nine international students, the study found that the currently enrolled students are from African states solely and were informed about OPCSC by word of mouth disseminated by the International Istiqama Organization, which liaisons between studying opportunities offered by the Ministry of Higher Education and willing international students, and through Omani delegates as well as friends. Therefore, this paper recommends branding the OPCSC and subjecting it to systematic policies and procedures, on the one hand, as well as diversification of international students' portfolio in order to raise the quality of higher education in Oman.

**Keywords:** International Students, Omani Program for Cultural and Scientific Cooperation (OPCSC), Higher Education

## 1.Introduction

International students are endorsed as one of the systematic endeavors to quality in higher education internationally and locally. They are defined by the Institute of International Education website (2022) as "Individuals studying on a non-immigrant, temporary visa that allows for academic study at the post- secondary level." At an international level, it is quite common that higher education, in western countries, embraces international students. It is said that "Typically, a top institution looking to recruit one hundred students a year will encourage applications from prospective graduate students from thirty or more countries." This undertaking exposes these students to other cultures, qualifying them to become critical and independent thinkers. Similar wise, locally, this phenomenon has evolved in higher education in the sultanate of Oman since the eve of the



millennium. However, it has become systematically substantial and sustainable through the Omani Program for Cultural and Scientific Cooperation (hereafter OPCSC). This program grants university level scholarships to the brotherly and friendly countries under certain terms and conditions for acceptance. (OPCSC, 2022). Rustaq College of Education, previously operating under the umbrella of the Ministry of Higher Education (MoHE) and now under (UTAS), accepts international students with a minimum total score of 75% in the Omani general diploma or its equivalent and has embraced a number of international students over the last two decades.

The international student status has been recognized by the Higher Education Council established by the Royal Decree No. (65/98). Rustaq College of Education, in turn, following UTAS strategic goals has recognized the international student status in its strategic plan and has adopted the following strategies:

- ❖ Achieve international standards
- ❖ Admit international students
- ❖ Initiate fee-paying admission for international students
- ❖ Market itself as a brand

The umbrella under which UTAS-Rustaq College of Education processes its strategies has been realized so far through the OPCSC, as stated above. UTAS policy and procedures are still under development. However, UTAS, in line with its regulations, unfolded in the Royal Decree No. (47/2021), Article 4.7, has clearly identified in its proposed strategic plan, strategic goal 4, objective 4.2.2 the need to “Establish exchange programs with other education providers for faculty and students (national/international)” (UTAS strategic plan proposal, 2022). Hence, the call to revisit this study in order to incorporate its findings into the formulation of international students' future policy and procedures. This study outlined the existence of international students within the OPCSC at Rustaq College of Education and explored the merits of the program. The research into international students with the OPCSC is reported by situating the study in its theoretical context through reviewing the relevant literature. Following this, the case study approach that framed the research was rationalized and explained before describing the research methods used to collect and analyze the data. The research findings were outlined and discussed with an emphasis on the merits of the international exchange program domain where the research was conducted. The research concluded by examining how the results of the study can inform improvements to the OPCSC across Oman.

## 2. Literature Review

### 2.1. Internationalization in higher education

Due to globalization, higher education both locally and internationally has massively expanded and within this massive expansion, increasing concerns regarding quality have been coming under focus remarkably. In response to these concerns, internationalization was perceived as providing a solution and helping to improve quality of higher education. Put differently, the higher education sector is becoming rapidly aware that in the globalized world of today, internationalization is fundamental to improve the quality of education and provide students with the skills and competences they need to make a valid contribution to society. According to Van der Wende (1997), internationalization is defined as, “any systematic effort aimed at making higher education responsive to the requirements and challenges related to the globalization of societies, economy, and labor markets” (p.18)

In higher education, there are two pillars of internationalization: at home and cross-border education (Altbach and Knight, 2007). Cross-border education pillar implies mobility of people, programs, providers, projects/services and policy. Home pillar, on the other hand, includes curriculum/teaching/learning, open access education, domestic students/faculty, international students/scholar, extracurricular activity and research (Knight, 2012).

At a regional level, UTAS colleges adopt the Oman Authority for Academic Accreditation and Quality Assurance of Education (OAAAQA) definition of international student as the one “....who has come to Oman

from another country with the sole intention of gaining a higher education qualification in Oman " (ISAM, 2016, p.60). These students are admitted to UTAS colleges in Oman, either in Undergraduate / Graduate or Arabic Program for Non-native Speakers, and issued Omani residence permits under UTAS sponsorship through Scholarships and International Admissions Section. (OPCSE, 21-22). The scholarships and International Admissions Section supports one of UTAS approaches, as stated in Article 4.7 of UTAS regulations, in welcoming students from all over the world by adopting different practices that assist applicants from outside Oman to enroll in any of the wide variety of programs at UTAS. Additionally, the Section maintains services that support the enrolled international student's personal growth and progress to reach academic success at UTAS; mentors them to acquire the benefits of OPCSC and provides consistent care until they graduate. These international students who are granted scholarships provided by MoHE/Oman should;

- a) come from Islamic world and other countries (External/Internal Scholarship) to study at the Undergraduate level, and
- b) gain a short Scholarship to study in the Arabic program for Non-Native Speakers.

At an international level, European countries have had a rich history of international exchange contributing to the role of higher education in promoting diversity, equity and inclusion and the responses of universities to related issues and challenges. For example, universities in Europe approach the topic from a strategic point of view, bringing together various smaller scale projects focused on different aspects and dimensions into a comprehensive strategy that becomes an integral part of these institutions' mission to embrace diversity. The Erasmus program (short for the European Community Action Scheme for the Mobility of University Students) is an exemplary initiative run by the European Union (EU). It provides opportunities for students to study or gain work experience in a different European country while completing a degree.

Furthermore, since 2015 the new Erasmus+ programme has also allowed students to carry out mobility schemes in countries from almost all over the world, which is the so-called 'international dimension' of the programme. However, there are some barriers to this mission, such as the preparation of future generations for an internationalized world in terms of providing them with the best training. Thus, there was a need to infuse and promote such concepts in the curriculum and in its policies at the institutional level. Having done that, and according to the Spanish Service for the internationalization of Education (2017), there is a comprehensive internationalization across the institution as all stakeholders including students, teachers and administrative staff become knowledgeable and well-educated.

Having said so, this research is based on Knight's (2004) generic model of internationalization in higher education. This framework is based on four dimensions namely program, rationales, policies and strategies. The first dimension is seen in terms of providing funded programs that facilitate international activities, such as mobility, research and linkages. The second dimension is presented in terms of why it is important that the sector becomes more international. Rationales vary enormously and can include human resource development, strategic alliances, commercial trade, nation-building, and social/cultural development. The third dimension is described in terms of policies that address or emphasize the importance of the international or intercultural dimension in higher education. Policies can come from a variety of sectors, including education, foreign affairs, science, technology, culture, and trade. The fourth and final dimension is considered a key element of a national strategy to achieve a country's goal and priorities, both domestically and internationally.

Therefore, the OPCSC in higher education in Oman has to be examined at the institutional level of internationalization; at home and at the cross-border educational level as well. Thus, the question which guides this research is "What is the current situation regarding the international students' sponsorship at Rustaq College of Education from the international students' perspective?"

### **3. Methodology**

#### *3.1. Case study*

The present study adopts qualitative research methods, specifically case study methodology. Since this study explores how international students are sponsored at UTAS-Rustaq, college of Education, it equates with Van Lier's (2005) description of a case study as an influential research method in education as it allows researchers to deeply examine the phenomenon in its educational settings. Thus, this research deeply investigates the phenomenon of current practices regarding internationalization at Rustaq college of Education.

Moreover, this study fits well within the definitions of a case study. One of the definitions of case study presented by Yin (2018), is that 'a case study is an empirical method that investigates a contemporary phenomenon (the case) in depth and within its real context, especially when the boundaries between phenomenon and context may not be clearly evident' (p.45). In other words, an extensive in-depth description and understanding of a social phenomenon in its real context is likely to involve contextual conditions that are related to the investigated case. In this research, the practices of internationalization have been examined at Rustaq college of Education in Oman where international students have been admitted and pursued their study.

Through using multiple sources of evidence, the investigated phenomenon under its complex social settings will be revealed. In relation to this study, the social phenomenon of the international students' sponsorship at Rustaq College of Education is investigated from various perspectives. First, it has been studied from the literature review through examining the practices that international and regional countries are involved in. Second, the phenomenon has been investigated through international students' perspectives. In this regard, the research has employed semi-structured interviews to uncover the examined phenomenon.

### *3.2. Participants and instruments*

The research participants were international students studying at Rustaq College of Education. Purposive sampling has been utilized by selecting only those participants who had an experience of internationalization and sponsorship. The nine participants were all from West Africa and in their final year of International Business Administration (IBA) and IT majors program.

Semi-structured interviews with the participants is the main set of data used in this study. It is an interaction between the interviewer and the participants to gather perceptions, attitudes and feelings towards the investigated social phenomenon in a non-threatening environment. So, it involves the interviewer asking questions and getting answers from the participants of the study. It is a relatively cost effective and efficient data collection method because it involves collecting data from a group of people at the same time. It is also flexible as it allows the researchers to explore unpredictable topics that might arise during the process of interviewing. The group interview was analyzed using the thematic analysis procedure (Braun & Clarke, 2006). There are six phases of thematic analysis starting from familiarizing oneself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and finally producing the report.

## **4. Findings and Discussion**

In response to the research question "What is the current situation regarding the international students' sponsorship at Rustaq College of Education from the international students' perspective?". The following sections will present the findings and discussion.

### *4.1. Lack of clear marketing for OPCSC*

All the interviewed international students confirmed that they heard about the OPCSC only through the International Istiqama organization in their countries. It seems that the Istiqama organization under the umbrella of The Ministry of Awqaf and Religious Affairs works as a liaison between the Ministry of Higher Education in Oman and abroad. However, the Istiqama organization seemed to target the Islamic countries in West Africa as all the interviewed international students were from Tanzania, Republic of Benin and Kenya. Moreover, there is no systematic process of how the Istiqama organization disseminates the information of the program. It is more like a word of mouth. One of the interviewed international students said that "the ambassador of my country

talked about the Omani sponsorship in the mosque and it happened that I heard about it.” Another international student mentioned that she heard about the Omani sponsorship from her friend and another from his relative through the mosque. This intensifies the need that the OPCSC should clearly indicate in its electronic booklet 2021/2022 how the international students will know about the OPCSC. Plus, there should be a clear mechanism for marketing the program to international students, for instance delegates can visit international schools in Oman and abroad to introduce the program to students, Omani cultural attaches can popularize and market the program too. Moreover, there should be an updated link on the MOHE and/or UTAS websites which leads to further details about the program.

#### *4.2. Lack of systematic procedures for international students' rights*

All the interviewed international students seemed to have encountered negative experiences upon arrival to the Sultanate due to their misunderstanding of the mechanisms of their rights. One of the ambiguous procedures is the unavailability of accommodation for them upon arrival to Oman. One of the international students expressed his disappointment upon arrival to Oman. He mentioned that he took a taxi to the Rustaq College of Education for an hour and half and upon arrival, the college gate guard asked him to return back as there was no male accommodation available. Another student mentioned that she was received by a family member working in Oman, at the airport. A third student stated that one of his relatives worked in the Istiqama organization and he helped him with the accommodation. A fourth student had a network connection with a previous international student who assisted him to find a place to live in.

Another unclear procedure is the visa renewal. The international students mentioned that they had to renew the visa every two years instead of being validated till graduation and surprisingly they had to pay by themselves for the renewal of their visa. Thus, it is highly important for the OPCSC to assist international students throughout their academic career by facilitating all the processes such as their visas and accommodation. They need, for instance, to validate their visa till graduation and provide or suggest accommodation nearby the selected college so that the students psychologically feel stable and their academic performance would improve accordingly.

Furthermore, funding was an obstacle for those international students as they mentioned that their previous international colleagues had advised them on how to get a loan from the college until the funding was resolved after four months of their arrival to the Sultanate. It is of significance that the international students' allowances are given on a monthly basis since the OPCSC is a funded program. The personnel in charge of program implementation should be responsible that all the details of international students including their bank information are given promptly and updated to facilitate receiving allowance smoothly.

#### *4.3. International students' views of the college services*

The findings show that the international students are nearly satisfied with the services provided for them, except for the following pivotal services namely: recreational services, psychological counseling, academic and social advisory services. Surprisingly enough, these services are not available for local students too. This entails the necessity of initiating such services for all students in order to promote their lifestyle and enhance their academic performance. Accordingly, they suggested some ideas to foster their satisfaction regarding the general services provided in the college. One of the international students mentioned that “the college should enhance the network and connection between it and my country so that it can receive new students.” A second student commented, “the college should help male students to find accommodation close to college in order to minimize cost of transportation.” Another student suggested that the college should conduct weekly meetings with them in order to discuss their needs within the academic context. These comments clearly highlight the need for the abovementioned services.

The above entails the absence of a clear approach to address the results of deploying the OPCSC in Omani Higher Education. At the national and Sectoral levels, Knight (2004) has emphasized approaches that highlight some of the emerging trends, issues, and questions important for internationalization. This section revisits these approaches with their description and how these align with OPCSC at Omani higher educational level.

<b>Approach</b>	<b>Description</b>	<b>OPCSC at Omani higher educational level</b>
Program	Internationalization of higher education is seen in terms of providing funded programs that facilitate international activities, such as mobility, research and linkages.	<b>OPCSC is a funded program from the ministry of Higher Education. Thus, international students' allowance should be given on a monthly basis.</b>
Rationales	Internationalization of higher education is presented in terms of why it is important that the sector becomes more international. Rationales vary enormously and can include human resource development, strategic alliances, commercial trade, nation-building, and social/cultural development.	<b>OPCSC is a commercial trade where Oman can market its education internationally. Thus, it should be marketed globally not only through the international Istiqama association.</b>
Policies	Internationalization of higher education is described in terms of policies that address or emphasize the importance of the international or intercultural dimension in higher education. Policies can come from a variety of sectors, including education, foreign affairs, science and technology, culture, and trade.	<b>OPCSC's policy is absent, thus Higher education should design a clear policy for OPCSC. This research proposes a policy suitable to the exchange program.</b>
Strategies	Internationalization is considered a key element of a national strategy to achieve a country's goal and priorities, both domestically and internationally.	<b>Oman is working hard to boost output in education. Its vision 2020 is designed to steer the Sultanate towards a more sustainable and diversified economy by using oil revenues to boost education. Thus, OPCSC should be given a priority to support the Sultanate achieving its goal.</b>

## 5. Conclusion and Recommendations

The research investigates the current situation of internationalization at UTAS-Rustaq, College of Education in Oman. From international students' perceptions and attitudes, the research found that there is lack of clear marketing for OPCSC, as well as lack of systematic procedures for their rights. International students indicated that they undergo absence of psychological counseling, shortage of recreational services as well as academic and social advisory services. Therefore, this research proposes a policy for the Scholarships and International Admission Section which will grant a systematic process to ensure international students' rights and obligations. Having said so, the research proposes a policy for the Scholarships and International Admission Section [The section, hereafter]. This "Proposed" Policy includes two parts.

**Part 1** entails rules and regulations for the students who obtain a student visa under UTAS residency sponsorship. They are as follows:-

**A) Tickets:** The following rules are applied for the international students who have a scholarship with a student visa and are eligible for an annual airline ticket.

1. The section would issue a one-way ticket for the student who gets admission and is willing to enroll at one of UTAS colleges.
2. Issuing the return ticket to the student to travel to the destination the student came from to UTAS/Oman for the first time. Changing destination requires approval of the Section.
3. The section issues the ticket upon student's confirmation

4. The ticket is provided only when the student is willing to travel after final exams in every spring or summer semester.
5. A Graduating student deserves only a one-way ticket to the destination the student came from to UTAS for the first time, and a 50 KG cargo letter. Both are provided only when the student cancels the residence permit and leaves Oman.
6. Short scholarship students have to bear all expenses including the airline ticket when the student withdraws or leaves the program at any time without any acceptable reason and without the approval of the A&R center's director.

#### **B) Residence and Exit Permits:**

1. UTAS has no objection to receiving a student visa application only from newly admitted international students when the student complies with the requirements and the assigned timeline. However, UTAS would not receive student visa applications from current students with accumulative GPA less than 2.5 or re-instated or re-enrolled or re-admission students.
2. Students are obliged to abide by the regulations in the Sultanate of Oman and CAS; including, newly admitted students should not leave Oman before completing the procedures of getting the residence permit.
3. Students are required to apply for an Exit Permit to travel for each trip outside Oman.
4. To be eligible to apply for services related to residence permit, Exit Permit or to receive any official letter from UTAS, etc., the student is required to settle the entire outstanding fee.
5. Female students traveling by road must submit written consent of her guardian enclosed with a copy of the guardian's ID card to the Scholarships and International Admissions Section, which requests for issuing the exit permit to travel by road.
6. In the condition of termination under any reason (academic dismissal, final withdrawal, freeze enrollment, etc.) or the visiting student completed studying in CAS, the student is required to complete the compulsory procedures and submit the original passport and ID card to the section. Consequently, the section would cancel the residence permit; and the student should leave the country within 5 days from the date of terminating the permit.
7. The student is obliged to bear any penalty fee when withdrawing during the semester.
8. Graduated students are required to cancel the residence permit to leave Oman within five days after getting the graduation certificate or attending the graduation ceremony.
9. The student, who stays out of Oman for more than six months, has to submit an official request clarifying the reason for the delay and his desire to return to the Sultanate of Oman for the completion of the study. In case of approval on request, students will be responsible for all fees and fines that may have to complete this transaction.
10. In all cases, the scholarship rules will be applicable for the Omani Cultural Exchange Program students.
11. Students will be subject to the scholarship conditions when not fulfilling scholarship regulations. When the scholarship gets canceled because the student failed to achieve the conditions to continue as the beneficiary of this scholarship, the student will be given a one-way ticket to leave Oman within five days after canceling the resident permit.
12. The student is responsible to contact the Scholarships and International Admissions Section and bring the original passport and ID card to renew the residence permit or to update the information at the Ministry of Interior systems when the student renews his passport. The student will be responsible for all consequences due to the delay in passport submission.
13. UTAS has the right to claim all or part of any expenses due to a student's failure to meet deadlines.
14. Current students in UTAS may submit a "transfer residence permit" application from the current sponsor to UTAS sponsorship due to any reason; for example, father leaves Oman; students should satisfy the conditions and submit the documents that prove the reasons for the transfer application to the section.
15. Upon completing the final exams immediately, graduated students should contact the section to settle the residence permit, either to cancel it or transfer it, with the importance of the availability of the required criteria. Leaving Oman is prohibited before completing this process. This regulation is not valid for students in the Arabic Program for Non-Native Speakers.

**Part 2** includes rules and regulations for the pay-free students who got a student visa under UTAS/Oman residence sponsorship. The following are the conditions of continuing study in UTAS

1. International students who enroll in the General Foundation Program are required to complete the Foundation Program in 2 semesters. Otherwise, the students should withdraw from UTAS, cancel the residence permit and leave the Sultanate of Oman.
2. The laws of residence and exit permits for the students who are sponsored by UTAS and have a scholarship are all applicable. All the expenses for issuing entry visa, residence permit, health insurance (if available), and any other obligatory fees and expenses are paid by UTAS.
3. A student continues to be eligible for a scholarship when s/he fulfills the following conditions:
  - o Must be enrolled in UTAS/ Oman as a full-time student.
  - o Must have completed UTAS General Foundation Program.
  - o Must have completed at least 24 credit hours in a UTAS college.
  - o Must have a minimum cumulative GPA 2.5 out of 4.

Student who are granted a scholarship under the umbrella of the Omani Cultural Exchange Program should fulfill the following scholarship conditions:

- o Must finish 15 credit hours in each semester.
- o Must maintain a minimum cumulative GPA of 2.50 out of 4.

## 6. Limitations and contribution

Every study has a limitation. This study merely focused on the international students at Rustaq College of Education, UTAS. Future research could conduct interviews with international students across UTAS to deeply investigate the practices and process of internationalization, including, but not limited to, self-funded international students and GCC students. Policy makers and personnel in charge of program implementation must also be interviewed to trace the multi-dimensions of the phenomenon. Furthermore, longitudinal studies could be conducted to trace international students from their arrival till their graduation, following intensively their academic routes. Despite its limitations, the study contributes to shedding light on the issue of international students in higher education and proposes a policy to regulate their life during their academic perusal. Internationally, this study reveals the need for the OPSCS to be professionally branded and marketed to attract increasing numbers of competitive international students from around the globe.

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# Improvement of Six Competency Skills through the Development of Flipped-Case Project in Era of Education 4.0

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## Abstract

The lack of research development on 21st-century learning models that can improve the six competency skills of Geography Education students at Universitas Lambung Mangkurat Indonesia and its integration in wetland environment management became the background for developing the Flipped-Case Project Model. This model results from the development of case methods and team-based projects, one of the efforts to improve six competency skills in learning innovation. This development consists of five stages: analysis, design, development, implementation, and evaluation. The results of this study showed that the novelty of the development of this model was seen in the learning syntax, including group formation, determining the topic of wetland management, mini-research, case finding by students, group discussion, presentation of reports, presentation of results, mini lecturers, and evaluation in the form of feedback. The Flipped-Case Project model has been declared feasible and effective for improving six competency skills as a learning model in the study of wetland environment management at the Geography Education Study Program, Universitas Lambung Mangkurat. The implications of this research as an alternative geography learning model that can improve students' six competency skills in the 4.0 education era. In addition, as a guide for further research to be implemented in other courses in higher education.

**Keywords:** Six Competency Skills, Flipped-Case Project Model, Wetlands, Education 4.0

## 1. Introduction

The era of education 4.0 is an era of the development of science and technology that is advancing rapidly in the field of education. The development of science and technology will align with the increasing quality of education in the higher education (Muzana et al., 2021). This poses a big challenge for universities in Indonesia in improving student competencies to enter a new era of education. Lecturers must produce graduates with competencies by education 4.0 through innovative and technological learning. Personalization of education 4.0 can be seen from the learning process in which lecturers have complete flexibility as their learning designers in achieving learning goals. It can be concluded that the role of lecturers is more complex than in the previous era, which is shown by the way lecturers respond to the increasing needs of student competence, accompanied by faster technological

developments and social construction changes. Therefore, (Fariza Khalid et al., 2016; Tican & Deniz, 2019) utilizes learning innovations.

Students in the 4.0 education era also face challenges in a complex and systematic way. In addition, students must be able to compete in the learning process to achieve goals (All et al., 2021; Li et al., 2021; Tapingkae et al., 2020). To survive in the 4.0 education era, students must have soft skills competencies and be developed according to their potential. The partnership framework of 21st Century Skills formulates it as "The 4C Skills," namely Critical Thinking, Communication, Collaboration, and Creativity (Ennis, 2019). As development progresses, it turns out that competencies must be possessed not only limited to 4C skills but also increased to Six Competency Skills: Critical Thinking, Collaboration, Creative Thinking, Character Education, Citizenship, and Communication (Anekwe, 2020).

But the problems faced in the learning process are encountered by most lecturers. These problems include the lack of student activity in participating in asking questions, discussing, and answering questions, the low ability of students to communicate to explain and argue both orally and in writing, and the low ability to solve problems in teamwork. Several research findings show that students in Indonesia cannot engage in critical thinking and higher order thinking (Mahanal et al., 2018). This problem can result in students being unable to fulfill the six competency skills that must be possessed in the 4.0 education era. So, lecturers must take advantage of learning technology currently developing rapidly through learning models.

The learning model is the most important component in the learning process (Budi et al., 2020). Applying the suitable model can improve student skills in the 4.0 education era. So, the development of learning models is necessary to adjust the need for the quality of student skills to the needs of today's world of work. So, it is essential to develop a learning model based on case learning methods and team-based projects so that students have six competency skills in the 21st century. Case methods and team-based project learning are one of the learning methods that refers to the 7<sup>th</sup> Key Performance Indicators (KPI), where the percentage (50%) of the final score weight must be based on the quality of class discussion participation (case method) and project-based learning final presentation. This learning is discussion-based participatory learning to solve cases or problems. The benefits of this case method can develop a holistic way of thinking, the correlation between concepts, and relationships between disciplines (Kim et al., 2006). For this reason, applying this case method and a team-based project can improve 6C skills, which are the learning objectives in the 4.0 education era.

### *1.1. Case Method*

The case method is a learning model that uses case studies from the real world in the community. This learning model uses engaging learning scenarios as a means of learning activities. With case solving, students can explore, find, and solve problems from cases through group discussions in class. Learning that uses real cases and is equipped with appropriate learning syntax will help students to answer problems so that they are more creative to develop critical thinking competencies (critical thinking) or higher-order thinking skills (HOTS) (Nuswawati et al., 2017).

The case method is an alternative to teaching and learning activities with a pattern of application in case studies of problems related to lecture material sourced from the organization's internal or external environment. With the emergence of issues and problems in case studies, it is a place for students to put themselves as decision makers of the problems found so that students not only know or understand the problems that have been discussed but also think about finding solutions to these problems. With the application of this case method, participatory learning based on problem-solving discussions will improve critical thinking skills to solve problems, communicate actively, collaborate, and innovate.

### *1.2. Team-Based Project*

Team-based project is a combination of project-based learning and team-based learning models. Project-based learning involves problem-based learning procedures requiring identification, analysis, and solutions. Meanwhile,

Team-based learning is evidence-based collaborative learning designed to provide a way for students to solve problems they face in their environment (real life).

Team-based project learning seeks students to think critically through projects given by educators (teachers or lecturers) (Mutakinati et al., 2018; Wu & Wu, 2020). This learning provides opportunities for students to build critical thinking skills, communication, knowledge, and learning outcomes that are important to improve the quality of education and long-term learning through group discussion activities (Marzuki & Basariah, 2017; Yustina et al., 2020).

This method will involve students actively through projects and discussion groups in developing their 6C abilities to solve problems related to real life, such as the problems encountered by students in the wetland environment. There are still many obstacles and issues that need to be criticized by students so that their potential can be developed optimally. For this reason, students must be able to explore their abilities in solving and providing solutions to these wetland environmental problems through courses such as Wetland Environmental Management, Regional Planning and Development, Rural and Urban Geography, and other related courses to environmental themes/discussions of wetlands.

Previous research found that conventional methods only emphasize declarative knowledge, while contemporary learning methods emphasize intellectual skills such as problem-solving. This causes differences in the learning outcomes that depend on the learning approach, and the assessment process carried out (Anderson, 2013). This case method and team-based project are better than conventional learning methods (Mentari & Laily, 2016) and positively affect student learning achievement (Anas, 2021). In line with this, it is stated that the development of teaching materials with this case method can improve student collaboration capabilities in synergy in understanding, analyzing, and finding solutions to problems outlined in cases with real situations and conditions (Anas, 2019). This case learning method is a forum for educators to integrate fundamental knowledge and practice in improving problem-solving skills (Schoeman et al., 2009). This research is different from previous research because this research will be able to produce a case method development model and a team-based project based on a wetland environment, namely the Flipped Case Model. The results of this study can fill in the gaps in information related to learning models based on case methods and team-based projects for the wetland environment as learning materials.

This research is fundamental to do to produce a Flipped-Case Project Model learning model as a case method and team-based project development with the topic of the wetland environment to improve Six Competency Skills (6C) skills in Era of Education 4.0 for students in the Geography Education Study Program, Universitas Lambung Mangkurat.

## **2. Method**

This research method uses ADDIE. The development model used is the ADDIE model, which consists of five stages consisting of 1) the analysis stage, which is the stage to find out the learning problems and the needs of the learning model; 2) the design stage, to design a learning model that is ready to be validated; 3) the development stage, consisting of validation test activities by learning model experts as many as two experts; 4) the implementation stage, including the learning model trial phase in the wetland environmental management course, involving 31 students and two lecturers in the geography education study program; and 5) evaluation stage, is the last stage in which the model evaluation stage becomes the final product. The procedure for developing a learning model using the ADDIE model is presented in a flow chart (Figure 1).

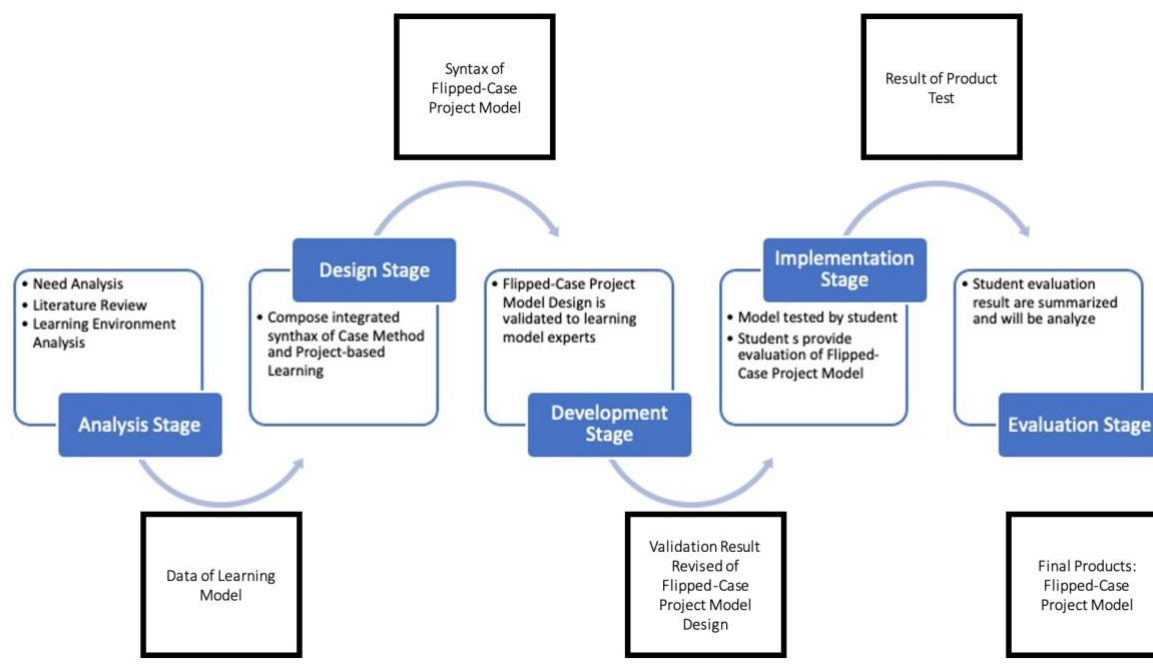


Figure 1: Flowchart of Model Development Procedure

### 3. Results and Discussion

#### 3.1. Analysis Stage

This stage is the initial stage in reviewing the goals of education development in Indonesian universities, namely 1) improving the quality of learning and the relevance of higher education; 2) improving the quality of lecturers and education staff; and 3) the realization of quality management of the Director General of higher education (Direktorat Jenderal Pendidikan Tinggi, 2021). Universities are expected to manifest these three goals by increasing the capacity and quality of the education process and management they are responsible for.

The achievement of targets can be measured through the Main Performance Indicators of State Universities (IKU-PTN), including first, the quality of graduates is calculated based on decent work and students gain experience outside the campus; second, the quality of lecturers is measured through the activities of lecturers outside the campus, teaching practitioners on campus, and the work of lecturers is used by the community and gets international recognition. Third, the quality of the curriculum has sub-indicators such as study programs in collaboration with world-class partners, collaborative and participatory classes, and international standard study programs. The three leading indicators, IKU-PTN, are broken down into eight KPI-PTN. Regarding learning, this is found in the 7<sup>th</sup> IKU-PTN: collaborative and participatory classes.

The development referred to in this research elaborates case methods and team-based projects into new learning models. The development of this model can be used as a learning model that can produce competent students and meet the challenges of 21st-century education in the form of six competency skills. The 6C skills in question are Critical Thinking, Collaboration, Creative Thinking, Character Education, Citizenship, and Communication to support 21st-century learning.

Critical thinking starts with evaluating evidence, assumptions, and logic that underlies other people's statements to reach a deep understanding (Retno et al., 2018). Problem solving also requires creative thinking skills as an effort made by lecturers and students in the learning (Heong et al., 2020). A diverse learning environment is important in learning management, especially regarding communication between lecturers and students. Communication skills play a very important role because communication culture as a bridge for interaction

between lecturers and students in conveying information must be reasonable and clear in the learning process (Roksa et al., 2017). The existence of communication with proper articulation in the learning process also influences creativity and critical thinking skills in the learning (Budi et al., 2020; Epçaçan, 2019). Education 4.0, or 21st-century education, also requires student skills in collaboration between individuals and groups. Collaboration between students and lecturers is an important element in learning to solve the difficulties of the problems discussed. The findings of previous studies also state that the challenges teachers and students encounter during classroom learning can be solved by collaborating to find the right solution (Mutohhari et al., 2021).

### 3.2. Design Stage

Based on the needs analysis results, it is necessary to design a learning model to improve six competency skills for Geography Education Study Program students. At the design stage, it is necessary to study literature that supports the design of the learning model concept resulting from the elaboration of the case method and team-based project. The idea of resulting learning model aims to improve the soft skills possessed by students in the form of six competency skills. The Flipped-Case Project model was developed based on the case method and team-based project elaboration (figure 2). The case method and team-based project syntax were elaborated and modified according to the needs and characteristics of students in studying contextual wetland management.



Figure 2: Syntax Design of the Flipped-Case Project Model

### 3.3. Development Stage

Based on the assessment given by the validators, the average value of the validation results on aspects of the Flipped-Case Project model is 95%. These results were obtained based on four factors, including parts of the syntax, social system, reaction principle, and instructional impact and accompaniment. Based on the test results on the four aspects (Figure 3), the highest score on the syntax aspect of the model reached 97%, and the instructional impact aspect had a low score of 90%. The validators give suggestions to use sentences that are easier to understand. Other recommendations regarding aspects of instructional impact are to be more concrete so that it is easy to achieve learning objectives. Revisions have been made according to suggestions from experts so that it is hoped that there will be no sentence ambiguity in the syntax of the Flipped-Case Project model.

### 3.4. Implementation Stage

This trial stage is carried out on all students who take the wetland environment management course in class A1 of the Geography Education Study Program, Universitas Lambung Mangkurat, Banjarmasin. The implementation of the Flipped-Case Project Model is by the learning syntax, in which their activities consist of nine learning steps of the Flipped-Case Project Model (Figure 2). So the learning activity of this Flipped-Case Project Model (Figure 4) begins with the formation of six groups that have determined the location of wetland environment management in the South Kalimantan region, including 1) peat swamp on A. Yani Street Km 16, Banjar Regency; 2) the Barito River in Banjarmasin; 3) Riam Kanan Reservoir in Banjar Regency; 4) Rice fields in Marabahan, Barito Kuala Regency; 5) Estuary in Barito Kuala Regency, and 6) Ex-mining pond in Martapura Area. The six locations are determined because the area can represent the wetlands in South Kalimantan. Before they did case finding in each of these locations, the lecturer provided an understanding of concepts related to wetland environment management in South Kalimantan.

After the lecturer explains the concept of wetland environment management in class, students can go directly to the field to find wetland environment management problems. Students must be more sensitive and critical in finding problems (cases) of wetlands in their respective locations. After the lecturer explains the concept of wetland environment management in class, students can go directly to the field to find wetland environment management problems. Students must be more sensitive and critical in finding problems (cases) of wetlands in their respective locations. After the lecturer explains the concept of wetland environment management in class, students can go directly to the field to find wetland environment management problems. Students must be more sensitive and critical in finding problems (cases) of wetlands in their respective locations.

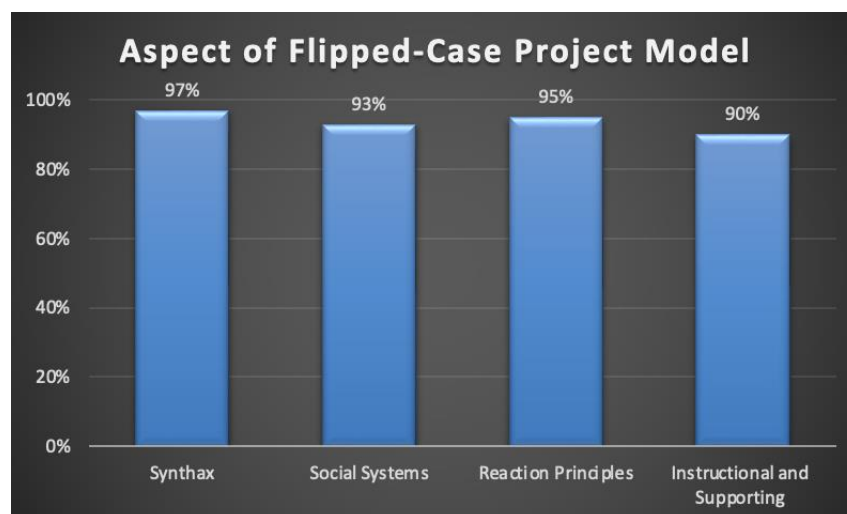


Figure 3: Flipped-Case Project Model Validation Results

In addition, they must explore data and information in the field related to theories and literature reviews of wetland environment management so that later they can propose appropriate designs, ideas, ideas, and solutions to solve case studies of wetland management. The results of this mini-research project must be written on a worksheet and discussed among group members. The discussion results can be used as the basis for making group reports and presenting the final product as a case report on wetland environment management in South Kalimantan. The lecturer's role as a facilitator is to direct and guide students in this learning process. In addition, lecturers provide feedback to students related to wetland environment management to see students' competence in critical and creative thinking.



Figure 4: Learning Activities with the Flipped-Case Project Model

Several Flipped-Case Project Model product tests were conducted for students and lecturers at this implementation stage. The test phase of this product is as follows.

1. Practical Test of Flipped-Case Project Model by Lecturer

The results of this Flipped-Case Project Model product were also tested on users, namely two lecturers in the Geography Education Study Program related to the practicality of the model, namely a lecturer in charge of a geography teaching planning course and a geography learning strategy course. Based on the results of the practical test of the Flipped-Case Project Model, it was found that the average value was 94.16%, which means this model is functional and user-friendly in the application of learning by lecturers (Figure 5).

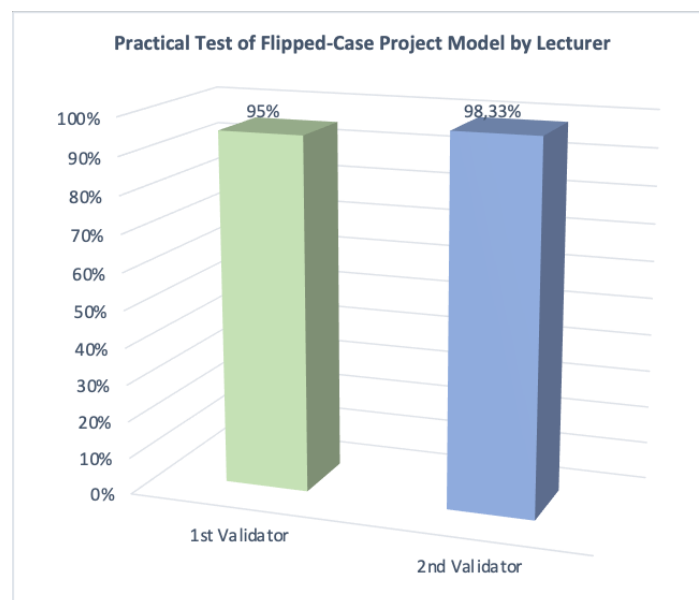


Figure 5: Practical Test Results of the Flipped-Case Project Model

2. Flipped-Case Project Model Practical Test by Students

At this implementation stage, the Flipped-Case Project Model was also tested on 6th-semester students who took the wetland environment management course in the geography education study program as many as 31 students. The results of the practical test of the Flipped-Case Project Model for students have obtained an average of 94.98%.

The learning steps in this Flipped-Case Project Model consist of nine components, including understanding the lecturer's instructions, understanding the instructions on the observation sheet, understanding the problem, understanding the lecturer's explanation, understanding the wetland environment management material, problem-solving ability, solving problems in the form of tests, conducting discussions, and presentation skills (Figure 6).

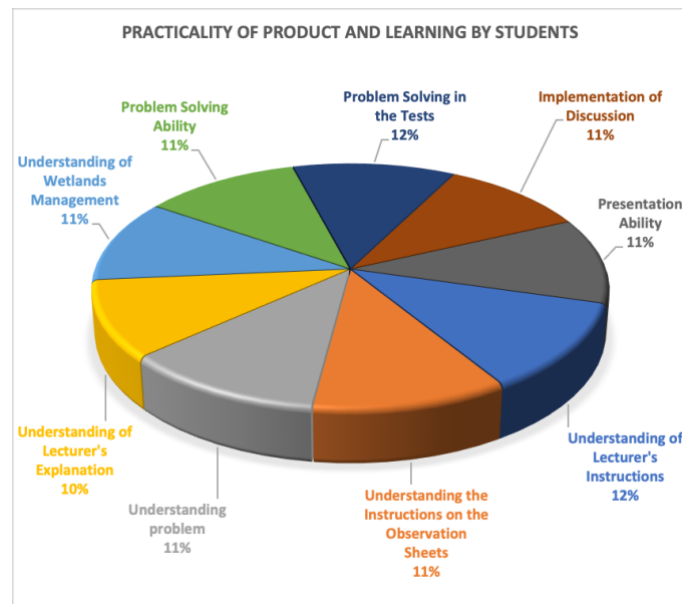


Figure 6: The Practical Test Results of the Flipped-Case Project Model by Students

### 3. Flipped-Case Project Model Effectiveness Test

In the Flipped-Case Project Model trial, it is also necessary to test the implementation of the model by two observers when the lecturer implements this model in the classroom. The two observers assessed the implementation of the Flipped-Case Project Model in the learning process. The results of the Flipped-Case Project Model implementation test found that the Flipped-Case Project Model had been implemented according to the components of this model in learning. The features observed in the implementation of this model include 1) student orientation in problem situations; 2) student organization for learning; 3) problem solving individually or in groups; 4) presentation of works; 5) analysis and evaluation; 6) the implementation of the social system; 7) the implementation of the reaction principle, and 8) implementation of the learning support system.

At the implementation stage, the Flipped-Case Project Model went through several test stages, so it can be concluded that it is practical and feasible to be used as a learning model to improve the six competency skills of students of the Geography Education Study Program, Universitas Lambung Mangkurat (Figure 7).

#### 3.5. Evaluation Stage

This trial stage is carried out on all students taking the wetland environment management course at the Geography Education Study Program, Universitas Lambung Mangkurat. The evaluation stage is the final stage of developing the Flipped-Case Project Model learning model. This stage produces a new learning model product that has undergone several tests at the implementation stage. The final product of this development research is a Flipped-Case Project Model. This model can be used as a geography learning model to improve students' 6C competencies.



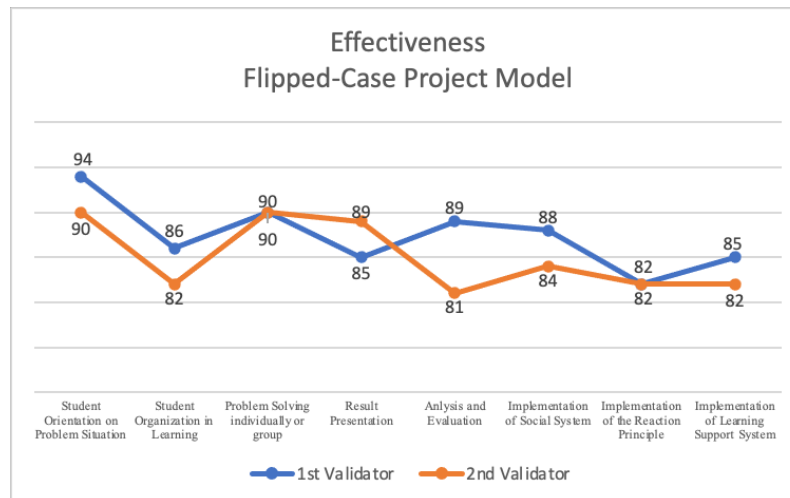


Figure 7: Results of the Flipped-Case Project Model Effectiveness Test

The Flipped-Case Project Model results from developing case methods and team-based projects based on projects and cases solved in groups. The existence of the Flipped-Case Project Model is expected to improve student skills in the 4.0 education era, namely six competency skills. This is in line with the 21st-century skills-based curriculum as stated in the Main Performance Indicators of Higher Education which aims to prepare student competencies including critical thinking, collaboration, creative thinking, character education, citizenship, and communication. These skills focus on 21st-century global education in preparing students to face the challenges of the 21st century and the real-world (Anekwe, 2020; Takeda, 2016).

The novelty in the Flipped-Case Project learning model lies in the learning syntax. The learning syntax of this model must include critical thinking, collaboration, creative thinking, character education, citizenship, and communication skills in the geography learning process, especially in the wetland environment management course. This can be seen from the activities of students who first identified cases with the theme of contextual wetland environment management in South Kalimantan. Activities outside the field integrated with this model are fun learning activities with direct experience in the field (Bamberger & Tal, 2007; Takeuchi & Sugimoto, 2006). Students conduct group discussions about the results of case findings in the field. This group discussion activity can develop students' mindsets and skills (Rijal et al., 2021). The role of the lecturer in the Flipped-Case Project model is as a facilitator of learning activities, not as a provider of cases to be solved by students. The transformation from conventional teacher-centered learning to student-centered learning that emphasizes problem-solving, creative thinking, critical thinking, communication, and collaboration can improve the 21st-century competency-based learning (Mutohhari et al., 2021).

The Flipped-Case Project's effectiveness This model positively impacts geography students in the learning process as they can identify problems around them directly, solve problems and make concrete problem solutions, work together, and communicate effectively. With this provision, students have solid mental activity, can reason, make the right decisions, generate creative ideas, collaborate, and communicate effectively with others (Belland et al., 2009; Zubaidah et al., 2020).

#### 4. Conclusion

The development of learning models refers to case methods and team-based projects as learning methods on the Main Performance Indicators of Higher Education in Indonesia. Research on this model's development goes through five research and development stages. The first is an analysis that includes primary considerations related to a strong background for developing learning models. The fundamental concern is the importance of a learning model that can form students with six competency skills in 21st-century education. Second, a design plan in the form of a prototype Flipped-Case Project Model. Third, at this stage, validation activities are carried out by learning model experts to assess the feasibility of the Flipped-Case Project Model. The validation test results

showed that the Flipped-Case Project Model was declared feasible. However, I still need to do minor revisions based on suggestions from the experts on this learning model. Fourth is the implementation stage, where at this stage, the Flipped-Case Project Model must be tested, including practicality tests by students and lecturers and model effectiveness tests. The results of the three tests show that the Flipped-Case Project Model can be applied well to each learning syntax and is declared effective as a geography learning model. Fifth, this stage is the final stage of developing this learning model, which produces the Flipped-Case Project Model. The implications of this research as an alternative geography learning model that can improve students' six competency skills in the 4.0 education era. In addition, as a guide for further research to be implemented in other courses in higher education.

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# Online Learning Participation after the Covid-19 Pandemic in Sikka Regency, Eastern Indonesia

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## Abstract

The Covid-19 pandemic has brought major changes in the world of education in Indonesia. The impact caused by this pandemic has led the Indonesian nation to the introduction of civilization or a new era related to mastering communication and information technology through the application of online learning. However, people's readiness to adopt new technologies and apply them in online learning has become an obstacle in itself during the pandemic until now. The purpose of this study is to describe the level of student participation during the pandemic related to the use of online learning technology. This research uses qualitative descriptive methods and emphasizes data collection through interviews, observations and documentation studies. The results showed that the low level of student participation in adopting online learning technology, students were not prepared for changes in application-based online learning technology, lack of digital literacy, lack of income for economic needs, and student mentality. Based on these findings, it can be concluded that the unstable economic conditions of the community during the pandemic have caused students' unpreparedness in accepting online learning models through modern learning applications on the internet, the mentality of students who are unwilling to accept changes, and the adaptation to the use of online learning technology.

**Keywords:** Student's Participation, Online Learning, Covid-19 Pandemic

## 1. Introduction

The Covid-19 pandemic has seized a lot of attention, energy, resources, and the financial side of human life in the world (Fauzi, 2022) including patterns of interaction with fellow humans (Munastiwi & Puryono, 2022). Almost all the concentration and diversion of the budget is only focused on the prevention, control and treatment of people affected by Covid-19 and continue to look for an antidote or vaccine to cure those infected (Sarip, et al., 2020). Many people are infected, being treated, and many have had to breathe after a long battle with this pandemic. Rizal (2020) said that there are at least three adverse impacts of the Covid-19 pandemic on the people of Indonesia, namely the high mortality rate of health workers (doctors and nurses) as the frontline of handling the pandemic, economic recession in various fields, and a change in the new learning paradigm, namely the application of distance

learning (*online*) with its characteristics resting on practical skills, data-driven assessment of learning outcomes, and multi-interaction (Naroo, et al., 2022). Meanwhile, on the education side, Aji (2020) explained the two main impacts of the pandemic, namely the unpreparedness of families to organize schooling at home as a short-term impact and the long-term impact resting on aspects of justice and equitable welfare for all Indonesian people.

Several important aspects of human life, especially those that affect the lives of many people, are also affected and do not make a positive contribution to meeting the needs of human life (Livana, et al., 2020). For example, aspects of health, education, business and industry, government and private institutions, as well as basic human activities, are limited and do not support human needs themselves. The obstacles faced by the community are precisely based on efforts to meet needs and require free space, even having to be limited by the demands of *physical distancing* and *social distancing* health protocols. This condition has appeared in several major cities in the world, with the term *lockdown*, or in Indonesia regulated in Government Regulation Number 21 of 2020 with the term Large-Scale Social Restrictions, as one of the government's policies to suppress the spread of the Covid-19 outbreak. On the sidelines of handling the impact of Covid-19, the Indonesian government has set 9 policies or regulations related to Science, Technology and Innovation (STI) that are used to recover the impact of the pandemic in question (Putera, et al., 2022). In the education sector, the impact of the pandemic actually affects the implementation of face-to-face learning, which is replaced with online learning as part of the central government's policy that is applied to remote areas (Safitri & Nugraheni, 2020).

In this study, researchers highlighted aspects of education and the implementation of learning in the midst of the Covid-19 outbreak by prioritizing the readiness and enthusiasm of students through the use of electronic media and online media as a means of supporting learning. Learning activities in the midst of the Covid-19 outbreak have adopted modern IT-based learning technology, namely by using online learning applications. Online learning creates a free learning atmosphere for students, connected to each other via smartphones (Nuryana, et al., 2022), because they can access various things via the internet (Amrullah, et al., 2022).

However, although teachers and students have been helped by the existence of online learning applications, several studies have shown that there is no significant influence of online learning with an increase in student learning activities and an effect on learning outcomes. There is anxiety illustrated in some research results, especially the impact of online learning on children (Zhu, 2022). Nuryana, et al. (2022) mentioned two reasons that illustrate the decline in the world of education during the pandemic, namely first, the problem of interconnectivity and the flow of information; and second, children experience social autistic, a deterioration in *emotional skills* and *social skills* (Alsubaie, 2022) as a result of the effectiveness of excessive use of *smartphones*. Suparman, et al. (2022) explained that the use of the *Google Classroom* and *WhatsApp* applications only had an effect of 54.5% on student learning activities. This means that still most students do not take advantage of online learning applications for various reasons. On the other hand, the obstacles to online learning are realized by teachers and principals who find the ability of schools and students to meet the facilities and infrastructure to support online learning for economic reasons and the difficulty of getting access to ICT support tools (Yufrinalis, 2021).

By taking *locus* attention to the application of online learning in several secondary schools in Sikka Regency, NTT, researchers described that even though faced with the Covid-19 Pandemic situation, learning through electronic media and online media can be a way out for students so that they continue to learn from home even though they are in a state of readiness and student participation cannot be said to be optimal. In this case, researchers can find the level of active participation of students to take part in online learning during the Covid-19 pandemic.

## **2. Materials : Pandemic and Community Stability**

Speaking of the impact of the pandemic on the stability of society, according to the authors, there are several aspects that are affected as outlined in the introduction above. The pandemic has led to a decline in the people's economy, known as an economic recession. Launching Forbes, (15/7/2020), a recession is a significant decline in economic activity that lasts months and even years. During the recession, the economy struggled, people lost their jobs, companies produced fewer sales and the overall output of the country's economy declined. Experts say a recession occurs when a country's economy experiences the following, namely negative gross domestic product (GDP), an

increase in the unemployment rate, a decrease in retail sales, a measure of income, and manufacturing contracts for a long period of time. Recession is considered an inevitable part of the business cycle that occurs in the economy of a country (Shalihah, 2020).

Indonesia officially experienced a recession because economic growth in the third quarter of 2020 was still contracting. The Central Statistics Agency (BPS) recorded economic growth in the period from July 2020 to September 2020 of minus 3.49% per year. The recession is indicated by a contraction of minus 2.03% per year (Viridita, 2020). Looking back, the Indonesian economy in the second quarter of 2020 was recorded at minus 5.32% per year. The economy in the quarter was under pressure due to the Covid-19 pandemic.

In Indonesia, the impact of the pandemic on public stability, especially economic stability, can be seen from the side effects of the global economic recession. The pandemic has taken away jobs and income. Unemployment due to stopping work or being laid off causes new social problems. The high rate of poverty, violence and criminality also color the social life of the community. Everyone is looking for their own way to meet their daily needs, or even just to survive.

The pandemic created chaos in people's lives and disrupted people's stability. According to Ian Stewart (Piliang, 2001), *chaos* refers to a state of irregularity or chaos of objects (object, economic, social, political, cultural and security), whose patterns are unpredictable, and occur everywhere but are difficult to explain. However, the chaotic situation created by this pandemic also on the other hand caused order. The resulting chaos must lead to a new paradigm, a change in behavior patterns, and a new world order. Chaos does not have to be something that refers to capriciousness, because behind its disorderly side, it fills in other situations that are said to be orderly (stable). The chaos caused by the Covid-19 Pandemic also gave birth to new social stability and the return of actual rules and regulations (Wardiono, 2012).

### 3. Method

The research method used in this study is a qualitative method with a descriptive approach. The research location was determined at six high schools in the city of Maumere, namely SMA Negeri 2 Maumere, SMK Negeri 2 Maumere, SMA Negeri 1 Maumere, SMAS Caritas Maumere, SMK Negeri 1 Maumere, and SMAK St. John Paul II Maumere. The reason why researchers chose this school is because during the Covid-19 Pandemic, the school continued to carry out learning activities indirectly through the internet network. Although there are obstacles in the implementation of online learning activities, these schools are still consistent in implementing online learning activities based on modern learning support applications. The timing of the research took place from August to December 2020.

Data collection techniques use field observation techniques, documentation studies, and interviews. Field observations were carried out in schools that were targeted for research activities. In addition, researchers also observed the online learning process carried out by teachers at school and *learning from home* (BDR) activities by students. The documentation study was carried out by studying documents on student learning outcomes during the pandemic in addition to photos and videos of learning activities prepared by the school. Meanwhile, interviews were conducted with the principal, the head of the district education agency (Sikka District PKO Office), a number of teachers and students. The determination of the number of samples is limited in number by considering the situation of the Covid-19 pandemic.

Table 1: Respondent Data

No.	Sample	Sum	Role
1	Schools	6	Object of Research
2	Principals	6	Key Informant
3	Students	32	Key Informant
4	Teachers	13	Key Informant
5	Parents or Guardians	12	Key Informant
6	Head of the Sikka District PKO Office	1	Key Informant

Data analysis techniques use Miles and Huberman data analysis. According to Miles & Huberman (1992:16) analysis consists of three streams of activity that occur simultaneously, namely: data reduction, data presentation, conclusion drawing/verification. In general, the data analysis procedure according to the two experts can be seen in the following chart:

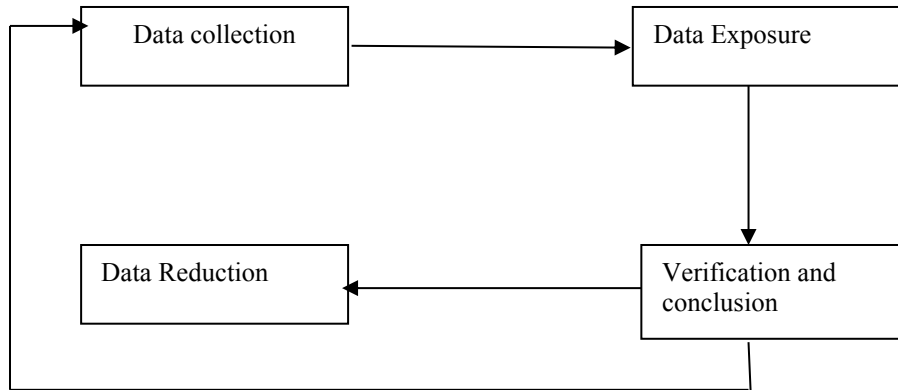


Chart 1: Data Analysis Flow According to Miles and Huberman

4. Results

In Sikka Regency, one of the districts in NTT Province and located in the central part of Flores Island, the impact of the Covid-19 Pandemic has also been felt by the community in various fields of life. The pandemic has taken away freedom of activity, whether working, studying, or other activities that support people's lives. In the field of education, schools are closed for an uncertain period of time in accordance with the advice of the Task Force for the Acceleration of Handling the Covid-19 Pandemic. The high number of positive confirmed cases of Covid-19 in the NTT region in general and in the Sikka Regency area in particular is a serious threat to the implementation of education and teaching in schools.

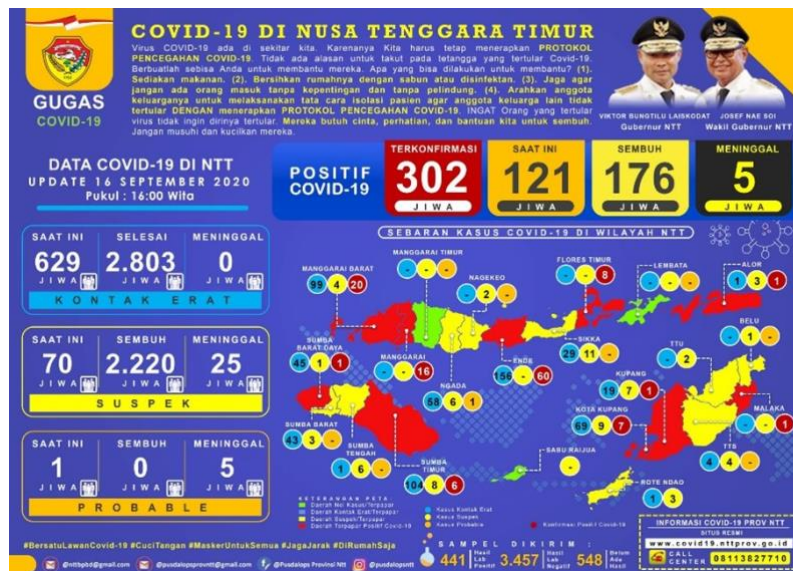


Figure 1: The trend of increasing Covid-19 cases in NTT as of September 14, 2020 (nttprov.go.id)

Local governments limit learning activities in schools by implementing the Learning From Home (BDR) policy. Each school is given the authority to regulate educators (teachers) and students to implement distance learning patterns according to the level of needs and conditions in the field. Learning From Home is the right choice to keep the school situation (educational process) running as it should. Teachers can give practice questions and assignments after carrying out teaching activities in shifts for each group of students with a certain number of

restrictions. Each study group accompanied by a minimum of 10 students. This kind of learning conditions and practices are usually found in schools located in remote or inland areas of Sikka Regency.

Unlike schools in villages (inland or rural), schools in maumere city (the capital of Sikka District) have begun to implement learning patterns with internet networks as a way out to overcome the stagnation of education and learning in schools (Langoday, 2020). To the observations made by researchers (September 2020), learning activities in several schools in the city of Maumere can be carried out through several online learning applications with varying numbers or frequency of use. Users of online applications to learn Zoom 20%, Google Classroom (20%), WhatsApp Group (50%), and Microsoft Teams (10%). In some of the schools observed, they chose the application of online learning considering that the facilities and infrastructure supporting learning were quite adequate. The use of virtual learning is seen as a way out of distance learning (Argaheni, 2020).

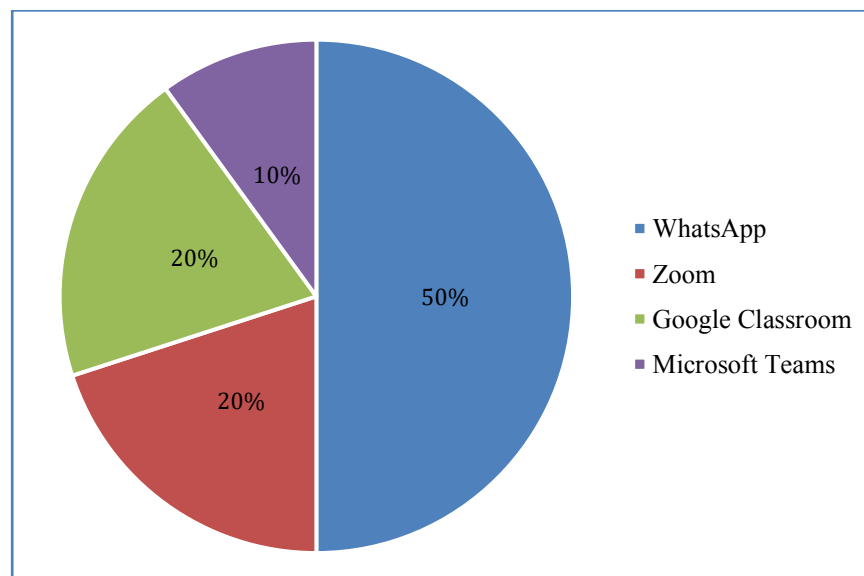


Chart 2: Percentage of Using Online Media in Learning Activities

When teachers carry out bold learning activities, teachers use electronic devices or media in schools to facilitate coordination by the principal so that teacher and student teaching activities can be effectively monitored. Some of the schools that implement full learning are SMK Negeri 2 Maumere, SMA Negeri 2 Maumere, and SMAK St. John Paul II Maumere.

Based on a researcher's interview with the principal in October 2020, that teachers remained present at the school with supervision and implemented strict health protocols. In school teachers get a bold teaching schedule in turn according to the number of classes available. Here the principal acts as the manager of learning activities, can study the development of bold learning activities, participate and monitor activities, and determine the proportion of student learning based on learning progress reports by the class teacher.

*"We implemented online learning after the local government (Sikka Local Government) designated Sikka Regency as a red zone for the spread of the Covid-19 virus. Therefore, since April 2020, we have stopped face-to-face learning activities in the classroom. students are asked to remain at home while waiting for further instruction. Initially we were still giving written assignments and teachers monitored students separately through communication media. On the way, considering that the school facilities are quite adequate in terms of electricity supply and internet access, we decided to use IT-based virtual learning. Our school has been very familiar with the Zoom app for some time now." (AK, 10/12/2020)*

YAM (13/10/2020) explains the same thing, which is to emphasize the participatory aspects of students during online learning with applications. Teachers have tried to prepare learning materials that can be accessed via cellphones or laptops, but if students are not ready to learn, the teacher's efforts will be in vain.



*" Teachers are always reminded not to be negligent and careless in preparing learning materials that can be accessed by students through digital platforms. Basically, almost all of our teachers are ready. But what is worrying is the level of student participation in online learning with the application. Not all students will be present virtually in every learning activity organized by the teacher. (YAM, 10/13/2020)*

Of course, the application of online learning does not always go smoothly. There are advantages or disadvantages that are found at all times. The advantages that can be used in online learning include students and teachers being more familiar with digital network-based knowledge because almost all knowledge information today is more easily accessible through various IT devices and online media platforms. However, one of the shortcomings in trying to get used to the online digital world, including in efforts to promote online learning for students, precisely what is most likely to happen is that teachers and students tend to access other knowledge and information beyond the demands of learning material to follow. More and more students are deviating from actual online learning because devices in the form of cellphones, gadgets, or the like are more widely used to exist in the needs of self-introduction in the online digital world. Students become bored in learning activities and do not like to be "taught" without having to meet the teacher in person.

For example, in an interview with FD (2/11/2020), it was explained that the use of online media platforms as an online learning medium has not been fully utilized by teachers and students in schools. One of the most heard reasons is that students don't have the media or tools for online learning; let's say they don't have a cell phone. In addition, one of the unreasonable reasons is the availability of data pulses to be able to access online learning. Of course, this second reason cannot be tolerated, considering that most of the students at the school are very active on online social media networks such as Facebook, WhatsApp, and Instagram. Not to mention, the level of supervision of subject teachers and homeroom teachers is not as efficient as face-to-face learning in general, considering that students can only attend virtually from their respective telecommunications devices.

*"Students only make this pandemic situation as vacation time because learning activities at school are automatically eliminated. We hope that online learning from home can keep students active and participatory. However, students actually ignore the urgency of online learning activities. They make it a long vacation period and don't care about online learning activities. The main reason is that you don't have a mobile phone or don't have enough data credit for internet access. " (FD, 02/11/2020)*

It's different with students as participants in online learning activities. The reason for not having a mobile phone or laptop and not having enough data credit for internet access is a common reason that teachers hear about. If you look at this reason, the role of parents is actually very important in facilitating the learning needs of students in this modern era. However, back to the main issue of the negative impact of the Covid-19 pandemic, that economic problems are very crucial to discuss if they are related to the main cause, namely the Covid-19 Pandemic.

*"How can we participate in online learning activities, if we don't have a cellphone, let alone a laptop. Even if we have a cellphone, it is not necessarily enough data credit for internet access. Our parents can't. able to provide that much need." (YAP, 09/30/2020)*

On the other hand, teachers who do online learning activities also complain about the same thing. Of the number of students in one class, only a few of them take part in online learning so that it greatly affects the teacher's assessment process of the absorption of the material taught.

*"We struggle when most students don't take virtual lessons. Though we have tried to give our best by willingly sacrificing time and energy to teach students online. If the reason is that it does not have mobile phones and data pulses, the government has provided assistance for special social safety networks to cope with the impact of this pandemic. So the key is actually in the character of the students and the motivation of parents in supporting students to learn from home" (MY, 10/02/2020)*

Based on data collected by researchers at one of the schools regarding the level of student participation in online learning, the number of students accessing online learning materials is very low. Data on the state of student participation can be seen in the following table.

Table 2: Description of Student Participation Rate in Online Learning

No.	Description	Assessment (√)				
		Very Agreeable	Agree	Neutral	Disagree	Very Disagree
1	Students do not have learning devices such as mobile phones and laptops		√			
2	Students have cellphones but do not have internet data kredit		√			
3	Students do not participate in or attend almost all learning activities	√				
4	Students attend virtually but are not serious about learning	√				
5	Parents' economic capacity is not enough to provide online learning support	√				
6	Most of the subject matter is well absorbed by students				√	
7	Many students make the pandemic situation a long vacation period		√			
8	Students feel bored in participating in online learning		√			
9	Students misuse data packages provided by the Ministry of Education and Culture to access knowledge and other information outside of learning		√			
10	Students want to go back to school and learn face-to-face as usual		√			

This is a brief description of the situation in the application of the Learning from Home concept in Sikka district, NTT, both in the form of structured assignments and online learning through telecommunication devices (mobile phones/smartphones). Of course, this condition is an important reflection for all stakeholders related to qualified policies to apply the concept of Learning From Home which is fair, situation-sensitive, and adaptive in the Covid-19 pandemic situation.

##### **5. Discussion: Participatory Learning collaborates with technology, information, and communication after the Covid-19 pandemic**

Talking about the readiness and participation of students in online learning during the Covid-19 Pandemic, of course, it is based on basic reasons related to meeting personal needs for access to information and communication, as well as the character of the students themselves. Why? The first reason raised in this discussion is the income level of parents or guardians of students which tends to decline during the Covid-19 Pandemic. Almost all fields of work have experienced stagnation and a slowdown in activities because everyone stopped working or stayed at

home to avoid being exposed to the Covid-19 outbreak. Many workers are laid off and some are even laid off because the company or workplace is experiencing a budget deficit and continues to lose money due to reduced turnover. Of course, the situation of economic recession globally and nationally has affected the income level of everyone who has a permanent job. The choice of working from home does not guarantee that a person can work optimally and achieve the expected target. Morale is declining under the shadow of Covid-19 which lurks and also affects everyone's work productivity.

The reduction in income of each family certainly affects efforts to meet basic (primary), secondary and tertiary needs. Including efforts to meet the educational demands of children in every household that cannot be avoided. There is an option for every child (student) to learn from home, requiring parents to prepare additional funds to buy communication devices (mobile phones) and data credits for their children to use digital platforms as learning media. Of course, there are demands for the readiness of parents to facilitate their children's learning needs, which are often the opposite of the real situation. Many parents complain that they are not financially capable or ready for their children to take online lessons. In addition, the mentality of children who are easy going, instant, and lazy to know are one of the obstacles for parents and schools in implementing online learning based on digital platforms.

In response to this condition, the government helps the community by providing social safety net assistance in various forms and schemes. In the world of education, as reported by the website of the Ministry of Education and Culture of the Republic of Indonesia (2020), the government has launched data credit assistance in the form of internet quota for ECCE level students of 20 GB per month, primary and secondary education levels of 35 GB per month, for educators at the education level. ECCE for primary and secondary education is 42 GB per month, and for students and lecturers it is 50 GB per month. Everyone gets a general quota of 5 GB per month, the rest is for the learning quota. This program is continued until 2021 with details of internet quotas for the ECCE level of 7 GB per month, primary and secondary education levels of 10 GB per month, ecce to primary and secondary education educator levels of 12 GB per month, and for lecturers and students. of 15 GB per month (2021).

*"As a representative of the government in charge of education issues, of course, the impact of the pandemic on education is inevitable. Students and teachers are separated by distance when conducting online-based learning. To overcome various limitations in the implementation of online learning, the government allocates a large enough fund for internet quota assistance for students and teachers, increasing teacher capabilities in the IT field, improving online learning support facilities, as well as socializing and implementing the Merdeka Belajar program on an ongoing basis as a way out of quality lags. education." (GMDC, 02/11/2020)*

The second reason, so far, can be questioned, is whether this program of learning activities at home has been very efficient and effectively implemented in all schools. In the author's observation, in addition to the lack of IT mastery of senior teachers and students (Sari, et al., 2021), learning activities at home using digital platforms are ineffective. One of the causes is the characteristic of students to be actively involved in learning. Although the government has helped with the help of internet quotas for learning, not all students participate in learning activities. Many students are wrong or mistaken in using the help of internet quota to do other things and are not used for online learning purposes. From the excerpts of the author's interviews with several teachers, it is explained that most of the students in each class held online learning, only a part of the students joined the chain of learning activities. Various reasons were put forward, including because of difficult network access, unstable internet, or even non-existent power grids so that telecommunications devices could not function properly.

The condition based on the two reasons above is a conclusion drawn by the author if the implementation of the home learning program by the government and schools in the context of places in the Sikka Regency area has not been implemented optimally. This is due to the inadequate financial readiness of parents and students and the level of active participation of students in online learning has not been optimal.

## 6. Conclusion

The problem of implementing online learning during the Covid-19 pandemic is often raised repeatedly by many parties involved in the world of education. The issue of efficiency and effectiveness of online learning programs is the most highlighted, considering that socially and economically people are affected and cannot facilitate the

education of their children properly. Of course, the government did not stand still and provided a lot of social safety net assistance for the recovery of the national economy.

Based on the description and explanation of the data above, researchers recommend several things that need to be considered in the application of application-based online learning. Among them are the following: 1). The need to increase the capacity and capability of facilities and infrastructure to support online learning in schools; 2). Increase the capacity and professionalism of teachers in the field of IT-based learning; 3). Encourage national economic recovery through community empowerment programs in the field of education for parents or guardians; 4). Increase the frequency of learning with online applications so that students become familiar; 5). There needs to be a commitment with the school and parents or guardians to provide social, economic and psychosocial support to students so that students' enthusiasm and motivation for learning are maintained.

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# The Effect of Prior Knowledge, Emotional Intelligence and Motivation on Mathematical Communication

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## Abstract

**Purpose:** To examine thoroughly 1) The effect of Prior Knowledge, Emotional Intelligence and Motivation on Mathematical Communication, 2) The effect Prior Knowledge and Motivation concomitantly on Mathematical Communication, 3) The effect of Emotional Intelligence and Motivation simultaneously on Mathematical Communication, 4) The effect of Prior Knowledge, Emotional Intelligence and Motivation at the same time on Mathematical Communication. **Methodology:** This observation rendered as quantitative with correlational-designed observation. The Applied technical data analysis was descriptive statistic, regressive analysis and coefficient multi-correlation with SPSS. **Findings:** The findings of this study were to unfold: 1) Positive and significant effect of Prior Knowledge on Mathematical Communication, was the highest effect. 2) Positive and significant effect of Motivation on Mathematical Communication is the lowest effect. 3) Positive and significant effect of Prior Knowledge and Motivation concomitantly was higher effect than Emotional Intelligence and Motivation on Mathematical Communication. 4) Positive and Significant effects of Prior Knowledge, Emotional Intelligence, and Motivation simultaneously effected on Mathematical Communication. **Significance:** In virtue of the findings result, herewith the researcher proposed a recommendation to the teachers so that always being paying attention upon the three independent variables in time of ongoing learning mathematics because of these three variables when they are maximized at the same time will reinforce Mathematical Communication maximally. To the next researcher may do research concerning motivational consequence to become the least contributor to Mathematical Communication as had been retained in this observation.

**Keywords:** Prior Knowledge, Emotional Intelligence, Motivation and Mathematical Communication

## 1. Introduction

Education is a process of a change of mannerism and behaviour of a person or group of human being in an endeavour of maturity through learning and training. Therefore, the change and development within education should have been analogous to the change in culture and lives. The change in education is when it is implemented augmentation of on all needed capabilities incessantly in anticipating condition to an expected future end. In order

to attain this object is absolutely required of qualified learning material, which might be able to anticipate future development. That one of learning material which crucially is required is the subject of mathematical study.

Mathematics is being considered as a prerequisite subject that should have taken into mastery by the students. because of it is very playing a role in raising learner's mindset. In conjunction with the opinion of Russel (2020) who declared as mathematics is closely related to logic. Logical concepts in mathematics could develop learner's mindset. This thought is analogous to the idea of Gasteigner (2018) who stated that mathematics could have created human resources with critical and analytical minds. Mathematics has been overwhelmed roles in the lives. Mathematics is regarded as a key role in communal industrial development. One of the mathematical roles is as symbolical language which allows a thorough and proper communication, the case in accord with universal objective of learning mathematics as stipulated by NCTM (*National Council of Teacher of Mathematics*) that is to consist solving problem, communicative ability, connective ability, reasoning ability, and representation. Students are expected to work it out to liaise information or caught up in ideas, the defined communication means verbal or non-verbal whereby presenting problems by mathematical language for instance through delivering modelled-presentation (Bina et al.,2021). Talking as reading, listening, discussing, explaining and sharing thoughts meanwhile writing is expounding ideas of mathematics within the real-world phenomena as figured through graphs/picture, tables, algebraic equation, or either in a written word (Ansari, 2018)

Mathematics is being considered as an elusive subject, so many of students are caused to dislike mathematics and try to avert it. This manner is to call forth students' attention who are found lack intrigued to learn mathematics which affected the mathematical learning outcome becomes poor. The poor mathematical learning outcome is coming up to view from the score of PISA (Programme for International Student Assessment) in order to find out of Mathematical ability in Indonesia PISA is a one of international assessment which examines the extent of students' attainment by the age of 15 years in the course of reading, mathematics and science (Baysal & Erkan, 2012). The result study of Programme for International Student Assessment (PISA) 2018 has been released. In virtue of the result of the study the PISA's rank of Indonesia in the year of 2018 turned down when it was compared with the result of PISA in the year of 2015. The study in the year of this 2018 had assessed 600.000 students by the age of 15 years old from 79 countries once in every three years. The category of mathematics of Indonesia was stayed at 7<sup>th</sup> level from the bottom (73) with average score 379 (Tohir, 2019). Indonesia's level was stayed at above of Saudi Arabia which was, having average score 737. And the first rank was still occupied by China which the average score was 591. The intricacy of learning mathematics could be rooted by bothered mathematical teaching learning process as well (Buentello-Montoya et al.,2021). The well-done process of learning-teaching mathematics would have evoked learner's interest and Motivation in learning mathematics which the students are to be more qualified to encounter the difficulties. And then might be rekindled because of mathematics is abstractive. Generally, to begin with mathematics is from concrete until to abstract, from that simple to the complex and from that easy to the very complicated. In learning mathematics should have been figured out the extent of intensity so the matter in learning mathematics might be thoughtfully coped with. There are some too the external factors that substantially giving influence as material subject presentation model, teachers' personality and conduct, learning environment, teachers' competency, vast society mannerism. Reaffirmed by Haser (2022) denoted there is an effect of the application of method, family's economic social status and lack of collaboration between teachers and students on learning mathematics. These factors must have taken into consideration as an objective learning mathematics to attain. The objective learning mathematics is to raise mathematical ability which consists of comprehending concept ability, reasoning ability, communicating ability, solving problem ability. In order to reach this goal, it is necessary to embrace of means and infrastructure to buttress, beside the method and model of learning which are properly performed by teacher. Thus, ought to be kept watch how well learner's Prior Knowledge is to qualify the pattern to render or to teach mathematical material.

In light of the above description that could reason students who think of mathematics is elusive which either leads to learning mathematical result is still found poor because of this diverse factor. The student's aggravation in learning mathematics will surely giving a very effect on the ability of Mathematical Communication. This thing supposed to be evaded in light of mathematics is necessary to develop such ability in the 21<sup>st</sup> century as expounded by Uyen (2021).

Mathematics absolutely is a prerequisite subject that is aptly to foster Communication ability as it is deemed as futuristic required skill (Uyen et al.,2021). Mathematics has a role as symbolical language which is thorough and precise to come true. Mathematics is merely not deemed as a thinking aid but as a Communicational vehicle between students and teachers as well (Tiffany & Surya, 2017).

Mathematical communication is an activity to involve the way to interpret and to bring up mathematical ideas verbally or non-verbally, ability to make sense and accept other mathematical ideas as well conscientiously, analytically, critically, and evaluating to a sheer comprehension (Saputra et al., 2022). Mathematical Communication is defined as:

"An individual's capacity to formulate, employ and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena. It assists individuals to recognize the role that mathematics plays in the world and to make the well-founded judgement and decisions needed by constructive, engaged and reflective citizens." (OECD, 2018, p. 67). Mathematical Communication encompassing the ability: a) to connect real thing, image, diagram into mathematical ideas, b) to describe idea, situation and mathematical relation verbally or non-verbally with real thing, image, graphic and algebra, c) to express daily phenomena in mathematical language or symbol, d) to listen, discuss, and write about mathematics, e) to read comprehensively or to write mathematical presentation, f) to strike conjecture, compile argument, stipulate definition and generalization, g) to define and create questions about learnt mathematics (Cartwright, 2020).

The proper Mathematical Communication will help students to express their mind verbally or non-verbally. Communication ability utterly most important for any activities, particularly in learning activity. By that means students learn how define their perfect mathematical ideas to colleagues, teachers and others (Putra et al.,2020). This means to become the Communication with others more easier working with mathematical presentation between object, symbol and Mathematical Communication is a helpful aid to corroborate students' creativity and motivation in learning mathematics (Tong et al.,2021). The skill of Mathematical Communication is not simply as a means of learning in school, but to enable students as well to affirm, explain, ask questions, and in collaboration to possess a deepened mathematical comprehension. Students have some opportunities to collaborate within group to collect and to present data, to listen of others idea, to discuss together and then is up to a conclusion which becomes an opinion of the group. Students are mainly to learn with communication and to develop their knowledge themselves. Lara-Porras, Rueda-Garcia, & Molina-Munoz (2019) in his study argued about how important it is the Mathematical Communication for a future successful mathematical performance. The skill of Mathematical Communication is importantly utilized in a daily lives due mathematical communication giving sense to student about mathematical role which is of avail in this nowadays of modernized world (Zakkia et al, 2021).

The process of learning mathematical that will crave to reach the ability of Mathematical Communication entails Prior Knowledge. Students' Prior Knowledge is their previous knowledge before taking given learning and this Prior Knowledge is a prerequisite which should have been retained so as student's performed learning process will have a good run. This is in corresponding with the glance of Mulyono (2021) which stated Prior Knowledge is the learners' pre-acquired learning outcome before leaping to a higher knowledge. This Mulyono's outlook is signifying as well that this learners' Prior Knowledge is regarded as prerequisite to attend the learning session so it can be running learning process well. Students' Prior Knowledge is important to be recognized by instructor in order to set the boundary of students' Prior Knowledge ability aptly. Prior knowledge becomes predictor of next mathematical ability (King & Purpura, 2021). Prior Knowledge is a students' bestowed adeptness, therefore teacher should have been aware of the students' readiness in attending learning activity so it may be designed the learning motifs well. Along with mathematics is a basic of diverse sciences and as an organized knowledge hierarchically then students' Prior Knowledge will bring about an effect of success to the next learning session. The students who go through in difficulty on a preliminary subject matter will automatically to face an intricacy to the next step learning well. Prior knowledge by the observation of Simanjuntak (2020) takes an effect on Mathematical Communication. Good Prior Knowledge will bring about Mathematical Communication. Most of



students when attempting to understand the lesson depending on Prior Knowledge which provides a recall to find out an entailed information (Hartati & Indrawati, 2019).

In addition to Prior Knowledge, Mathematical Communication has deliberately been impacted by students' Emotional Intelligence. According to Prafitriyani (2019) Emotional Intelligence is one of a factors that which is giving impact of learner's learning outcome. Due Emotional Intelligence is deemed as an individual capacity to identify and perceive emotion and learners own skill to interact with others (Cui,2021). Yet in order to well interact ought to have well literal ability. Emotional Intelligence has a most prominent part to reach eloquence and effectiveness in literacy, utmost in community (Coesamin et al., 2021). Emotional Intelligence has its own positive part with mathematical thought for emotional state will take an effect into students' performance (Al-Kiyumi & Alfalasi, 2021). Emotional Intelligence is an ability to motivate own self, to subdue frustration, to hold bad impulse, to manage mood, to be empathy and to be cooperative, this intelligence defined as positive character useful to shape strong character and good learning outcome so that Emotional Intelligence is an important means to actuate effectiveness, (Prafitriyani et al., 2019). Emotional Intelligence is a vital endowed necessity, as being the ground requirement as social being to nurture good relationship with others, therefore Emotional Intelligence in realm of education is keenly important to be nourished mostly in today full of vile moral crisis (Hasratuddin, 2018)

Not having Emotional Intelligence will also have a consequence to put down the ability of Mathematical Communication. This case in virtue of the study of Ghamar, Shamsolmolok, & Mohammad (2019) expounded that was found positive and significant relation between Emotional Intelligence and communication skill; they also said that Emotional Intelligence helps an individual to think of more vehement in more better condition and has more effective communication. Goleman (1996) declared that emotion refers to a sense and typical mind, a state of biological and psychological, and a series of tendency to act. Meant someone will be able to communicate well if it is in harmony with good emotion. Otherwise, if someone is in a state of negative emotion, then this thing will cause a disposition to negative means too. Mathematical competency, particularly Mathematical Communication required well emotional sustenance so as Mathematical Communication will be optimally used. Emotional Intelligence indicator alluded to five aspects delineated by Goleman (1996), that is to recognize self-emotion, manage emotion, motivate own self, identify others emotion and to build relationship.

Gleaned from an interview between researcher and a mathematical teacher who affiliated with one of High School Institution, the findings said that the encouragement of Emotional Intelligence in teaching learning was still found poor. Indicated students' Emotional Intelligent classified as poor category, it came to view when presentation conducted there were some students who were not able to under-control themselves, for instance to mess up the class which caused learning material absorption is found not in maximal. In view of (Pritriani, 2021), extracted out of an interview, the students who are poor in Emotional Intelligence as such solving problem senseless, fond of finding fault without resolution, pessimism, egoism, self-oriented, eager to disdain and look down on others, tetchy, bad listener and less empathy, contemptuous debate, temper, and easy frustrate. The difference level of Emotional Intelligence will do an effect into each students' Prior Knowledge.

Rajagukguk (2016) denoted that there is another thing in which is giving an effect to Mathematical Communication that is Motivation. Aqilah, Roza, & Maimunah (2021) in their research found a positive and significant effect of learning Motivation on Mathematical Communication which leads to Mathematical Communication is effected by the value of learning Motivation. Next Rajagukguk (2016) argued that Motivation consists of two that is internal and external Motivation. Internal Motivation is commonly more longer last than external Motivation. Meanwhile external motivation more rapidly evaporated, because of what then let someone to be motivated to learn has disappeared, then students' zeal for learning no longer last as well. The linkage with Mathematical Communication is that if viable learning is gone yet students will get stuck to achieve good Mathematical Communication when learning mathematics.

Otilia (2022) said that motivation is one thing that necessary paid attention in time of learning a certain lesson. Motivation is an internal process that made someone to move forward to reach the goals (Baretto, et al.,2017). Internal Motivation is actuated by satisfaction upon its activity, and it is reachable when students are eagerly to

pursue to carry out homework by their own will or passion which is more mastery oriented (Li et al.,2020). For instance the external factors actuated Motivation for example to accomplish given assignment in order to get renowned, score, and peer acknowledgement, teachers, and parents. Moreon definition of Motivation by Tohidi (2012) is to empower people to reach a high performance and to overcome hindrance in order to change. Motivation is a mover of exercise, control and unflagging in human being behaviour. Motivation could have invigorated one's behaviour, to direct behaviour toward a certain way and to enhance or preserve behaviour. Motivation in learning mathematics it is necessary. Student with high Motivation to learn mathematics is of course will impact his or her commitment to always be determined in learning mathematics. Learning Motivation reveals an important component in learning process, (Laurentius Saptono, et al., 2020).

In virtue of the above exposure assumed that Mathematical Communication is poor, because of the influence of some factors. This case is espoused by the statement of Ikhsan, Pramudia, & Subanti (2020) that at this moment, the extent of Mathematical Communication of students are still classified poor disclosed through when the students are experiencing difficulties in ending up summary in time of solving problem of mathematics and some troubles in expressing mathematical ideas into right symbol and notation. There are some indicated factors which bring about influence to Mathematical Communication that is Prior Knowledge, Emotional Intelligence and Motivation. Therefore, it is necessary the evaluation entreated to those factors, in order to be revealed which factor is most dominant or at least to see that dominantly brought about effect on Mathematical Communication, so that from the evaluation can be made a reference in pedagogical realm which intends to bring up the quality of learning mathematics in school. Evaluation in realm of education and teaching are activity process to dig out information which related to teaching learning end which is gone through by students and then to process or interpret to become in the form of qualitative and quantitative data in corresponding to certain standard (Rajagukguk,2015). The end of this evaluation is required to come up with decisions and or stipulation in realm of pedagogy.

## 2. Methods

This observation took place in a Private Senior High School YPK Medan. The population of survey involved a whole students of 10<sup>th</sup> class. The sample imposed to 10<sup>th</sup> MIA 2 class of 44 students. Methodology of study was experiment. The applied type of this research was quantitative with correlational-designed. Correlational research was intending to know whether or not any relation and effect between two or some variables upon study group as subject. The purpose of this study actually was to describe, explain and scrutinize the effect of Prior Knowledge on Emotional Intelligence and Motivation on the ability of Mathematical Communication individually and in community. The type of this study was in a figure of Quantitative research that is the research which is to involve calculation or number or quantity that intends to recognize the linkage among two or more variables. That relation is a contribution of one variable toward others variable or the relations that in inter-correlative.

To obtain of the empirical data about the observed variable, employed an instrument in a form of tests and questionnaires. The instrument in the form of a test was an instrument of the variable of Mathematical Prior Knowledge ability and calculus learning outcome. The instrument in a form of questionnaire was an instrument of the variable of attitude toward calculus and the Motivation to learn calculus. The development of instrument was run by the following stages, (1) to study the theory which inter-related to the observed variable; (2) to compile dimension and indicator of each variable research; (3) to provide grids instrument; (4) to provide items of questions and set the measurement scale; (5) to run trial error instrument; (5) to examine of each items of questions and validate research instrument.

Prior Knowledge is the students' endowed ability which had hereinafter measured through imposing test about the learnt material. The potency which someone had possessed that related with conceptual mastery, principle, and mathematical abstraction which was reflected in the ability of arithmetic, algebra, geometry, and logic which helpful to understand a concept or in a solving problem. This was acquired from gained score of students that based on Mathematical Prior Knowledge test which consisted from gained mathematical concept before.

Emotional Intelligence is the ability to be able to motivate own self, to overcome the feeling of frustration, to defer bad impulse, manage mood, empathy and collaborative ability, this intelligence is positive character to mould

strong character and a good learning outcome. This thing being gained based on questionnaire about Emotional Intelligence which was filled out by students.

Students' Motivation toward mathematics is a strength or power which was derived from themselves that encompassed encouragement to do something which related with mathematics, interest to deepen material of mathematics, unflagging in learning and passion to be stern learning mathematics. This thing being acquired based on questionnaire about what were students had filled out.

Mathematical Communication ability refers to students' ability is to communicate thoughts or ideas and understand the topic of mathematics through figure, graphic, symbol, table, chart or text that is corresponding verbally and non-verbally, and students' comprehension about mathematics when employing mathematics. Work with mathematical language to deliver ideas verbally and non-verbally accurately, simple and logic. In respect with communication aspect as such is representing, listening, reading, discussing and writing. Regarding this communication ability was obtained from the result of doing test of Mathematical Communication.

Prior Knowledge is the ability that the students possessed as a prerequisite to learn the advance material it is measured through imposing test about learnt material. The potency which someone possessed in related with conceptual mastery, principle and abstraction of mathematics which was reflected in the ability of arithmetic, algebra, geometry, and logic which is helpful to understand a concept or in solving problem. This was acquired from the score gained based on the test of Prior Knowledge which consists of mathematical concepts which was gained before. Prior Knowledge is a positive energy that builds the students' impression (Imam Suyitno, at al., 2019).

Emotional Intelligence is an ability to be able to motivate own self, to overcome the feeling of frustration, defer bad impulse, manage mood, to be empathy and the ability to cooperate; this intelligence is a positive character which is helpful to form strong character and learning outcome. This was acquired based on questionnaire of Emotional Intelligence which was filled out by students.

Students' Motivation upon mathematics is a strength or power which is derived from students' inner themselves which encompassing an impulse to do something that related with mathematics, interest to deepen mathematical material, unflagging in learning and passion to be stern learning mathematics. This was obtained based on questionnaire which was filled out by students.

The ability of mathematical communication refers to students' ability to literate thoughts or ideas and understand the topic of mathematics through picture, graphic, symbol, table, chart or text which are corresponding verbally and non-verbally, and the students should have a comprehension when working with mathematics. Work with mathematical language to deliver ideas verbally and non-verbally, aptly, simple, and logic. In connection with the ability of this communication was acquired from the result of doing the test of Mathematical Communication by students.

Prior Knowledge that is being possessed by students which related to Motivation that is being possessed by students upon mathematics. The more better students' Prior Knowledge on mathematics the more positive will be. Likewise, students' Motivation was impacted by students' Emotional Intelligence. The more better students' Emotional Intelligence then the more better Motivation will be. By a good Prior Knowledge and the good of Emotional Intelligence will drive students be more motivated to learn mathematics so that the ability of students' Mathematical Communication will be better. Thus, might be presumed that Prior Knowledge, Emotional Intelligence, and Motivation will bring about effect to the ability of Mathematical Communication. This is figured as following model.

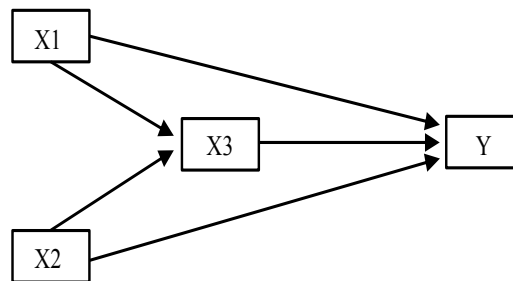


Figure 1: Connectedness Among Variable Research

$X_1$  = Prior Knowledge

$X_2$  = Emotional Intelligence

$X_3$  = Motivation

$Y$  = Mathematical Communication

Technical collecting data employed technical random sampling. Instrument of surveys in a form of 30 items questionnaires of Emotional Intelligence, and Motivation. Then essay test of Prior Knowledge and Mathematical Communication. Before doing with instruments, instrument test had been previously performed for its validity and reliability. Validity test was performed by applying formula *Product moment pearson* and Reliability test was performed by applying cronbach's alpha by means of SPSS. Technical data collection was performed by collecting instrument data of Prior Knowledge, Emotional Intelligence and Motivation which was valid disseminated to students of Senior High School YPK Medan. The data of Mathematical Communication ability was acquired from instrument test result of Mathematical Communication ability which had been handed to students. The applied technical data analysis was descriptive statistic, which comprised the total of the lowest, the highest, average and standard deviation by means of SPSS to explain the effect of Prior Knowledge on Mathematical Communication ability, the effect of Emotional Intelligence on Mathematical Communication ability and the effect of Motivation on Mathematical Communication ability.

Henceforth coefficient multi-correlation with applying SPSS to see how the effect of Prior Knowledge and Emotional Intelligence were concomitantly upon Mathematical Communication ability. The effect of Emotional Intelligence and Motivation simultaneously upon Mathematical Communication ability. Next the effect of Prior Knowledge, Emotional Intelligence and Motivation simultaneously upon Mathematical Communication ability.

### 3. Results

#### 3.1. Descriptive Statistic

The following exhibited table summary of descriptive statistic result, the data about Prior Knowledge, Emotional Intelligence, Motivation and Mathematical Communication.

Table 1: The Summary of Descriptive Statistics Variable Research

	N	Minimum	Maximum	Mean	Std. Deviation
Prior Knowledge	44	36	65	51.07	3.571
Emotional Intelligence	44	41	74	57.77	6.372
Motivation	44	41	79	60.55	9.490
Mathematical Communication	44	38	79	51.30	9.184

From the table 1 above came to view that the total data was of 44. The lowest minimum score coming from Prior Knowledge was 36. Meanwhile the highest was Emotional Intelligence and Motivation with a common score 41. Minimum score of Mathematical Communication was 38 a little bit higher than minimum score of Prior Knowledge. And then for a maximum score which the lowest was Prior Knowledge of 65, the highest was

Motivation and Mathematical Communication was commonly at the number of 79. The lowest average acquired Prior Knowledge data was of 51.07 and the highest was Motivation of 60.55. The lowest standard deviation was Emotional Intelligence with score 6.372 and the highest was Motivation ability with the number of 9.490. Alluded to this information it might be presumed that Prior Knowledge encompassing good category because of the average 51.07 from the maximum score 65. At the mean time Mathematical Communication it is merely obtained in average 51.30 from that maximum score 79. So, this Mathematical Communication could be categorized still in medium category.

### 3.2. Validity and Reliability Test

Validity is measuring what is supposed to be measured (Sumitomo & Widhiarto, 2015). If a test was found valid then that test is *fit* applied to measure what that should be measured. In virtue of that case then the trial of instrumental test was employed (Prior Knowledge and Mathematical Communication) and questionnaire (the ability of Emotional Intelligence and Mathematical Communication) and questionnaire (Emotional Intelligence and Motivation) to seek whether applied instrument had been adapted to measure the ability. The data that had been acquired on trial result, examined by employing SPSS. The end of validity test inferred that the entire question items (4 items questions of Prior Knowledge and 4 items questions of the ability Mathematical Communication) and questionnaire items (30 items questionnaires of Emotional Intelligence and 30 items questionnaires of Motivation) or 68 items were found valid in data collection instrument.

Reliability is the measure by test that is performed to find out consistent result (Sumintorno & Widhiarso, 2015). It meant that the result of students who answered today or tomorrow whether it's consistent or not was found significant difference. Upon reliability test, a whole items of questions and items of questionnaires showed good result, that was being acquired Alpha value of 0.737. This meant overall applied items of questions and items of questionnaires were reliable.

## 4. Normality Test

The acquired data of Prior Knowledge, Emotional Intelligence, Motivation and Mathematical Communication from the result of filling out the surveying test, the normality test examined by applying SPSS, this test functioned as prerequisite to assign which test was properly used to decide hypothesis. Normality test employed with Saphiro-Wilk test, which was executed to see whether normal or not of a data with minor sample (Junita et al.,2021).

Table 2: Summary of Normality Test Variable Research

Variable	Saphiro-Wilk		
	Statistic	Df	Sig.
Prior Knowledge	0.986	44	0.850
Emotional Intelligence	0.955	44	0.083
Motivation	0.956	44	0.087
Mathematical Communication	0.963	44	0.101

From the table 2 above when referring to criteria of examination of Saphiro-Wik which was if Sig. > 0.05 so data was in normal, then it came to view that Prior Knowledge variable data was in normal (Sig. > 0.05 or 0.850 > 0.05). Variable data of Emotional Intelligence was normal because of Sig. > 0.05 or 0.083 > 0.05. Moreover, variable data of Motivation and Mathematical Communication were found normal too because of Sig. > 0.05 or 0.087 > 0.05 and 0.101 > 0.05. Based on the result of normality test due to the four variable data was in normal distributed, then the technical data analysis employed regression test and correlation it might be continued.

## 5. Homogeneity Test

The following table of homogeneity test result from Prior Knowledge, Emotional Intelligence, Motivation and Mathematical Communication with Lavene Test employing SPSS:

Table 3: Homogeneity Test Result Variable Research

		Levene Statistics	df1	df2	Sig.
Data Based on Mean		1.439	3	172	0.233

On the table 3 above its explicitly came to view that a whole variable data research was homogeneous or derived from the same population. This was because of referring to criteria of homogeneity test with Levene that homogenous data if Sig. > 0.05 is  $0.233 > 0.05$ .

## 6. Regression and Correlation Test

After doing prerequisite test as of normality test and homogeneity test (though this test not as absolute precondition before doing parametric test but it's necessary to unveil whether data was derived from the same population. Hypothesis test was executed with regression and correlation test employing SPSS. From the table below explicitly revealed how was the effect of Prior Knowledge on Mathematical Communication ( $X_1$  to Y), Emotional Intelligence on Mathematical Communication ( $X_2$  to Y), Motivation on Mathematical Communication ( $X_3$  to Y):

Table 4: Analysis Summary  $X_1$  to Y,  $X_2$  to Y,  $X_3$  to Y

Model	Correlation	Anova	Regression		
	R	Sig.	Constant	Coefficient	Sig.
$X_1$ to Y	0.823	0.000	24.204	0.650	0.000
$X_2$ to Y	0.648	0.000	48.252	0.367	0.000
$X_3$ to Y	0.407	0.006	53.591	0.235	0.000

From the table 4 above could be formulated  $X_1$  to Y the regressive equation was  $Y = 24.204 + 0.650X_1$ , Sig. < 0.05 viz.  $0.000 < 0.05$  upon Anova test this thing was to appoint that regressive equation acquired from regression test which was good to be applied. Value R pointed Prior Knowledge contribution on Mathematical Communication was 82.3%. Afterward for  $X_2$  to Y its regressive equation  $Y = 48.252 + 0.367 X_2$  from Anova test this regressive equation was good because the value of Sig. < 0.05. Value R appoints Emotional Intelligence contribution on Mathematical Communication of 64.8%. The last,  $X_3$  to Y has regressive equation  $Y = 53.591 + 0.235X_3$ . This regressive equation was good in light of Anova test result Sig. < 0.05 viz.  $0.00 < 0.05$ . Motivation contribution on Mathematical Communication is 40.7%.

The analytical result of Prior Knowledge and Motivation on Mathematical Communication ( $X_1$  and  $X_3$  to Y) with Emotional Intelligence and Motivation on Mathematical Communication ( $X_2$  and  $X_3$  to Y) is exhibited on table below:

Table 5: Analysis Summary  $X_1$  and  $X_3$  to Y with  $X_2$  and  $X_3$  to Y

Model	Correlation	Anova	Regression			Sig.
	R	Sig.	Constant	Coef $X_1$ and $X_2$	$X_2$ and $X_3$	
$X_1$ and $X_3$ to Y	0.890	0.000	10.754	0.627	0.196	0.038
$X_2$ and $X_3$ to Y	0.794	0.000	26.457	0.387	0.266	0.000

From the table 5 above assumed for  $X_1$  and  $X_3$  to Y its regressive equation  $Y = 10.754 + 0.627 X_1 + 0.196 X_3$  from this test of Anova regressive equation was good as well because of the value Sig. < 0.05. The value R indicated the contribution of Prior Knowledge and Motivation simultaneously on Mathematical Communication of 89%. Moreover,  $X_2$  and  $X_3$  to Y has regressive equation  $Y = 26.457 + 0.387X_2 + 0.266 X_3$ . This regressive equation

was good too in light of Anova test result Sig. < 0.05 viz.  $0.00 < 0.05$ . The contribution of Prior Knowledge and Emotional Intelligence simultaneously on Mathematical Communication of 79.4%.

The effect of Prior Knowledge, Emotional Intelligence and Motivation concomitantly on Mathematical Communication, as demonstrated on the table below:

Table 6: Analysis Summary  $X_1$ ,  $X_2$ , and  $X_3$  to Y

Model	Correlation	Anova		Regression			Sig.
	R	Sig.	Constant	$X_1$	$X_2$	$X_3$	
$X_1$ , $X_2$ and $X_3$ to Y	0.910	0.000	10.012	0.484	0.150	0.217	0.036

From the table 6 above assumed  $X_1$ ,  $X_2$  and  $X_3$  to Y its regressive equation was  $Y = 10.012 + 0.484X_1 + 0.150X_2 + 0.217 X_3$ , Sig. < 0.05 viz.  $0.000 < 0, 05$  upon Anova test this thing was simplified that regressive equation which was acquired from regression test was good and it was applicable. Value R appoints the contribution of Prior Knowledge, Emotional Intelligence and Motivation concomitantly on Mathematical Communication was 91%.

## 7. Discussion

From the analysis result of the test of significance and regression to detect how the effect of Prior Knowledge on Mathematical Communication was displayed whether the influence was positive and significant among Prior Knowledge variable on Mathematical Communication. The Sig. which was acquired on regression test was  $0.000 < 0.05$ . The value of its coefficient determination was 0.823 which signified that the effect of Prior Knowledge on Mathematical Communication was 82.3%. This finding was synchronized with the research of Simanjuntak (2020) which magnified there is a positive relationship and the effect of Prior Knowledge on Mathematical Communication.

From the next analysis, obtained positive and significant effect among Emotional Intelligence variable on Mathematical Communication. This was verified from the regressive calculation with Sig. =  $0.000 < 0.05$ . Coefficient determination value was 0.648 which said that substantial effect of Emotional Intelligence on Mathematical Communication was 64.8%. In accord with the research of Cui (2021) and Coesamin (2021) that stated it was found direct significant effect among Emotional Intelligence on Mathematical Communication.

Furthermore, in light of regression analysis result and correlation it was verified that discovered a positive and significant effect among Motivation variable on Mathematical Communication because of Sig. obtained  $0.000 < 0.05$  and coefficient determination value 0.407 which said the substantial Motivation effect on Mathematical Communication was 40.7%. This case was corroborated by the research of Georgeta (2021) and Aqilah, Rosa, & Maimunah (2021), which also found that Motivation affecting Mathematical Communication, Motivation as a main key within Mathematical Communication. From the three analysis the effect of each Prior Knowledge, Emotional Intelligence and Motivation on Mathematical Communication the most enormous of its coefficient determination was Prior Knowledge was of 0.678. This meant that 67.8% of contribution of Prior Knowledge took an effect on Mathematical Communication. Meanwhile the least contribution was derived from Motivation with coefficient determination 0.407 or is of 40.7% the effect on the ability of Mathematical Communication.

Hence in virtue of the analysis of collaboration effect between two independent variables on dependent variable it's found the positive and significant effect between Prior knowledge and Motivation simultaneously on the ability of Mathematical Communication. This was proven out of the result of Sig Regressive Test, that was  $0.038 < 0.05$ . The value of coefficient determination was of 0.890, which stated that the substantial effect of Prior Knowledge and Motivation were simultaneously on Mathematical Communication was of 89%. This variable connection when in aggregate as Erlin (2017) declared that Mathematical Communication is connected with cognitive and psychometric aspect. So, if there was found collaboration between cognitive aspect and psychometric such as Prior Knowledge and Emotional Intelligence therefore would be more effectual on the ability of Mathematical Communication.

Emotional Intelligence and Motivation are simultaneously having a positive effect on Mathematical Communication. It was verified by the result  $\text{Sig. } 0.000 < 0.05$ . Coefficient determination value was 0.794 which signified this variable at the same time giving an effect 79.4% on Mathematical Communication. Collaboration between two dependent variables that which were most impacting the ability of Mathematical Communication was the collaboration between Prior Knowledge and Motivation were of 89%. Meanwhile the collaboration which gave the lowest contribution was the collaboration between Emotional Intelligence and Motivation simultaneously were giving the effect of 79.4% on the ability of Mathematical Communication.

And then in light of the analysis of the effect of collaboration between three independent variables toward dependent variable found a positive and significant effect of Prior Knowledge, Emotional Intelligence and Motivation on Mathematical Communication simultaneously, with contribution 91%. The evaluation from this overviews result were the variables which mostly impacting Mathematical Communication was Prior Knowledge of 82.3%. Meanwhile the variable of the least its contribution or its effect on Mathematical Communication was Motivation of 40.7%. Nonetheless, if Motivation was connected with Prior Knowledge the contribution rendered toward Mathematical Communication it's far more higher that was 89%. Though if two variables were connected then the greatest contributor on Mathematical Communication simultaneously were Prior Knowledge and Emotional Intelligence were of 79.4%. The most enormous factor which was impacting the ability of Mathematical Communication if it's done simultaneously was the fusion between Prior Knowledge, Emotional Intelligence and Motivation were of 91%. From this result of evaluation might be summed up that Prior Knowledge is the ability which is most contributive on the ability of Mathematical Communication. This idea was corroborated by Putri (2020) who said that if Prior Knowledge is high then the ability of Mathematical Communication is high as well.

In virtue of this findings that Prior Knowledge was very influential on Mathematical Communication how much more if it's combined with students' learning Motivation. Whilst Motivation is only penetrating more less influence toward the ability of Mathematical Communication, but if it's combined with Prior Knowledge would give the greatest contribution on Mathematical Communication. Though Emotional Intelligence was rendering effect which great enough of 64.8% on Mathematical Communication ability but if it's combined with Prior Knowledge and Motivation they only add up a little bit were 2%. This was certainly caused of contribution that had been great from Prior Knowledge and Motivation on Mathematical Communication ability of 89% it is no longer prevailing any great effect again.

## 8. Conclusion

The data had been gone through analysis, then the reviews were taking place upon the test result of descriptive statistic, regression and correlation, so the conclusion extracted as:

1. Found positive and significant effect among Prior Knowledge on Mathematical Communication with substantial effect of 82.3%
2. Found positive and significant effect among Emotional Intelligence on Mathematical Communication with substantial effect of 64.8%
3. Found positive and significant effect among Motivation on Mathematical Communication with substantial effect of 40.7%.
4. Found positive and significant effect between Prior Knowledge and Motivation at the same time on Mathematical Communication with substantial effect of 89.2%.
5. Found positive and significant effect between Emotional Intelligence and Motivation simultaneously on Mathematical Communication with substantial effect of 79.4%.
6. Found positive and significant effect between Prior Knowledge, Emotional Intelligence and Motivation concomitantly on Mathematical Communication with substantial effect of 91%.

In virtue of the findings result expounded above, herewith the researcher proposed a recommendation to the teachers so that always being paying attention upon the three independent variables in time of ongoing learning mathematics because of these three variables when maximized at the same time will reinforce Mathematical



Communication maximally. To the next researcher may do research concerning motivation consequence to become the least contributor on Mathematical Communication as being retained in this observation.

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# The Effects of Emotional Intelligence of the Foreign Students Learning Turkish Language on Speaking and Writing Anxiety

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## Abstract

Emotional intelligence is expressed as a person's ability to differentiate between oneself and other's emotions, to perceive them, and to act accordingly. The emotions left in the background by the education world, which are based on cognitive skills, have started to take place in education from the perspective of emotional intelligence in recent years. This study aims to determine the effect of emotional intelligence of foreign students learning Turkish language on speaking and writing anxiety. In this direction, within the framework of emotional intelligence, the effect of teaching Turkish as a foreign language on speaking and writing anxiety has been studied and various determinations have been made. This study is a quantitative study and the method of the research is descriptive field research. The study group consists of 173 volunteers who studied at Inonu University TOMER in the academic year of 2018-2019. It was determined that the emotional intelligence writing and speaking anxiety levels of the students were at an average level. It was determined that as the emotional intelligence levels increased, speaking and writing anxiety decreased in the result of the analysis. In addition, as the duration of the students' stay in Turkey increased, there was an increase in the speaking anxiety level, while no significant difference was shown in the writing anxiety level.

**Keywords:** Emotional Intelligence, Speaking Anxiety, Writing Anxiety

## 1. Introduction

As a social being, human encounters many difficulties in his/her daily life. It is important how much and how the individual copes with these difficulties. Individuals who are aware of their emotions and use them correctly can establish healthy relationships. People who can keep their impulses under control in social life and have high adaptability and empathy skills are resistant to the negativities they encounter. Therefore, the importance of emotional intelligence for the individual is an undeniable fact.

Emotional intelligence is a term adopted by the American Dialect Association as of 1955 (Özdemir, 2003). But before this date, there have been thinkers who have used the concept of emotional intelligence in the past. Aristotle

and Plato, one of the Greek thinkers, attributed the source of psychological events to "nous" and expressed emotional intelligence as a skill that connects emotions to the methods of controlling and understanding emotions (Goleman, 1995). The first scientific approach investigating the importance of emotions in human life was realized in the 18th century. Descartes, one of the famous thinkers of this period, argued that emotions constitute the essence of behavior and that emotions are a mechanism that functions as the opposite of reality (Kırtıl, 2009). The concept of emotional intelligence took place in Thorndike's work in the 1920s. Thorndike divides intelligence into three parts, the first part is abstract, analytical and verbal intelligence. The second part includes mechanical, performance and visual intelligence and the third part includes social and practical intelligence. In addition, by talking about social intelligence, it was defined as "the ability to understand one's own and others' inner states, motives and behaviors and to act in the light of this understanding" and stated that standard intelligence tests could only measure abstract intelligence, not social intelligence (Aşan & Özyer, 2003). Gardner (1983) also emphasized that intelligence is plural and versatile in the theory of multiple intelligences. Gardner (1983), who divides intelligence into eight types, states that emotional intelligence includes adaptive skills and that the individual's awareness of his/her own emotions and abilities and using them in her own life constitutes emotional intelligence. In 1985, Bar-On determined the characteristics that are important in the success of people with the emotional domain name. In addition, emotional intelligence was placed in the personality theory model within the well-being model and developed a scale for the measurement of well-being (Bar-On, 1988; Yurdakavuştu, 2012).

The term emotional intelligence was first used by Payne (1985) in the thesis titled "A Study on Emotions: Developing Emotional Intelligence" written in the USA. Payne stated that the study aims to contribute to the development of the field of emotional intelligence and to be a guide for developing emotional intelligence (Hein, 2005; Aksaraylı & Özgen, 2008; cited in; Beceren, 2004). In the 1990s, studies on emotional intelligence started with two scientific articles by Mayer and Salovey. In their studies, they revealed a rational understanding of emotions and two researchers established the relationship between emotion and intelligence (Aşan & Özyer, 2003). The person who made emotional intelligence popular is Daniel Goleman. In the book named "Emotional Intelligence", written by the author in 1995, the definition and characteristics of this concept were included. Goleman (2002) also stated that academic intelligence and emotional intelligence are not against each other and are inseparable abilities. After such studies, the concepts of (EQ) and academic intelligence (IQ) came to the fore (Yaşarsoy, 2006). In addition, emotional intelligence has been brought to the literature and many studies have been made in this field. Some of the studies are on emotional intelligence models. Peter Salovey and John Mayer, Daniel Goleman, Reuven Bar-On are the leading models of emotional intelligence.

The contribution of emotional intelligence development to intelligence is discussed in Mayer and Salovey's theory of emotional intelligence. Mayer and Salovey (1993) stated that emotional intelligence is a joint product of cognitive and emotional systems. Thinkers argued that in this model, the cognitive system makes abstract judgments about emotions and this increases cognitive capacity. In addition, emotional attributes are used to express some emotions. These qualities are empathy, expressing and understanding emotions, controlling temperament, independence, adaptability, admiration, solving interpersonal problems, perseverance, compassion, kindness and respect (Shapiro, 1998). In this model, Mayer (2006) stated that emotional intelligence has dimensions such as perceiving, evaluating and expressing emotions, using emotion to facilitate thought, thinking and understanding with emotions, and managing/regulating emotions. Goleman's individual emotional intelligence model, which is based on the model of Mayer and Salovey, is the most common model. According to Goleman (1995), the thinking part of the brain reproduces from the emotional part of the brain, and the thinking and emotional elements of the brain work together to complement each other. Goleman (2000) considers emotional intelligence in two competence areas, personal and social, and states that emotional intelligence consists of five dimensions: self-awareness, managing emotions, activating oneself, understanding the emotions of others, and managing relationships. The Bar-On mixed model is characterized as a mixed model because it tries to explain why some people are better emotionally and why some people are more successful than others. Bar-On started his emotional intelligence studies in the 1980s. Bar-On's emotional intelligence model includes emotional intelligence and social intelligence models (Çakar & Arbak, 2004). The subject that Bar-On wants to explore includes the personal, emotional, social and survival dimensions of the economy. Accordingly, Bar-On developed emotional intelligence inventories separately for adults and youth to measure emotional intelligence (Pfeiffer, 2001). Bar-on

(2000) explained the dimensions of emotional intelligence as personal skills, interpersonal skills, adaptability, stress management and general mental health.

Robert Cooper- Ayman Sawaf model of emotional intelligence, in the four corner stone model Cooper and Sawaf (2000) stated that emotions are the ability to sense, understand and use effectively as a source of human energy, knowledge, relationships and influence. They also recommend making a study plan to develop emotional intelligence skills. This plan is the 'Four Cornerstone Model', which takes emotional intelligence out of the field of psychological analysis and philosophy and brings it directly to science, and puts it into practice. Cooper and Sawaf (2000) stated that there are four dimensions of emotional intelligence that they describe as cornerstones in the emotional intelligence model, namely learning about emotions, emotional vitality, emotional depth, and emotional alchemy.

Studies on emotional intelligence have determined that gender, age, family environment and education are important factors in the development of an individual's emotional intelligence. The first factor in the development of emotional intelligence is considered to be age, because with the birth of the baby, emotional intelligence begins to develop. Craig (1989) states that primitive emotions such as pleasure and anger are observed in babies younger than 6 months. Other learned emotions such as joy, unhappiness or anger are observed in babies older than 6 months. The gender factor is another variable that is important in the development of emotional intelligence. Ceylan (1999) states that girls are better at showing and expressing their emotions than boys. Family environment is another factor that is effective in the development of emotional intelligence skills. In the family environment, parents and siblings set an example for the child with their behaviors and words, and the child's self-expression is taught by modeling. Another factor that affects emotional intelligence is education. Shapiro (1998) states that the basis of emotional intelligence is the lessons learned at school during childhood shape the emotional circuits of children. Supporting this idea, Goleman (2000) also states that emotional intelligence can be developed with education, and emotional stages will be shaped by experiences in childhood.

Areas such as the active working of the mind, reasoning, abstract thinking, and memory constitutes intelligence. Emotion is the situation in which the environment or individual differences arouse emotions such as joy, sadness, pain, excitement in the individual, and the word emotion is originated from the Latin word "motere" and means to perform. Emotional intelligence, on the other hand, consists of a combination of these two concepts and is considered as the act of emotions and the direction of people. In the light of the information scanned in the literature, we can list the characteristics of emotional intelligence as follows:

1. Emotional intelligence skills are not static, but have a constantly changing and developing feature (Goleman, 2016; Mayer & Salovey, 1993; Caruso, D. R., Mayer, J. D., Salovey, P., Riggio, R. E., & Murphy, S. E. 2002; Özdemir, 2003).
2. Emotional intelligence is associated with mental health, psychological well-being, emotional stability, and life satisfaction (Ciarrochi, Chan, & Caputi, 2000, Austin, et al., 2005; Bhullar, Schutte, & Malouff, 2012)
3. Emotional intelligence is related to the concepts of empathy, self-control and social skills (Schutte et al., 2001)
4. There is a positive and significant relationship between life satisfaction and emotional intelligence (Constantine & Gainor, 2001; İkiz & Kırtıl-Görmez, 2010).
5. There is a significant relationship between emotional intelligence and happiness (Furnham & Petrides, 2003).

Emotional intelligence, which covers the entire emotional intelligence of individuals, can be defined as the "feeling mind". Individuals with high emotional intelligence have abilities such as perseverance, self-control, being empathetic, controlling their emotions, and self-motivation (Yelkikakan, 2006). Emotional intelligence emerged with the beginning of researching the reasons behind the failures of individuals in their social lives despite getting high results in intelligence measurement tests. In the last century, studies have mostly focused on the cognitive aspect of intelligence., recent studies have revealed that perception is not the only predictor of performance, emotional development is equally a predictor of success (Nasir & Masrur, 2010). Emotional intelligence is also part of the social intelligence landscape.

The purpose of studying a foreign language is to express the feelings, thoughts, wishes and dreams of the individual through this language. In order for the individual to reach this level, he/she must be able to use his/her speaking and writing skills effectively. In this direction, speaking and writing skills, come to the fore in the foreign language learning process, and this is seen as an indicator of success in the foreign language learning process. However, there are many affective and cognitive factors that prevent reaching the desired level of success in foreign language learning. Although factors such as attitude, self-confidence, extroversion, and self-esteem are seen as important variables in the foreign language learning process by researchers, anxiety is thought to be the most important factor affecting this process (Gardner & MacIntyre, 1993). In this direction, researchers have conducted studies considering that anxiety is main component in the foreign language learning process (Campbell & Ortiz, 1991; Dewaele et al. 2016; Elaldi, 2016; Horwitz, 2001; Steinberg & Horwitz, 1986; Zheng & Cheng, 2018). As a result of the researches, they studied on the effects of anxiety on learning foreign language and tried to define anxiety, which is an important part of the psychological aspect of this process (Matsuda & Gobel, 2001).

Anxiety has emerged as a subject that has been handled by medical and psychiatry sources since the 18th century. Towards the middle of the 19th century, Freud started the study of anxiety. According to Freud (1927), anxiety is “the worry that there may be things that do not exist in reality”, Lewis (1970), anxiety from the root of “Anx” is “suffocation, drowning”, Spielberg (1983) describes anxiety as “tension, irritability and a feeling of fear”. Tuma and Maser (2019) stated that it was defined in different ways at different times in human history and stated that this emotion has biological, behavioral and experiential components, and that it is a situation that raises suspicion and causes anxiety when the individual is in difficult situations. Based on these explanations, anxiety, which is at every stage of human life, emerges as a threat that prevents or decreases the success of individuals by causing them to worry and fear, especially in learning environments. A situation where anxiety is frequently experienced is foreign language learning. In the context of second language learning, it can be defined as the feeling of anxiety and fear that appears during the acquisition of basic skills and hinders the success of individuals in the target language. Due to its multidimensional and complex structure, it is not known exactly how anxiety affects the foreign language learning process. It is important to investigate the causes of anxiety, especially in foreign languages. In this study, the effect of emotional intelligence of foreign students learning Turkish language on speaking and writing anxiety was investigated.

Studies on the speaking anxiety of foreign students learning Turkish language in the literature (Boylu & Çangal, 2015; E. Özdemir, 2013; K. Yoğurtçu & G. Yoğurtçu, 2013; Polatcan, 2019; Rashid, 2017; Tunçel, 2014; Sallabaş, 2012); Şen & Boylu, 2015; Yalçın & Sarıgül, 2017; Köse, 2009) and writing concerns (Maden, Dinçel, Maden, 2015; İşcan, 2015; Aytan & Tunçel, 2015; Ülker, & Boylu, 2017; Taşdemir, 2017, Bayat, 2018; Dalcı, 2020) are available.

There have been studies investigating the relationship between emotional intelligence and foreign language learning anxiety. In the study conducted by Chao (2003), it was determined that there is a relationship between the emotional intelligence of students and their academic success. In the study conducted by Dewaele, Petrides, and Furnham (2008), it was determined that there is a significant relationship between emotional intelligence, native language speaking anxiety and foreign language anxiety. A study by Shaoo, Yu, and Ji (2013) found moderate to relatively strong relationships between Chinese students' emotional intelligence, foreign language anxiety, English achievement, and English proficiency. Movahed and Kerns (2017) examined the relationship between emotional intelligence, foreign language anxiety, language proficiency, and Iranian language success, and it was determined that emotional intelligence was significantly related to achievement and self-rated competence. Li, Huang, (2017) investigated the predictive effects of classroom environment and emotional intelligence on foreign language liking and anxiety.

In the literature, there are studies examining the relationship between emotional intelligence and anxiety, and there are studies that determine the relationship between foreign language anxiety and emotional intelligence of people who learn English as a foreign language. Kılıç (2021), in a study on the relationship between English as a foreign language learners' willingness to communicate, their emotional intelligence levels and their attitudes towards learning a foreign language, found that students' emotional intelligence levels were partially effective on their willingness to communicate in English. Gök (2020) found that there is a connection between the foreign language

anxiety of students studying English and their academic success. Budak (2020) found a positive and significant correlation between emotional intelligence, foreign language anxiety and demotivational factors in their study examining the relationship between emotional intelligence, foreign language anxiety and demotivation factors in foreign language learning in Turkish preparatory students. Kılıç (2018) investigated the relationships between emotional intelligence factor and foreign language anxiety, and the effect of emotional intelligence level on anxiety level. As a result of the research, it was determined that gender did not change according to the level of foreign language anxiety, but changed according to the level of emotional intelligence. Şakrak (2009) investigated the relationship between emotional intelligence and foreign language anxiety. The results showed a negative correlation between students' emotional intelligence levels and foreign language anxiety.

In this analysis, the outcome of emotional intelligence on speaking and writing anxiety in teaching Turkish as a non-native language was investigated. The main question of the research is “What is the effect of emotional intelligence on speaking and writing anxiety of students learning Turkish as a non-native language?” The sub-issues of the research are given below:

1. What are the emotional intelligence, speaking anxiety and writing anxiety levels of foreign students learning Turkish language?
2. What is the relationship between emotional intelligence, writing anxiety and speaking anxiety of foreign students learning Turkish language?
3. What is the status of the emotional intelligence, writing and speaking anxiety scores of the foreigners learning Turkish language according to the variable of being in Turkey?

## 2. Method

### 2.1 Research Model

This research is a quantitative study in terms of data gathering and data evaluation, and the method of the research is descriptive field research. Is there a correlation between research and more? As a referral, is it also elevated under scrutiny? Relational research is one of the important elements that cannot be manipulated in the laboratory, which can be high fear, deprivation, or success related to a large number of students at the same time. (Tutar and Erdem, 2020: 56). This is done to consider the concerns of emotional intelligence in speaking and writing.

### 2.2 Working Panel

In the study group, 173 students from İnönü University TÖMER in the 2018-2019 academic year voluntarily participated. First of all, the purpose and importance of the research they participated in were explained to the students, and then the questionnaires were distributed on a voluntary basis. Demographic characteristics of the students cooperating in the research are given in Table 1.

Table 1: Demographic characteristics of the students cooperating in the study

Groups	Number(n)	Rate (%)
<b>Gender</b>		
Female	109	63,0
Male	64	37,0
Total	173	100
<b>Nationality</b>		
Syria	157	90,8
Afghanistan	3	1,7
Turkmenistan	10	5,8
Yemen	1	0,6
Palestine	1	0,6
Azerbaijan	1	0,6



### Duration of Stay in Turkey

3 Years and Below	43	24,9
4 Years and Above	130	75,1

According to Table 1, the students are distributed as 109 (63.0%) females and 64 (37.0%) males according to gender. According to nationality, 157 (90.8%) of the students are of Syrian origin, 3 (1.7%) Afghanistan, 10 (5.8%) Turkmenistan, 1 (0.6%) Yemen, 1 6% (0.6%) are distributed as Palestine and 1 (0.6%) as Azerbaijan. According to the duration of stay in Turkey, 43 (24.9%) of the students were determined as 3 years and below, 130 (75.1%) were determined as 4 years and above.

### 2.3 Data gathering tools

The data gathering tools of the research were decided after the literature was searched by the researchers in accordance with the purpose. Most suitable data gathering tool was used by the researchers.

The writing anxiety scale generated by Aytan and Tuncel (2015) for foreign students learning Turkish language was used to measure student's writing anxiety. It is known that the reliability measurement of the Turkish as a non-native Language Writing Anxiety Scale, which consists of 35 items, is .86, and the internal consistency factors for the scale's dimensions are .93 for the first dimension, .84 for the second dimension, .84 for the third dimension, and .84 for the last dimension. It has been determined that the scale can differentiate writing anxiety, and since it is a valid and reliable test, it was used as a data gathering tool in this research.

Another data gathering tool used in the research is the speaking anxiety scale. The speaking anxiety scale was created by Melanlıoğlu and Demir (2013) by testing the credibility and accuracy of the Turkish version of the "Second Language Speech Anxiety Scale" (Woodrow, 2006). The test-retest reliability coefficient of the scale comprising of 12 items was found to be 0.90 for the whole scale.

The Schutte Emotional Intelligence Scale, which was altered into Turkish in 2011 by Tatar, Tok and Saltukoğlu, was used to calculate the emotional intelligence of the students. There are 3 factors in the 41-item scale. In addition, the accuracy coefficient of the scale, which was organized by Ateş (2019) in a way that foreign students learning Turkish language could understand and whose validity and reliability were established, was found to be .856. The highest score to be obtained on this scale is 205, while the lowest score is 41.

### 2.4 Analysis of Data

The data prevailed in the research were examined using the SPSS (Statistical Package for Social Sciences) for Windows 22.0 program. In the evaluation of the data, percentage, number, mean, regression analysis, correlation analysis, standard deviation and t-test were used as descriptive statistical technique.

## 3. Findings

In this section, the result prevailed from the analysis of the data collected through the scales of the students participating in the research are included in order to solve the research problem. The first question, one of the sub-problems of the research, was "How is the emotional intelligence, speaking anxiety and writing anxiety of foreign students learning Turkish language?". In this respect, the scores that the students obtained from the scales were calculated.

Table 2: Students' Emotional Intelligence, Speech Anxiety and Writing Anxiety Scores Mean

	N	Avg	Ss	Min.	Max.	Alpha
Emotional intelligence	173	3,165	0,330	2,320	4,050	0,833
Speaking Anxiety	173	30,578	7,741	13,000	55,000	0,799
Writing Anxiety	173	105,567	12,407	71,000	167,000	0,845

In Table 2, the student's emotional intelligence mean score is  $3.165 \pm 0.330$  (Min=2.32; Max=4.05), the mean "speaking anxiety" score is  $30.578 \pm 7.741$  (Min=13; Max=55), the mean "writing anxiety" score is  $105,567$  It was determined as  $\pm 12,407$  (Min=71; Max=167). Considering the average score of all scales, it is possible to interpret that the students have average score.

One of the other sub-problems of the research, "How is the connection between emotional intelligence, writing anxiety and speaking anxiety of foreign students learning Turkish language?" Correlation evaluation was conducted to answer the question.

Table 3: Correlation Analysis between Student's Emotional Intelligence, Writing Anxiety and Speaking Anxiety

		Emotional Intelligence General	Speaking Anxiety	Writing Anxiety
Emotional Intelligence General	r	1,000		
	p	0,000		
Speaking Anxiety	r	-0,334**	1,000	
	p	0,000	0,000	
Writing Anxiety	r	-0,186*	0,153*	1,000
	p	0,014	0,044	0,000

\* $<0,05$ ; \*\* $<0,01$

According to Table 3, when the correlation analyzes between emotional intelligence, speaking anxiety, writing anxiety is examined;  $r=-0.334$  negative ( $p=0.000 < 0.05$ ) between speaking anxiety and emotional intelligence overall,  $r=-0.186$  negative between writing anxiety and emotional intelligence overall ( $p=0.014 < 0.05$ ),  $r=0.153$  productive between writing anxiety and speaking anxiety ( $p=0.044 < 0.05$ ) correlation was found.

This research also aims to include the title, "What is the effect of the emotional intelligence of foreign students learning Turkish language on speaking and writing anxiety?" Regression analysis was performed to answer the question.

Table 4: The Outcome of Emotional Intelligence on Speaking Anxiety and Writing Anxiety

Dependent variable	Independent variable	$\beta$	T	p	F	Model (p)	R <sup>2</sup>
Speaking Anxiety	Constant	55,381	10,285	0,000	21,448	0,000	0,106
	General Emotional Intelligence	-7,837	-4,631	0,000			
Writing Anxiety	Constant	127,771	14,205	0,000	6,160	0,014	0,029
	General Emotional Intelligence	-7,016	-2,482	0,014			

The regression analysis performed to determine the cause-effect relationship between emotional intelligence and speaking anxiety was found to be significant ( $F=21.448$ ;  $p=0.000 < 0.05$ ). The total change in speaking anxiety level is explained by emotional intelligence at a rate of 10.6% ( $R^2=0.106$ ). Emotional intelligence reduces the general speaking anxiety level ( $\beta=-7,837$ ). Regression analysis to determine the cause-effect relationship between emotional intelligence and writing anxiety was found to be significant ( $F=6.160$ ;  $p=0.014 < 0.05$ ). The total change in the level of writing anxiety is explained by emotional intelligence at a rate of 2.9% ( $R^2=0.029$ ). Emotional intelligence reduces the level of writing anxiety ( $\beta=-7.016$ ). These findings are perhaps one of the main findings in the study. It should be said that emotional intelligence reduces the levels of writing and speaking anxiety.

Another sub-problem of the research, "How is the writing and speaking anxiety scores of foreign students learning Turkish language compared to the variable of being in Turkey?" A t-test was conducted for the question.

Table 5: Variation of Speaking Anxiety and Writing Anxiety Scores by Time of Presence

	Group	N	Avg	Ss	T	sd	P
Speaking Anxiety	3 Years and below	43	27,558	7,235	-3,020	171	0,003
	4 Years and above	130	31,577	7,668			
Writing Anxiety	3 Years and below	43	105,698	13,435	0,080	171	0,937
	4 Years and above	130	105,523	12,102			

Independent Groups t-test

When Table 4 is considered, it is observed that the speaking anxiety scores of the students differ significantly according to the duration of their stay in Turkey ( $t(171)=-3.020$ ;  $p=0.003<0.05$ ). Speaking anxiety scores of those who have been in Turkey for 4 years or more ( $\bar{x}=31,577$ ) were found to be higher than those who have been in Turkey for 3 years or less ( $\bar{x}=27,558$ ). In the light of these findings, it can be said that the longer the students' stay in Turkey, the higher their anxiety level. According to the variable of the length of stay in Turkey ( $p>0.05$ ), the writing anxiety scores of the students do not vary significantly.

#### 4. Conclusion and Discussion

In teaching Turkish to foreigners, the aim is to enrich the language teaching and make it permanent. There may be some disruptions in the language education given for this purpose. Situations such as anxiety and anxiety experienced by students can have negative effects on the language acquisition process of students. Although it is possible to understand all kinds of problems that students encounter from the lessons, as instructors, it is helpful to the field to present them in the light of science. Indeed, studies have found that anxiety negatively affects academic achievement (Hunsley, 1985; Vitasari et al., 2010; Weda & Sakti, 2018).

This study aimed to determine the effects of a known problem in teaching Turkish to the foreigners. Evaluating the speaking and writing anxiety of foreign students on the axis of emotional intelligence will be beneficial for the instructors in respect of using different procedures and strategy. For this purpose, emotional intelligence, speaking anxiety and writing anxiety status of foreign students learning Turkish language were examined in the study. As a result of the tests conducted on 173 students, it is noticed that the students have average outcome in line with the scores obtained from the scales. Therefore, it was ascertained that there was  $r=0.153$  positive ( $p=0.044<0.05$ ) relationship between writing anxiety and speaking anxiety. In addition, it was determined in the study that the speaking anxiety scores of the students varied notably according to the duration of their stay in Turkey, but the writing anxiety scores of the students did not vary notably as per to the duration of their stay in Turkey.

The outcome of a study directed by Nasir and Masrur (2010) in which 132 university students participated, revealed that there is an important link between emotional intelligence and academic achievement. Therefore, it was determined that emotional intelligence is an important predictor of academic success. Lu et al. (2010) examined the effect of emotional intelligence (EI) on English learning anxiety of Chinese students. Thus, it was determined that there is a strong relationship between the emotional intelligence of the students and their English success. All these results revealed the fact that emotional intelligence affects the anxiety level of students in the language learning process.

In the literature, there are studies in which notable association was determined between emotional intelligence and speaking skill. In the research conducted by Rode et al., (2007), it was determined that individuals with high emotional intelligence are practical speakers. In this respect, it is possible to say that emotional intelligence affects effective speaking and communication skills. Şakrak (2009), E. Kurt and Savuran (2016) found a negative relationship between foreign language anxiety and emotion in their research. In these studies, it has been determined that emotional intelligence contributes to the reduction of anxiety level. In addition, in the study conducted by Avcı (2016), Gül and Güney (2019), a significant relationship was found between emotional intelligence and communication skills. This result is in line with the result of our study. Ebrahimi, Khoshshima, and Zare-Behtash Heydarnejad (2018) determined the effect of emotional intelligence on speaking skills in their studies. Thus, it was determined that both the EQ and speaking skills of the students in the experimental group

improved substantially. In addition, there are studies in the literature that have determined significant relationships between emotional intelligence and writing skills. Huerta et al. (2016), in the studies where graduate students examined the connection among writing anxiety, self-efficacy and emotional intelligence, a moderate relationship was found between emotional intelligence and writing anxiety. Shao et al. (2013) recognized that there was a relatively firm connection amid emotional intelligence and writing success in a study examining the relationship between student's emotional intelligence and writing success. Chen et al. (2021) examined the interactions of emotional intelligence, non-native language anxiety and non-native language liking in the non-native language classroom. As a result of the research, it was determined that emotional intelligence has an effect on non-native language anxiety and non-native language liking. Rode et al. (2007) found that people with high emotional intelligence are effective speakers. It can be said that the result of this research contributes to effective speaking and communication skills.

As a result of the findings, various suggestions were made to practitioners and researchers.

- In order to reduce students' speaking and writing anxiety, teachers should inform students about ways of positive thinking.
- Activities that encourage students to realize their speaking and writing skills should be organized.
- Activities that increase the emotional intelligence level of children should be organized in educational environments.
- Studies can be conducted to examine the speaking and writing anxiety of foreign students learning Turkish language in terms of various variables.
- Researches involving students at the level of basic education and secondary education who learn Turkish as a foreign language can be conducted.

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# Secondary Students' Experiences with Distance Education for Mathematics Courses During the Covid-19: The Sample of Turkey

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## Abstract

The aim of this study is to reveal the opinions of secondary school students about the mathematics lessons conducted during the Covid-19 pandemic process. This research is a descriptive study based on survey model. The sample group of the study consists of 740 secondary school students who have been attending public schools in the Black Sea Region of Turkey in the 2020-2021 academic year. A questionnaire consisting of three open-ended questions and five question items created by the researchers was used as data collection tool in the study. The questionnaire was created on the Google Forms platform and delivered to the students by this way. As a result of the study, it was stated that most of the students had difficulties in the mathematics lessons conducted during the pandemic, and these difficulties generally emerged in terms of not being able to understand the lesson or lack of digital resources. Students generally stated that they could not understand the teacher in online lessons, could not focus on the lesson, online lessons were not permanent and productive, and these lessons reduced their motivations towards the lesson. The data obtained from the study were discussed in relation to the literature and appropriate suggestions were made in line with the results of the study.

**Keywords:** Covid-19, Distance Education, Mathematics Lessons, Secondary Students, Student Experiences

## 1. Introduction

Covid-19 (New Type Coronavirus), which emerged in Wuhan, China in December 2019, spread all over the world in a short time and was declared a pandemic by the World Health Organization on March 11, 2020 (Anjorin, 2020; Jebri, 2020). Since the disease can be transmitted from person to person in many ways, especially respiratory and contact, and cause fatal results, infection and death rates have increased to alarming levels worldwide in the first quarter of 2020 (Johns Hopkins Coronavirus Resource Center, 2020). This situation has caused national governments to take some precautions such as social distance, quarantine practices, martial law, travel, and



education restrictions to control the spread of the epidemic (Bourouiba, 2020) and the dynamics of life all over the world have changed completely.

According to Telli and Altun (2020), education is the sector most affected by COVID-19 after the health sector. Because, due to the rapid spread of the epidemic, many countries around the world had to pause their education activities and develop different alternatives. Within the scope of the measures to be taken against the epidemic, it was also recommended that the schools be closed. Countries have suspended schools on different dates, considering their own conditions. Thus, many countries such as China, Italy, USA, England, and Georgia have switched to distance education by taking a break from face-to-face education to minimize the impact of the pandemic on education. While the number of countries that closed schools was six in March, this number increased to 195 a month later. According to UNESCO (2020) data, as of April, the education and training lives of 92% of the students in the world have been interrupted by the pandemic. In this process, primary, secondary, and high schools in Turkey were suspended for a week as of March 16, 2020, and as of March 23, 2020, distance education was started, and teaching activities were continued through TRT EBA TV channels and Educational Information Network (EBA). EBA is defined as an online social education platform (Education and Information Network, 2016) opened for use by the General Directorate of Innovation and Educational Technologies without any charge. To provide an effective education and training, the distance education process was carried out by adopting the use of digital technology in Turkey, as in most countries.

Distance education is a computer-based teaching method in which the interaction between students and education practitioners is provided from a specific center in cases where classroom education cannot be provided due to limitations in the general education and training process (Moore, Dickson-Deane, & Galyen, 2011). Distance education has many benefits such as providing sustainability in education (Akinbadewa & Sofowora, 2020; Seage & Türegün, 2020), providing lifelong learning (Alharthi, 2020; Lou, 2004), and reducing education costs (Al-Husban, 2020; Baggaley, 2008; Hall & Knox, 2009) as cited in Hebebcı, Bertiz and Alan (2020). However, moving away from face-to-face education to online education in a very short time due to the pandemic has caused many negative effects on students (Crawford, Butler-Henderson, Rudolph, & Glowatz, 2020). According to United Nations, 770 million educated people in the world have been adversely affected by the closure of schools and universities due to the pandemic (Zhong, 2020). Despite this, since it is not clear when the pandemic will end, all educational institutions around the world have tried to develop distance education materials (Kaur, 2020). There were two main problems in this process. The first of these is the limited data on the effectiveness of distance education (McPherson & Bacow, 2015), and the second is digital resources (Liguori & Winkler, 2020). Lack of access to fast, affordable, and reliable internet connections hindered the online learning process, especially for rural communities (Wains & Mahmood, 2008). Students accessing the Internet via smartphones could not benefit from online learning because a significant amount of online content could not be accessed via smartphones (Adnan & Anwar, 2020). However, the transition from traditional education to distance education in a very short time as a necessity in the shadow of the pandemic has caused different problems related to learning environments. Purwanto, Pramono, Asbari, Santoso, Wijayanti, Hyun, and Putri (2020) stated in their study that 80% of children wanted to go back to school during the pandemic, they were bored with online education and most of the students were not satisfied with distance education. While Fitriyani, Fauzi, and Sari (2020) state that the COVID-19 pandemic has caused a decrease in the learning quality of students, Chiu (2021) says that student difficulties experienced in this process are generally related to motivation, cognitive load, and anxiety level.

When it comes to mathematics education, it can be predicted that the difficulties experienced in learning environments will be more because the integration of digital technologies into mathematics education is a complex task that requires consideration of many elements such as pedagogy, content, and student knowledge (Attard & Holmes, 2020). However, it is important to identify the difficulties experienced by teachers and students who do not have much knowledge and experience in distance education, and to shed light on similar applications to be made in the future. In this context, in this study, it was tried to reveal the opinions of students about the mathematics lessons carried out during the pandemic. It is thought that the findings will help to obtain a general picture about the effectiveness of the mathematics courses conducted during the pandemic. The sub-problems of the study are as follows.

- ✓ Do students prefer to learn mathematics by distance or face to face education? What are the reasons for these preferences?
- ✓ Did the students have difficulty in understanding the mathematics lessons conducted during the distance education process? What are the causes of these difficulties?
- ✓ Has the distance education process had any effect on students' love/interest in mathematics?

## 2. Method

This research is a descriptive study based on survey model. According to Karasar (2005), survey models are research approaches that aim to describe a past or present situation as it exists. Within the scope of this study, this method was preferred because it was tried to determine the opinions of the students about the mathematics lessons carried out during the pandemic process.

### 2.1 The Sample Group

The sample group of the study consists of 740 secondary school students attending public schools in the Black Sea Region of Turkey in the 2020-2021 academic year. In determining the sample group, convenient and criterion sampling methods were used together. The mentioned criteria are determined as attending public secondary schools and volunteering to participate in the study. Of the participating students, 239 (32%) were 5th grade, 190 (25%) were 6th grade, 159 (21%) were 7th grade, and 148 (20%) were 8th grade students. Of all students, 387 (52%) are female students and 353 (47%) are male students.

### 2.2 Data Collection and Analysis Process

A questionnaire consisting of 3 open-ended questions and 5 question items, created by the researchers, was used as a data collection tool in the study. The questionnaire was created on the Google Forms platform and delivered to the students in this way. Due to the pandemic, study data were collected online. The answers given by the students to the survey questions were handled with the content analysis method and coded under the common themes and categories determined by the researchers. In this process, inductive coding was done, and the answers that did not fall into the categories created by the researchers were coded under the other category. Responses that do not qualify as an answer to the questions asked or that contain expressions such as "I have no idea, I don't know, I'm not sure" were not included in the coding process. During the data analysis, the encoder reliability calculation was made for each survey question by consulting the opinions of another academician who expert in the field, and the relevant values were calculated above 0.80.

## 3. Results

In this part of the study, the findings will be presented in parallel with the sub-problems.

### 3.1 Do Students Prefer Mathematics Lesson with Distance or Face to Face Education? What are the Reasons for These Preferences?

In the first question of the questionnaire applied to the students within the scope of the study, 621 students (84%) answered that they would prefer to learn mathematics face-to-face, and 119 students (16%) answered that they would prefer to learn mathematics through distance education.

When the answers of the students who gave the answer, I prefer to learn the mathematics lesson face to face were analyzed, it was seen that these students put forward different reasons related to *Understanding the Lesson*, *Learning Environment* and *Physical Environment*. Responses that did not fall into these categories were coded under the *Other* category.

#### 3.1.1 Reasons for Understanding the Lesson

The reasons given by the students who prefer face-to-face education in the category of *Understanding the Lesson* are as in Table 1.

Table 1: Reasons of students who prefer face-to-face education about understanding the lesson

Reasons	Frequency (f)
I understand better/easier with face-to-face course.	130
I can't understand with distance education (with online course)	77
Face-to-face learning is more efficient/permanent for us.	60
Distance education is not efficient/permanent.	10
I can't focus on distance education.	4
<b>TOTAL</b>	<b>281</b>

When Table 1 is examined, it is seen that students generally state that they do not understand the lesson in online environments and what they learn in these lessons is not permanent.

### 3.1.2 Reasons for the Learning Environment

The reasons given by the students who prefer face-to-face education in the *Learning Environment* category are divided into sub-categories as *Statements About Processing of the Lesson*, *Statements About Affective Factors* and *Statements About the Lesson Time*. All the justifications used regarding the Learning Environment are divided into sub-categories as for the Processing of The Lesson, for the Affective Factors and the Lesson Time. All statements in this category are listed in Table 2.

According to the data in Table 2, it is seen that the students put forward different reasons for *Processing of The Lesson* in face-to-face environments. Among the students' statements, the ones with a high frequency indicate that there is more student-teacher interaction in face-to-face environments, face-to-face education is more efficient, and they especially prefer the mathematics lesson to be taught with face-to-face education. Among the expressions containing *Affective Factors*, the ones with high frequency are that face-to-face lessons are more fun, and students are boring in online lessons. The statements about the *Lesson Time* category are that students can take longer lessons and solve enough questions in face-to-face education, but they do not find enough time to ask questions in distance education.

Table 2: Reasons of students who prefer face-to-face education about learning environment

Reasons	Frequency (f)
<b><i>Expressions for the Processing of the Lesson</i></b>	
Interaction with the teacher is more in face-to-face education	21
In face-to-face education, I can ask my questions to the teacher face to face.	21
We learn more in face-to-face education.	11
Mathematics is difficult and it makes more sense to do it face-to-face.	11
It is difficult to calculate in distance education.	4
In distance education, the teacher cannot determine whether I understand or not.	3
We cannot do activities in distance education.	3
Geometry subjects require drawing, but the teacher cannot control them.	3
There is no school discipline in distance education.	2
I am lacking in subject in distance education.	1
Examples in distance education are insufficient.	1
In face-to-face education, everyone listens to the lesson.	1
Participation in face-to-face training is more.	1
It is more difficult for the teacher to teach remotely.	1
Writing in distance education takes a long time.	1
Total	85
<b><i>Expressions that include Affective Factors</i></b>	

Face-to-face education is more fun.	12
I'm bored in online lesson.	5
I found excuses in distance education and started not taking notes and not listening to the lesson.	2
I would like to attend more classes in face-to-face education.	1
face-to-face training is more intimate.	1
<b>Total</b>	<b>21</b>
<b><i>Expressions About Lesson Time</i></b>	
We can teach face-to-face for longer periods of time.	5
There is no time to ask my questions in distance education	2
We can solve more questions in face-to-face training.	1
<b>Total</b>	<b>8</b>
<b>GRAND TOTAL</b>	<b>114</b>

### 3.1.3 Reasons for the Physical Environment

The reasons put forward by the students who prefer face-to-face education regarding the *Physical Environment* are given in Table 3.

Table 3: Reasons of students who prefer face-to-face education about physical environment

<b>Reasons</b>	<b>Frequency (f)</b>
Technical problems (internet access, audio and screen sharing problems).	77
I concentrate better in face-to-face training.	17
My eyes get tired at the screen, we get distracted, we can't get fresh air.	14
I miss school, my teachers and my friends, there is very little socialization in distance education.	9
In distance education, we cannot do the things we do in school.	1
I'm bored at home in distance education	1
There is respiration in face-to-face education.	1
<b>TOTAL</b>	<b>120</b>

According to the data in Table 3, it is seen that most of the students prefer face-to-face education due to technical problems. Other than that, expressions with high frequency are that I cannot concentrate in online education, I am boring, and I cannot socialize. The answers that could not be included in the categories here as the reason for preferring face-to-face education and were coded in the *Other* category are in Table 4.

Table 4: Other reasons for students who prefer face-to-face education

<b>Reasons</b>	<b>Frequency (f)</b>
Distance education is difficult / not good / there are too many problems.	12
Face-to-face training is better/helpful.	6
Opportunity for distance education (computer, internet, tablet, phone, etc.) is required.	4
It is more difficult in distance education to take the notes of the courses that we cannot attend.	3
<b>TOTAL</b>	<b>25</b>

The answers in the other category are that *distance education is difficult, not good, and requires opportunities, etc.*

When the answers of 119 students who answered the first question in the data collection tool as *I prefer distance education* were examined, it was seen that 85 students (72%) gave reasons, and 34 students (28%) did not. When the answers of the students who gave reasons were examined, the statements used by the students were divided into categories as *Health-Related Reasons*, *Learning Environment-Related Reasons* and *Physical Environment-Related Reasons*. The answers for these categories are presented in Table 5.

Table 5: Reasons for students who prefer distance education

Reasons	Frequency (f)
<b><i>Health-Related Expressions</i></b>	
I'm worried about corona	42
I think health is more important than education.	12
I have type 1 diabetes	1
<b>Total</b>	<b>54</b>
<b><i>Expressions about Physical Environment</i></b>	
Distance education/home environment is more comfortable.	16
There is a lot of noise at school.	7
<b>Total</b>	<b>23</b>
<b><i>Expressions about Learning Environment</i></b>	
I understand better with distance education.	3
It's easier to access the books.	2
It's easier to use the board.	1
I am more active in courses.	1
<b>Total</b>	<b>7</b>
<b>GENERAL TOTAL</b>	<b>85</b>

When Table 5 is examined, it is seen that most of the students prefer distance education due to health reasons and then because they are more comfortable at home.

### 3.2 Did the Students Have Difficulty in Understanding the Mathematics Lessons Conducted During the Distance Education Process? What Are the Causes of These Difficulties?

To the second question applied to the students within the scope of the study, 466 students (63%) answered *Yes*, and 274 students (37%) answered *No*. The students who answered yes, put forward different reasons for the difficulties they experienced. Within the scope of the study, the reasons put forward by the students for this question were gathered under different categories as *Expressions About Physical Environment*, *Expressions About Understanding the Lesson*, *Expressions About Learning Environment*, *Expressions About the Quality of The Lesson*, *Expressions About the Teacher*, *Expressions Including Affective Factors* and *Other*. Findings for all categories are given in Table 6.

Table 6: The reasons for the difficulties experienced by students in distance education for math lessons

Reasons	Frequency (f)
<b><i>Expressions about Physical Environment</i></b>	
There was a problem with the internet.	180
I could not attend the courses.	37
I can't focus.	29
I find it difficult because there is no face-to-face interaction.	24
There is noise in online lessons.	13
It's not like a school environment/ Face-to-face education is easier.	8
My course time was the same with my siblings and it was not my turn.	7
It's hard to stay in front of the screen for hours/our eyes hurt.	5
I had necessities (tablet, computer, internet).	3
I am not used to distance education.	3
I don't understand because the screen is small.	3
I'm just watching the screen.	1
<b>Total</b>	<b>311</b>
<b><i>Expressions about Learning Environment</i></b>	
I have difficulty in understanding what my teacher is saying.	138
It's hard to ask about the things I don't understand in distance education.	11

Time is not enough, and it passes quickly.	10
I fell behind on the subjects.	9
I can't take notes.	7
I forgot the subjects I saw / the subjects are not consolidated enough / we cannot repeat the lessons.	4
We could not attend regular classes because the attendance was low.	4
I couldn't get results from the lessons.	3
We couldn't solve many tests/questions.	2
Since I did not understand the lesson, my participation in the lesson decreased.	2
There is no discipline like in the school environment.	1
<b>Total</b>	<b>191</b>
<b><i>Expressions about the Nature of the Lesson</i></b>	
Mathematics is a difficult subject.	12
I'm having a hard time solving questions/next generation questions.	6
<b>Total</b>	<b>18</b>
<b><i>Expressions about Affective Factors</i></b>	
My interest/motivation in the lesson decreased/I was distracted.	5
I am boring in the lesson.	4
I am afraid of not understanding the subject.	1
<b>Total</b>	<b>10</b>
<b><i>Expressions about the Teacher</i></b>	
The teacher cannot explain in detail/sufficiently in the online course.	5
Our teacher is not interested in the lesson.	1
Our teacher covers the topics quickly.	1
<b>Total</b>	<b>7</b>
<b><i>Other Expressions</i></b>	
I have difficulties in distance education, I don't know why.	8
I've had health/sleep problems.	8
Distance education is bullshit.	1
<b>Total</b>	<b>17</b>
<b>GENERAL TOTAL</b>	<b>554</b>

When Table 6 is examined, it can be said that the difficulties experienced by the students in the mathematics lesson are generally due to the difficulties experienced in *accessing the internet* and *not being able to understand the teacher*. Apart from this, some students stated that *mathematics was a difficult lesson, the teacher could not explain the lesson efficiently in the online environment, and they lost their motivation towards the lesson*. Some students, on the other hand, expressed the problems they experienced in the course due to the health problems they experienced due to the distance education process.

### 3.3 Did the Distance Education Process Have any Effects on Students' Love/Interest in Mathematics Lesson?

Regarding the third sub-problem of the study, 621 students (84%) said that they liked the course, while 119 students (16%) said that they did not like it. Students who answered *I love the course* gave answers in different categories such as: *It Did Not Affect My Love for the Lesson, It Had a Negative Effect on My Love for The Lesson, It Had a Positive Effect on My Love for the Lesson*.

Table 7: Expressions of students responding *I love the lesson*

Expressions	Frequency (f)
<b><i>No Effect</i></b>	
I already liked the lesson; distance education had no effect.	259
I still love math because I love my teacher.	35
<b>Total</b>	<b>294</b>

<b><i>Negative Effect</i></b>	
I like math less with distance education.	57
With distance education, my motivation/interest towards the lesson decreased.	47
<b>Total</b>	<b>104</b>
<b><i>Positive Effect</i></b>	
I liked the lesson more with distance education.	61
<b>Total</b>	<b>61</b>
I force myself to love the lesson in distance education.	2
<b>Total</b>	<b>2</b>
<b>GENERAL TOTAL</b>	<b>461</b>

When the student expressions in Table 7 are examined, it is seen that distance education has no effect on the love of mathematics for most of the students (63%) who love mathematics, have a negative effect on these students' love for mathematics (23%), and have a positive effect on their love for mathematics (13%). Related answers are given in Table 8. Within this sub-problem of the study, the expressions of the students who answered that *I do not like mathematics*, it was seen that they gave the answers that *it did not affect my love for the course*, and *it had a negative effect on my love for the course*. Related answers are given in Table 8.

Table 8: Expressions of students responding *I don't love the lesson*

Expressions	Frequency (f)
<b><i>No Effect</i></b>	
Distance education had no effect on my love for the lesson.	29
<b>Total</b>	<b>29</b>
<b><i>Negative Effect</i></b>	
Because of distance education, I don't like the lesson / I am alienated from the lesson.	12
There is nothing to love about mathematics in distance education.	4
<b>Total</b>	<b>16</b>
<b>GENERAL TOTAL</b>	<b>45</b>

According to the data in Table 8, it can be said that the distance education process has no effect on the love of the students who do not like the mathematics lesson in general. However, it is seen that some students stated that they became even more alienated from the course during the distance education process.

#### 4. Discussion

In this study, it was seen that most of the students in the sample group (84%) preferred face-to-face education. It has been seen that the two most important factors in students' preference for face-to-face education are *understanding the lesson and technical problems*, respectively. The students stated they understood the lesson better, they could learn for a longer period, could solve more questions depending on the student-teacher interaction and they had more permanent learnings in face-to-face environments, and they especially preferred the mathematics lessons to be taught in face-to-face environments. Besides, they stated that face-to-face lessons are generally more fun, and they are boring in online lessons. The reasons for students who prefer distance education mostly consist of statements about health reasons and home environment to be more comfortable. Most of the students (63%) stated that they had difficulty in understanding the mathematics lessons during the pandemic, and they stated that the reasons for this difficulty were the problems of achieving the internet and not being able to understand the teacher, respectively. When the reasons for not understanding the teacher are examined, it is seen that the students generally use expressions such as *there is a lot of noise, I cannot focus on the lesson, I cannot ask where I do not understand, I cannot take notes, I forget what is explained because there is not enough repetition, we do not solve enough questions in the lesson, the teacher cannot explain enough, mathematics is difficult, my motivation is low, I am boring, etc.* In the question of whether the lessons conducted during the pandemic process influenced their love for the mathematics lesson, most of the students answered that they already liked the lesson, so it did not have any effect. 23 % of the students said they liked the lesson, but their love for the lesson decreased

during the pandemic. Nevertheless, 6% of all students who participated in the study stated that they did not like the lesson. Most of the students in this group stated that distance education did not influence their love for the lesson, while some students stated that distance education alienated them from the lesson even more.

According to the data obtained from the study, it can be said that the students generally prefer to interact with the teacher in face-to-face course environments. Related findings obtained from the study are consistent with the results of different studies in the literature. Kaynar, Kurnaz, Doğrukök, and Şentürk Barışık (2020), one of these studies, state that secondary school students find face-to-face education more beneficial than online education. Özüdoğru and Bulut (2021), on the other hand, examined the 8th grade students' opinions about the mathematics courses conducted during the Covid-19 pandemic process, and they stated that the students could not understand the lessons and they could not access the digital resources in this process. Başaran, Doğan, Karaoğlu, and Şahin (2020) examined the opinions of students, teachers and parents on distance education and revealed problems such as *not being suitable for individual differences, limited interaction, students' not participating actively in the lesson, and technical problems for these processes*. In the same study, the requirements such as *inequality of opportunity, content, infrastructure, material development and improvement were stated*. Özdoğan and Berkant (2020), in their research in which they examined stakeholder views, put forward the advantages of distance education such as *providing time-space independence, re-watchability of courses, and protection against disease transmission but they have also revealed that it has disadvantages such as loss of motivation, lack of measurement-evaluation, lack of computer-internet, inequality of opportunity in education and technical problems*. They also included solution proposals such as creating equal opportunities and strengthening the infrastructure. Therefore, it can be said that the opinions of students about online mathematics courses in Turkey emphasize common points and that the students are not satisfied with the courses conducted in this process. In parallel with this result, the study of Özçakır Sümen (2021) can be cited. Although the study was carried out for the primary school level, it is thought that the results will be useful as a discussion point. Özçakır Sümen (2021), in her case study on how primary school mathematics lessons are being conducted in the distance education process, revealed that teachers plan their mathematics lessons well, they enter the lesson with a good preparation, they use different methods and techniques in the lessons, and mainly support the lesson with technological materials. However, it has been revealed that 30 minutes of course time is not enough to explain mathematics subjects, solve questions and make students to comprehend it for distance education. It has been observed that there are mainly difficulties in classroom management. Hebebcı, Bertiz, and Alan (2020) in their study in which they examined the views of teachers and students regarding the distance education activities carried out during the pandemic, stated that the students did not understand the teachers in the distance education process and found them inadequate. At the same study, the students did not find online activities satisfactory due to the lack of time and infrastructure.

When the international publications examining the opinions of the students about the mathematics lessons carried out during the pandemic process are examined, it is seen that similar results have been reached. In the study of Mukuka, Shumba, and Mulenga (2021), in which they examined the opinions of 367 secondary school students about mathematics lessons during the pandemic process in Zambia, most of the students believed that mathematics is a lesson that can be learned with face-to-face education. In the same study, it was reported that 56% of the students did not have online resources during the pandemic process and therefore they had difficulties in accessing the courses and providing motivation. In the study of Das (2020), in which he brought together different types of participants, most of the participants accepted online teaching as a barrier to mathematics education. In their study, Wardani, Mardiyana and Saputro (2021), in which they determined the opinions of 11th grade students about the mathematics lessons carried out during the pandemic process through a survey, 46% of the students found that online mathematics learning was ineffective, 27% very ineffective, 17% effective and 10% found it to be effective. The students expressed the obstacles they experienced in this process as *unstable internet network, limited internet quota, lack of time for discussion and collecting homework, and too much homework*. Tezer, Cavus Orkun, Osum and Türe (2021), in their study examining primary school students' views on mathematics lessons during the COVID-19 pandemic process, stated that fifth grade primary school students in Northern Cyprus have difficulty in understanding online lessons and need help while doing their homework. Schult, Mahler, Fauth, and Lindner (2022) state that the mathematics courses conducted during the pandemic process, cause mathematics learning losses in the 5th grade students who have a low socio-cultural level in Germany. Apart from these, a study conducted in Jordan by Abuhammad (2020) addresses the personal, logistical,



and technical barriers associated with the distance learning during the COVID-19 quarantine. Another study conducted in Bangladesh by Al-Amin, Zubayer, Deb and Hasan (2021) reported that limited access to the internet and electricity are among the biggest barriers to distance learning in most developing countries. Zhang, Wang, Yang and Wang (2020) also reports that *the weakness of the online teaching infrastructure, the inexperience of teachers, the knowledge gap, and the complex home environment are undermining student learning during COVID-19.*

The literature review within the scope of this study was carried out regarding the mathematics courses during the pandemic process, depending on the purpose of the study. The reason for this situation is to be able to determine the effects of mathematics lessons, conducted all over the world, on students during the pandemic process, to evaluate the process in this context and to reveal the measures to be taken for effective mathematics teaching. Therefore, the discussion part of the study was limited to mathematics learning processes, and it was aimed to reveal field-specific results. When the national and international studies are examined, it is seen that different problems related to the mathematics learning processes carried out in online environments were expressed by the students. The main problems revealed in these studies are *the difficulties in accessing the internet and the inability to understand the lesson.* It can be said that the situation of not being able to understand the lesson expressed here is mostly due to the disconnections in the teacher-student interaction. These disconnections can sometimes be caused by the internet. The reasons expressed by the students as the reasons for not being able to understand the lesson as a result of this study, also support this situation. The students used expressions such as *I cannot focus on the lesson, I cannot ask where I do not understand, I cannot take notes, the teacher cannot explain enough, etc.* However, according to the results of different studies, it is seen that the students generally think that the mathematics course can be learned in face-to-face environments. It is thought that the main reason for this situation is similarly related to student-teacher interaction. In different studies in the literature (Arora & Srinivasan, 2020; Barış & Çankaya, 2016; Chen, Ou, Liu, and Liu, 2001; Jin, 2005; Kaya & Önder, 2002) problems related to student-teacher interaction are also mentioned. Wahyuningrum and Latifah (2020), one of them, stated in their study that teachers do not act to encourage mathematical conversation in online lessons and do not make students active in this regard. However, Chakanyuka, Chiome, and Chabaya (2008) and Özköse, Arı, and Çakır (2013) argue that problems related to interaction can be solved by training teachers and students.

Another remarkable result of the literature review is student motivation. It is seen that students generally think that mathematics is a difficult lesson, so it is very difficult for them to understand this lesson in online lessons. However, the students stated that they lost their motivation towards the lesson on online platforms, and they were boring in the lesson. Therefore, it can be said that one of the ways to attract students to the online lessons is to improve their attitudes towards the lesson.

## 5. Conclusion

This study was carried out in order to reveal the opinions of students in Turkey about the mathematics learning process during the Covid-19 pandemic, and as a result of the study, it was seen that the students generally drew a negative picture. When the literature is examined, it is seen that similar results have been obtained from different studies conducted in many countries. It is difficult to say that this is an unexpected result for distance education applications that are carried out in different environments by breaking away from traditional education in a very short time. Because teachers and students who are not accustomed to distance education and who do not have enough knowledge and preparation for it, have lived this experience for the first time. Therefore, it is expected that students will have difficulties in this process. However, it is obvious that the pandemic process gives an idea about the obstacles that may be encountered if distance education is needed in the next days. The aim of this study is to reveal these obstacles and to develop solutions. Therefore, when it comes to mathematics education, some suggestions can be made about accessing digital resources and understanding mathematics, which can be expressed as the two biggest obstacles for distance education. The first of these recommendations is about access to digital resources. In order to avoid disruptions in distance education processes, countries should ensure equal opportunities for students and find ways to access digital resources (internet, computer, tablet, etc.) as much as possible for each student. Although this proposal is not easy to implement (Ahedor, 2020; Camacho-Zuniga, Pego, Escamilla, and Hosseini, 2021; Oyediran, Omoare, Owoyemi, Adejobi, and Fasasi (2020), it is a known fact that

the inadequacy of digital resources lies at the root of the disruptions. Apart from this, when considered on a local basis, schools can support their students for getting knowledge about digital resources (e-books, software, digital games, online trainings, videos, webinars, etc.). Students can be encouraged to carry out technology supported projects and educational activities using digital resources can be carried out by schools. In addition, students can be informed about accessing online resources, so they can reach a better level of using these resources. Besides, it can be ensured that especially teachers are informed about the learning activities to be carried out on online platforms. It is thought that the trainings to be given to teachers and students regarding distance education will contribute to overcoming many obstacles. In addition to all these problems, it is known that one of the biggest obstacles in front of students in distance education processes is their attitude towards the mathematics. For this reason, it is thought that informing students about why mathematics is a lesson to be learned and its usage areas in life will increase their motivation towards the lesson and help them change their negative attitudes.

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# Perceptions of School Managers Towards the Acceptance and Use of Technology: A Phenomenological Study

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## Abstract

This study aims to bring out the perceptions of school principals about technology and its use in educational institutions. The research is important in terms of determining the perceptions of school administrators to accept and use technology in the context of the necessity of using technology in schools in the distance education process and today's rapid technological developments. The study group of the research consists of 20 school administrators (principal and assistant principal) working in primary, secondary, and high schools in Istanbul. The data of the research were collected through semi-structured interviews. The collected data were analyzed by content analysis method. It is understood that the administrators who participated in the research have positive perceptions of technology acceptance and consider its use mandatory. According to the participants, it was obtained that with the technological competencies of school administrators, their perceptions of following and using technology were different. In the research, it was found that school administrators use technology more in compulsory situations and to provide benefits. When evaluated in terms of technology in management processes, it was concluded that the administrators participated in the study using technology but they differed according to the age, in-service training, desire, and need of other school administrators in accepting and using technology.

**Keywords:** Acceptance of Technology, Technology Leadership, Technological Competence, Technology Usage in Education

## 1. Introduction

Education is a crucial component for managing and predicting future technological innovations and changes (Bates, 2000). In schools where education shapes the future, information and communication technologies should be used effectively to transform education (Teo, 2011). Every new technology that brings its unique opportunities and features in the 21st century, is a tool with the potential to redefine and empower education leaders (Hamidi & Chavoshi, 2017; Golden, 2004). However, the technology is accepted by supporting it when the user wants to use this technology for the tasks for which it was designed. (Teo, 2011). Technology acceptance and use is the effort to use a specific technology within a user group (Dillon, 2001). The change that is created by technology in society necessitates the use of technology in many areas of life such as education (Turan & Haşit, 2014). School administrators are given important duties and responsibilities in the use of technology in education in schools. School management should demonstrate the need to create a culture of technology acceptance as part of the school management process (Mentz & Mentz, 2003). Due to the developing technology today, school administrators who

can supply complex requirements of the school model in the information society with technological resources, produce solutions to increase efficiency and make decisions for the future of the institution are needed in order to initiate, realize and manage in schools (ISTE, 2001).

School administrators who develop 21st-century skills and can use technology well are the most important supporters of change and improvement in schools (Wilmore & Betz, 2000). School administrators have responsibility to realize technological developments in educational environments, to reflect technology to good practice and change process and to use effective technology in order to manage change in education (Liethwood & Riehl, 2003; Macaulay, 2009). School administrators who support or prevent the use of information technologies in schools show that the use of technology in school improves and facilitates the learning and management process (Macaulay, 2009; Schiller, 2003). Therefore, school administrators should be competent in the use of technology and lead in the adaptation of technology to education (Afshari, Bakar, Luan, Samah & Fooi, 2009). It is important for education administrators to use technology effectively in the education process and lessons. Because it is seen that school administrators who are open to innovations and with high technological competence are more successful (Bahçeci, 2019).

Due to the increasing influence of technology on school management, it has become important to adapt it to schools, to reach the information needed by the schools, and to use the information correctly. School administrators have an important role in understanding the acceptance and use of technology, and supporting the transition to technology in information systems research (Miltgen, Popovic & Oliveira, 2013; Venkatesh., Thong., & Xu, 2012). The technological competencies of school administrators and their acceptance of technology gain importance in the context of school administrators being effective in the quality of education in schools, benefiting from today's developing educational technologies and developing schools (Dinham, 2005). The importance of technology leadership competencies and school administrators' attitudes towards and use of technology in the literature (Can 2003, 2008; Cerit, 2004; Helvacı, 2008; Akbaba-Altun, 2002; Akbaba-Altun & Güner, 2008; Karadağ, Sağlam & Baloğlu, 2008; Seferoğlu, 2009), school administrators' technological leadership behaviors (Cantürk, 2016), technology leadership self-efficacy and their level of realization of education and training (Hayytov, 2013; Ertuğrul, 2014; Ulukaya, 2015); no qualitative study was found on school administrators' perceptions of technology acceptance and use. Technology acceptance, use, and technological competence gain importance in the context of benefiting improving education technologies and their adaptation to schools. The aim of the research is to put forward the sense of school administrators' technology acceptance and use. For this purpose, sought an answer to the following questions;

1. School administrators' ability to accept technology and use technology tools,
2. Roles and responsibilities in the adaptation of technological developments to schools,
3. Levels of following, learning and using technological developments and innovations,
4. Determining and meeting the needs of teachers for technology use,
5. With the practices and measures to increase the use of technology at school,
6. Thoughts on technology leadership?

## **2. Method**

In this section, explanations about the research model, study group, data collection technique, and data analysis are given.

### *2.1 The Research Model*

The qualitative research method was preferred in research because it aimed to examine the perceptions and attitudes of school administrators regarding technology acceptance and use. In this qualitative research, it is aimed to interpret technology acceptance and use observations of school administrators and their experiences with their perceptions. The phenomenological pattern was preferred to reveal in-depth emotions, thoughts, and information about this phenomenon. Phenomenology is a research pattern that helps us to understand deeply the experiences of people who are involved in the event and experienced the facts one-to-one (Yin, 2016).

## 2.2 Study Group

In this research, the purposive sampling method was preferred in order to determine the perceptions of school administrators about the acceptance and use of technology. Participating managers were determined according to the criterion sampling from the purposive sampling types. In this context, the criterion suitable for the sampling technique is the selection of participants working in different kinds of schools, different branches, and have different lengths of services. The study group of the research consists of principal and vice principals working in schools in the Beylikdüzü, Büyükçekmece, and Silivri districts of Istanbul in the 2021-2022 academic year. The primary, secondary and high schools in which 15 male and 5 female administrators in the study group work, are located in the Beylikdüzü, Büyükçekmece, and Silivri districts of Istanbul.

Table 1: Demographic information on school administrators

Variables (N=20)	Subgroups	f	%
<b>Gender</b>	Female	5	25
	Male	15	75
	Total	20	100
<b>Marital Status</b>	Married	5	25
	Bachelor	15	75
	Total	20	100
<b>Education</b>	License	12	60
	Master Degree	7	35
	Doctorate	1	5
	Total	20	100
<b>Age</b>	21-30	1	5
	31-40	6	30
	41-50	12	60
	51 and above	1	5
	Total	20	100
<b>Job</b>	Principal	10	50
	Vice principal	10	50
	Total	20	100
<b>School Type</b>	Primary School	3	15
	Middle School	7	35
	High school	10	50
	Total	20	100
<b>Branch</b>	Social Studies	7	35
	Sciences	2	10
	Information Technologies	2	10
	Classroom Teaching	2	10
	Foreign Language	3	15
	Other	3	15
	Total	20	100
<b>Management Seniority</b>	1-5 years	7	35
	6-10 years	6	30
	11-15 years	4	20
	16 years and above	3	15
	Total	20	100
<b>Professional Seniority</b>	1-5 years	-	0
	6-10 years	6	30
	11-15 years	5	25
	16-20 years	2	10
	21-25 years	6	30

	26 years and above	1	5
	Total	20	100
<b>Technology In-service Training</b>	I got it	18	90
	I didn't get it	2	10
	Total	20	100
<b>Management In-service Training</b>	I got an education	19	95
	I didn't get an education	1	5
	Total	20	100
<b>Technology (e-school, mebbis etc.) usage time (Weekly)</b>	1 Hour	0	0
	2 Hour	6	30
	3 Hours and more	14	70
	Total	20	100
<b>Internet (Research, publishing etc.) usage time (Weekly)</b>	1 Hour	2	10
	2 Hour	6	30
	3 Hours and more	12	60
	Total	20	100

When the personal data of school administrators are examined, it is seen that it is male according to the gender variable, it is married according to the marital status variable; it is high school according to the school type variable, the majority of school administrators who worked at least 6 years according to the seniority variable. Besides, it is seen that a balanced distribution is followed between 1-15 years in terms of management period, and the ratio of managers and assistant managers to those who perform managerial duties is equal to each other according to the type of duty.

### 2.3 Data Collection and Analysis

A semi-structured interview form was used in order to determine perceptions of technology acceptance and use in line with the opinions of school administrators. The reason for using a semi-structured interview form is that it offers the interviewee the opportunity to express himself or herself and it provides in-depth information (Büyükoztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2014). Interview-standardized open-ended interview style was used to understand school administrators' experiences, attitudes, thoughts, and mental perceptions with the interview. Standardized open-ended interview style approach, "consists of a series of carefully written and ordered questions that are asked to each interviewee in the same style and order", thus reducing interviewer bias (Yıldırım & Şimşek, 2016).

Before the interview form is prepared, a literature review was conducted on the school technology acceptance and use of school administrators, and a pool of questions was created suitable for the purpose of the research. Opinions of Turkish language specialists were taken on whether the questions were understandable. The opinions of two specialists in educational sciences (a Doc. Lecturer and an Associate Professor in Educational Administration) were consulted. The linguist arranged the items in the form by examining them in terms of language and expression. There are five questions in the semi-structured interview form, which are finalized in line with expert opinions. To test the suitability of the interview form, a preliminary application was made by the researcher and the form was given its final shape. This made the external reliability of research.

In the research, data were obtained through interviews with 20 school administrators in order to determine their perceptions of technology acceptance and use in line with the opinions of school administrators. The interviews were conducted with each school administrator face-to-face for an average of 15-30 minutes. The managers' answers to the open-ended questions in the interviews were taken with a voice recording in order not to cause data loss. The data collected by the interview technique in the 2021-2022 academic year were analyzed by content analysis. The content analysis makes inferences about the message in the texts by identifying and analyzing the existence, meanings, and relationships of certain words or concepts in a text or a set of texts (Büyükoztürk, vd. 2014).



At the beginning of the research, by giving the information about the purpose and scope of the research to the participants, its credibility was ensured. The transmissibility of the study was ensured by explaining the research questions clearly. Besides, the opinions of the participants are given in the findings with direct quotations. In order to ensure the reliability of the research, the demographic information and characteristics of the participants are given in detail.

### 3. Findings

In this section, the findings obtained by analyzing the interviews of the participants are presented. The research was conducted in order to determine the observations about technology acceptance and use by school administrators. The participant school administrators state that they have difficulties in accepting and using technology that developing and renewed, but they consider obligatory using information communication technologies in education as a requirement of their profession. When evaluated in terms of using technology in management processes, it was concluded that the administrators participating in the study used technology effectively, but other school administrators differed in accepting and using technology.

In this study, as a result of the data obtained from the in-depth interviews to understand the attitudes and approaches of managers in the context of technology acceptance and following technological developments, 2 main themes, namely “Accepting Technology” and “Technological Developments and Attitudes of Managers” and sub-themes and codes for these themes were reached.

Table 2: Perceptions of School Administrators on the Acceptance and Use of Technology

<b>Category</b>	<b>Subcategory</b>	<b>Codes</b>
<b>I. Accepting Technology</b>	<b>1. Technology Perception</b>	1.1 Open to Innovation
		1.2 Biasness
		1.3. Declamation
		1.4. Insufficiency
	<b>2. Technology Use Intention</b>	2.1. Necessities
		2.2. Request
		2.3. Requirement
		2.4. Benefit of Technology
	<b>3. Technological Competencies</b>	3.1 Technological Opportunities
3.2 Competencies of Managers		
3.3 Inabilities of Managers		
<b>II. Technological Developments and Attitudes of Managers</b>	<b>1. Responsibilities of Managers</b>	1.1. Bringing technology to school
		1.2. Technology Leadership
	<b>2. Adopting Technology</b>	2.1. Technology Adoption
		2.2. Necessities of Management
		2.3. Age of Manager
	<b>3. Following Technological Developments</b>	3.1. Internet
		3.2. In-service Training
		3.3. Friend/Fellow

### 3.1. Accepting Technology

As a result of the analysis of the interviews with the school administrators, two teams were revealed, “Accepting Technology and Attitudes of Managers in Technological Developments”.

‘Accepting Technology’ theme, with the themes of “Technology Perception, Technology Usage Intention, and Technological Competencies”, other codes were reached in some of these sub-themes.

- Codes for the Technology Perception sub-theme: Open to innovation, Biasness, Disclamation, Insufficiency.
- Codes for the Technology Use Intention sub-theme: Necessity, Request, Requirement, and Benefit of technology.

Codes for the Technological Competencies sub-theme: Technological opportunities, Competencies, and inabilities of managers.

#### 3.1.1. Technology Perception

They defined the perceptions of school administrators about technology and technology innovations with the Technology Perception sub-theme with Open to innovation, Biasness, Disclamation, Insufficiency codes; Technology Use Intention sub-theme with Necessity, Request, Requirement codes and Benefit of technology expressions that from sub-theme.

Participant school administrators stated that the school administrators' being open to technological innovations and whether they are prejudiced or not related to technological innovations and developments depend on their perception of competence.

Some of the participants' views on the codes that determine school administrators' technology perception are;

##### 3.1.1.1. Open to Innovation

According to the participants, the most important feature that determines the technology acceptance perceptions of school administrators is seen as being open to innovation. However, it is stated that the current managers' attitudes towards technological innovations differ according to variables such as age, interest, education, and competence. Some opinions of school administrators about being open to innovation are;

*P1: “New managers care about technology and I think they are open to technology.”*

*P 17: “Managers in our schools are not open to developments, and innovations in terms of technology.”*

##### 3.1.1.2. Biasness

According to the participants, school administrators' biases about technology are seen as determiners of technology perceptions. Some opinions about school principals and vice principals being biased;

*P 8: “It starts with a prejudgment against technological innovations, there is an unintentionally shield.”*

*P 19: “In general, school administrators are a bit prejudiced and abstain from technology. I think it's because they don't know much about technology.”*

##### 3.1.1.3. Disclamation

According to the participants, the majority of school administrators show resistance to technological innovations and developments. Some of the opinions of school principals and vice principals about their resistance to technological innovations and developments are;

*P8: “In general, there is a resistance of education community against all innovations.”*

*P9: “Although many managers resist this change today, i believe they try their best to adapt. I think that school administrators have a hard time in accepting technology.”*

##### 3.1.1.4. Insufficiency

Perception as all kinds of concepts and phenomena that our minds learn by choosing determines the attitudes of school administrators toward technology. All kinds of thoughts, judgments, and perceptions about a person affect their behaviors. Participating school administrators also stated that the inadequacy perceptions of school principals

and vice principals regarding the acceptance and use of technology are very effective in accepting and using technology. Opinions of some participants on this subject:

*P14: "There is a logic of 'Let nothing happen' in the area where the school principal himself is not sufficient in terms of hardware and software."*

*P9: "I think that there are deficiencies in my school in terms of teacher competencies in the use of technology."*

### 3.1.2. Technology Use Intention

School administrators' designing, wanting, thinking, and deciding to use technology state their intention to use technology. Some of the opinions of participants stated that school administrators' necessary use of technology, their request, and need, and their expectation of the benefit of technology constitute their intention to use technology:

#### 3.1.2.1. Necessity

Necessities in school administrators, especially principals technology use is seen as a determining factor by the participants. All of the participant school administrators think that school principals accept and use technology in cases of necessity.

*P2: "School administrators see the adaptation of technology as a necessity and inevitable."*

*P12: "In school, teachers have to try, or they learn because they have to. Otherwise, they can not catch up with technological developments because of their age."*

#### 3.1.2.2. Request

All of the participant school administrators state that the willingness of school administrators, especially principals, is a significant factor in the adoption of technology. Besides, they think that the willingness of school principals to technological developments and innovations positively affects their technology acceptance and use. Some of the opinions on this subject are:

*P 4: "Adaptation to technology is faster and easier for young teachers because they are newly appointed and young, their desire to learn is more unfinished and not exhausted."*

*P 15: "Administrators are good at approaching technology, and there is also a desire in teachers. It must be desire to use technology."*

#### 3.1.2.3. Requirement

The educator who notices the rapid changes and innovations in technology can learn. Because learning is a process that emerges as a result of perceived need. The fact that school principals feel the need to learn and apply technological developments and innovations positively affects their technology acceptance behavior. Some of the opinions of the participants on this subject are:

*P 17: "In order to know that technology is a tool not a purpose, needs should be determined first of all."*

*P 7: "Determining the needs are easier than provide it, but we are having trouble meeting the needs."*

#### 3.1.2.4. Benefit of Technology

Technology provides benefits to teachers and students in education, as well as in all areas of life. The benefits of technology to schools, managers, teachers, students, and parents are also reflected in the quality of education. Participant school administrators state that the benefits of technology affect their perceptions positively in technology acceptance of principals and assistant principals in schools.

*P3: "For a specific example, I use other programs not for my job, but to facilitate my works or for hobby, out of personal curiosity."*

*P15: "The more we are in technology, the easier our work becomes."*

### 3.1.3. Technological Competencies

For the use of technology in education, administrators and teachers must have certain qualifications. According to the participant school administrators, the technological capabilities of the schools, the technological competencies, and the age of the administrators determine the technological competencies.

### 3.1.3.1. Technological Opportunities

Participant school administrators consider the technological opportunities of schools, the use of information and communication technologies by school administrators, and their attitudes towards technology as a variable depending on the opportunities offered by the government. Technological opportunities in schools are seen depending on the economic conditions of the schools, the opportunities offered by the ministry, and the opportunities provided by families to students are seen depending on the approaches of the administrators about technology. Some of the school administrators' opinions on technological opportunities are:

*P9: "We should use the technology that developed and educational tools that emerged in the technological environment in our schools. These tools should be brought to our schools."*

*P19: "Although teachers' own possibilities are decisive in the use of technology and access to technology at school, I try to meet their needs as a school."*

### 3.1.3.2. Competencies of Managers

Technological competence differs depending on the schools' technological opportunities and educators' technological competence. According to the participants, the competence of school administrators to learn technological developments and follow innovations determines the technological status of the school. Some participant manager opinions on the technological competencies of school administrators are:

*P5: "I consider myself sufficient, but I give myself nine out of ten for following rapid developments."5*

*P11: "Technological proficiency levels of teachers vary from person to person. Age is a factor according to interest, and branch is definitely a factor."*

### 3.1.3.3. Inabilities of Managers

According to the participant managers, the fact that school administrators are competent and sufficient in information communication technologies affects the active and effective use of technology. It is stated that most school administrators are insufficient in the technological context in the use of educational technologies, which are considered compulsory today. Some opinions of participant school administrators on this subject are:

*P2: "I do not consider myself sufficient in technology use. I do not consider teachers enough in technology."*

*P17: "I think principals and vice principals are insufficient in technology use."*

## 3.2. Technological Developments and Attitudes of Managers

As a result of the analysis of the interviews with school administrators, the theme of 'Attitude towards Technological Developments' was reached under 3 sub-themes as 'Responsibilities of Managers', 'Adopting Technology', and 'Following Technological Developments' and other codes in some of these sub-themes.

### **Responsibilities of Managers** sub-theme

- Bringing technology to school
- Technology Leadership

### **Adopting Technology** sub-theme

- Technology adoption
- Necessities of management
- Age of manager

### **Following Technological Developments** sub-theme

- Internet
- In-service training
- Consists of Friend/fellow learning codes

#### 3.2.1. Responsibilities of Managers

The majority of participant school administrators stated that school administrators have responsibilities and their roles are important regarding technological innovations and developments. It is thought that vice principals,

especially school principals follow, learn, and apply technological developments and education technologies are crucial especially for teachers. The opinions of participants on the responsibilities of managers sub-theme are: The codes formed in line with the opinions of the participants belonging to the responsibilities of managers sub-theme are; Bringing technology to school ve Technology leadership.

*P7: "The school administrator has a role and responsibilities in technology. The role and influence of the school principal is also important."*

*P17: "Principals and vice principals have quite big roles and responsibilities."*

### 3.2.1.1. Bringing Technology to School

Participating school administrators attach great importance to the role of school principals in bringing technology to school and its adaptation. They stated that the school principals had a great impact on the introduction of technology to the school, but the support of the state was also obligatory. Opinions of participant school administrators on the introduction of technology to schools;

*P1: "School administrators need to bring technology to school."*

*P18: "School administrators are the people who need to bring technology to school."*

### 3.2.1.2. Technology Leadership

Participant school administrators state that school principals should be technology leaders, follow technological innovations and developments, and lead teachers in technology. Opinions of the participants about the technology leadership of school administrators;

*P 6: "It is a necessity of the age for school administrators and principals to be technology leaders."*

*P9: "A school principal who mobilizes all opportunities is a good educational technology leader."*

## 3.2.2. Adopting Technology

### 3.2.2.1. Technology Adoption

Codes formed in line with the opinions of participants that belonged to Adopting technology sub-theme; Necessities of Management and Age of Manager

Participant managers stated that while they find the approaches of the current school principals and vice principals to adopt technology mostly positive, managers may have a negative attitude towards innovations because they have difficulty in learning technology depending on age; the responsibility of teachers and students in adapting to technological innovations in schools belongs to school administrators.

Opinions of school administrators on technological developments and innovations are:

*P 2: "I do not think that school administrators' approaches to technological developments are very positive."*

*P20: "I think that school administrators have the wrong attitude towards technology and developments."*

### 3.2.2.2. Necessities of Management

Participant school administrators think that necessities have a great impact on the adoption of technology, and learning technology innovations however despite the necessities some school administrators can not adapt to technology, and do not learn or while adopting it through their assistants, teachers other administrators accept technology and developments due to the necessities.

Some opinions of school administrators about the adoption of technology, technological developments, and innovations are:

*P9: "Everyone has difficulties in accepting technology, but I think they adapt it."*

*P17: "I think school administrators have a hard time accepting technology."*

### 3.2.2.3. Age of Manager

Participant managers state the fact that school administrators are competent and adequate in information communication technologies depends on school administrators' age, and young managers are adequate in technological context compared to old managers.

Some opinions of participant school administrators are:

*P2: "A certain generation of older ones are far from technology."*

*P3: "Technology adoption by administrators is going faster because of the generation gap."*

### 3.2.3. Following Technological Developments

Participants state that they learn developments in technology from the internet, in-service training, and their friends. Some opinions of school administrators on using education technologies in education and following technological developments are:

#### 3.2.3.1. Internet

School administrators state that the most effective tools for following and learning technological developments are the internet and social media:

*P5: "We generally follow up on the internet, everything can be accessed on the internet."*

*P7: "I try to reach technological developments from various sources on the internet as much as possible and to train myself in this subject."*

#### 3.2.3.2. In-service Training

Participant school administrators state that the most effective tool for following and learning technological developments is in-service training. Some of the opinions of school administrators about the importance of in-service training that school administrators and teachers receive in using educational technologies and following technological developments are:

*P1: "The manager must have a license and their technology license must be renewed annually."*

*P3: "Our in-service trainings against technological developments continue. We are now in the age of technology, I think everyone in the profession has more knowledge on the subject."*

#### 3.2.3.3. Friend/ Fellow Learning

According to some of the participants, school administrators and teachers benefit from their friends and forum sites to follow technological developments, learn about innovations, and eliminate their deficiencies. Some of the opinions of participants about friend/fellow learning, which is seen as an effective learning tool are:

*P7: "I consult with my friends who know about the issues that I am lacking. I'm trying to learn, whatever it takes, and I do what I can."*

*P19: "I also learn from my friends and online digital platforms."*

## 4. Discussion

This research was carried out to determine the perceptions of school administrators regarding technology acceptance and use. The aim of technology acceptance is to predict the attitudes of school administrators, teachers, and other shareholders towards technology and explain the common determinants of acceptance or rejection. In this research, the following findings were reached by analyzing thoroughly the opinions obtained through the interviews with participants. In the research, it was determined that the acceptance and use perceptions of school administrators were affected by their proficiency and intentions to use technology; their attitudes towards technological developments were affected by their necessities, request, and needs. It is assumed that intention in technology acceptance affects attitudes towards use as well as perceived usefulness and ease of use (Teo, 2011).

The majority of participant managers consider being open to innovations in acceptance of technology is important. School administrators should be able to follow and use technology sufficiently to fulfill the management duties expected from them nowadays (Topcu & Ersoy, 2020). In the research, according to the majority of participants, school administrators show resistance to innovations by being prejudiced in their attitudes towards technological innovations. People develop a reaction against innovations that they do not know how to use or think they cannot use, and they resist changing (Çelik ve Bindak, 2003). According to the participants, self-efficacy perceptions of school administrators are crucial in order to prevent resistance to accepting technology as an innovation. It is known that the intentions and attitudes of educators towards computers are directly affected by their perceptions of technology compatibility (Lee & Lee, 2014).

Participants state that requests and needs as well as professional obligations affect the intentions of technology use. Accepting the use of technology in education as a professional obligation affects positively the attitudes and behaviors toward innovations (Arslan & Şendurur, 2016). When the opinions of participants in the research, which all schools have equal opportunities for technological infrastructure, and equipment, are examined it is seen that the administrator and teacher competencies with technological opportunities of the schools are important for the technology usage in education. Technological competencies of school administrators are important in managing schools more effectively (Flanagan and Jacobsen, 2003; Seay, 2004; Erbakırcı, 2008; Bostancı, 2010; Banoğlu, 2011; Çalık, Çoban & Özdemir, 2019). The majority of the participants find that the competencies of other administrators other than themselves are deficient in the technological context at schools. It is difficult to adopt and follow by individuals since the development of technology progresses rapidly (Ekici & Gümüş 2016).

In the research, the perception that managers who received in-service training are more competent in the use of technology than the others shows similarity with the literature. Participants consider technology leadership crucial in following technological innovations and developments. In literature, interaction with socialization tools such as family, friend groups, and mass communication is seen as an important variable in the adaptation or acceptance of technological innovations (Tuna Uysal, 2020). As technology continues to affect teaching and learning, the expectations of benefiting from technological advantages from schools will increase and the pressures of the necessity to make a rapid transition between technology and teaching will be experienced (Pelgrum, 2001). Age can be an important consideration in technology acceptance (Venkatesh vd. 2012).

According to participants, young managers accept and learn innovations easier while experienced managers who are older, on the other hand, have difficulty with technology and become incompetent. Besides, it is seen that the internet, social media, in-service training, and learning from friends are the most effective learning tools in the following technology.

## 5. Results and Recommendations

Research results are compatible with literature in learning and following technological innovations. The aim of the research is to predict the acceptance and using technology, the attitudes of school administrators towards technology, and explain the common determinants of their acceptance or rejection. In this context, it is stated that school administrators have difficulty in accepting and use of the developing and renewed technology, but they consider the use of technology in education as a requirement of their profession. According to the participants, it was concluded that the technological competencies of school administrators differed in following and using technology. In the research, it was found that school administrators use technology mostly to facilitate their work and to provide benefits in compulsory situations. When evaluated in terms of using the technology in the management process, it was concluded that the administrators who participated in the study used technology, but other administrators differed in accepting and using technology. The findings of the study can be used by administrators to contribute to technology usage in schools and to improve themselves in this field.

In the light of the findings, the following recommendations can be made:

- School administrators should inform about the effective use of technology in the education processes in school.
- In-service training programs can be organized in order to use technology more effectively in education and training processes.
- The technological equipment that the school needs should be provided and technical infrastructure issues should be resolved.
- All schools should have equal opportunities in terms of technological infrastructure, equipment and equipment.
- The level of acceptance, following, and use of technology by school administrators in education processes can be investigated.
- Technological knowledge, abilities, and competencies of education administrators should be accepted as the criteria for manager appointment.

- Studies can be done on the technology leadership of school administrators.

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# The Effect of Out-of-school Learning Environments Used in Life Studies Lessons on Students' Academic Achievement and Attitudes<sup>1\*</sup>

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## Abstract

The purpose of this research is to examine the effects of teaching the subjects and concepts under "life in nature" unit of the 3rd grade life science lesson, on the academic achievement and attitudes of the students. In order to achieve this aim, a quasi-experimental model with pretest posttest control group was used in the study. In the study, an experimental (28) and a control group (31) classes were selected. Guidance teacher material was developed in order to guide teachers in the implementation phase of the study. The achievement test developed by the researcher, and the life studies lesson attitude scale developed by Oker (2019) were used as data collection tools and applied as pretest and posttest. Before this study, the personal information form was used to obtain the demographic information of both the experimental and control group students. The obtained data were analyzed with SPSS 20 computer program. As a result of the research, the pretest scores of the life studies lesson achievement test and the posttest scores after the application were in favor of the experimental group; life studies lesson attitude pretest scores were similar for the experimental and control group students; after the application, it was revealed that the life studies lesson attitude posttest scores were in favor of the experimental group students. Within the scope of the results obtained, "recommendations for the design and implementation of the developed guidance teacher material in different classes, courses and subjects, and some suggestions for future research" were made.

**Keywords:** Out-Of-School Learning, Classroom Education, Life Studies, Life In Nature, 2023 Education Vision

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## 1. Introduction

In this era we are in, it is a be constant change and development. Ministry of National Education (2018) science-technology has affected the roles expected from society. Revolutionary changes and developments took place in the 20th century (Karbeyaz, Yurtdakal & Kurt, 2021; Çakır & Ceyhan, 2022; Çakır & Erbaş, 2022). Today, important developments are taking place in many fields (Karbeyaz & Bayar, 2020). For this reason, the education of individuals and society cannot be left to chance. "Knowledge is power" means; while human beings accept the power of nature, they control nature for their own purposes and transform their energy (Dewey, 2001). As in other countries, Turkey is making serious efforts in this regard. This effort is carried out within the framework of an educational philosophy in which the student gains first-hand experience and the student is put in the center, in line with the student-centered education approach that is dominant in Turkey. According to this idea, the activities to be carried out in formal education institutions are carried out in a planned and programmed way through teaching programs. School is primarily a social institution (Dewey, 1897). The knowledge and skills to be given to the students are realized through the curricula of the courses. The importance of life knowledge in these courses cannot be denied. Life science lesson; it is a course that takes the child as a whole by making use of multiple disciplines, helps the student to adapt to life in one way, supports the child's spiritual and physical development, supports him to be a good person and a good citizen, and prepares the child for life by making use of data from social and natural sciences (Demir, 2018).

### 1.1. Purpose of the research

The aim of this study is; to examine the effects of teaching the subjects and concepts in the "Life in Nature" unit of the 3rd grade life science lesson in out-of-school environments on the academic achievement and attitudes of the students. The inclusion of out-of-school learning environments in the 2023 Vision of the Ministry of National Education can be considered as proof that such learning environments are given importance by the Ministry of Planetarium offers students experiences that they cannot encounter elsewhere (Schmoll, 2013). With the achievement in the curriculum in out-of-school learning environments, the student understands the subject better, learns the subject by doing and living (Kılıç, 2020), the learned information becomes more permanent (Wright, 2012), the academic success of the students increases (Kılıç, 2020), students develop a positive attitude towards students (Can, 2019; Kılıç, 2020), while students have fun, become happy and produce new ideas (Can, 2019). Planetarium visit contributed positively to students' attitudes, interests and learning (Schmoll, 2013). In the interview with the personnel working in science centers, it was revealed that two-thirds of the personnel who visited the science center felt positive emotions about science were happy and learned the subject more easily, and also used the information they learned in daily life (Eshach, 2007). In the interview with the staff working in the science centers, more than half of the interviewees stated that effective learning occurs thanks to the interactions with the objects in the museum (Eshach, 2007). Thanks to out-of-school learning environments, it contributes to students not only in terms of academic success, but also in terms of various support and orientation (Wright, 2012; Karbeyaz & Kurt, 2022). Soysal (2019) found in he study that the lessons held in out-of-school learning environments have a positive contribution to the interest, attitude and motivation of the students. The student needs to be supported in terms of transferring knowledge between two different concepts (Schmoll, 2013). Thanks to out-of-school learning environments, students' critical thinking skills are supported (Gever, Tunca, Boluwatife, Nwogbo, Onuoha, Ugwuoke & Talabi, 2021). Skills such as motivation, personal development, academic success, time management, independent thinking, teamwork and professional judgment are transferred to real life (YrAdranPlant, Addysg & DysguGydolOes a Sgiliau, 2008). The aim of many out-of-school programs is to support students in disadvantaged areas in terms of academic and personal development by providing a safe learning environment (Helms, Fukkink, Driel & Vorst, 2021). In out-of-school learning environments, people are more exposed to speaking English (Munoz & Cadierno, 2021).

The increase in the human population in the world, urbanization and the resulting destruction cause the havoc of the natural environment. The more industrialization, the more our environment is destroyed (Karbeyaz, Özdemir & Kurt, 2019; Michelle, 2021). The threat on the world's climate and natural resources is recognized by almost the whole world (Chelala & Akar, 2021; Zikargae, Woldearegay & Skjerdal, 2022). The natural environment has been severely damaged by human influence (Michelle, 2021). Conservation of natural resources is important for

a sustainable environment (Thiemann, Carvalho & Oliveira, 2018). Sustainable environment is important for future generations. "We borrowed nature from future generations" expression comes to mind. Sustainable environmental education is important for environmental problems faced globally (Michelle, 2021; Rickinson & Kenzie, 2021). Environmental approaches bring attitude and behavior change (Zikargae et al., 2022). The most important tool to be used to overcome environmental pollution can be seen as environmental education (Thiemann, Carvalho & Oliveira, 2018). Non-formal learning environments are an important tool that positively affects people's attitudes and behaviors towards the environment and sustainable environment (Zikargae et al., 2022). Formal, non-formal and informal education is used to create awareness for a sustainable environment in people (Zikargae, 2018). Out-of-school education includes a series of activities that combine environmental management with sustainable environment and physical activities (Gruno & Gibbons, 2021). So how can environmental education best be given to students? question comes to mind. The commonly used form of environmental education is to take place in out-of-school learning environments (Johnson & Cincera, 2021). By seeing living and non-living things in nature, students can learn how to protect and develop them. Out-of-school learning environments positively affect students' participation in class (Sivarajah, Smith & Thomas, 2018) and support their environmental knowledge and skills (Brownin & Penner, 2018). Thanks to out-of-school learning environments, people have an adventurous spirit outside their homes and a desire for the natural world (Gruno & Gibbons, 2021). Thanks to the excursions carried out in out-of-school learning environments, participants can relate their environmental problems to the world and respect nature by establishing a strong relationship with it (Michele, 2021; Ratinen, Sariivaara & Kuukkanen, 2021). In early childhood, students should be educated on environmental education and waste management in formal and informal settings (Ceylan, 2022). Environmental education becomes more meaningful and more permanent in out-of-school learning environments (Ceylan, 2022). It is important to provide enriched environments for educationally gifted students (Kutlu Abu, 2019). Instructional environments offer many opportunities to students. In the United States, general health goals guided out-of-school environmental education, various trips to city parks, forests, and municipal parks were organized, supported by youth organizations, churches, nature centers, and private organizations winter orienteering, deep snow adventure and ice hole fishing (Pasek, Bendíková, Kuska, Zukowska, Drozd, Olszewski-Strzyzowski, Zajac, & Szark-Eckardt, 2022). People are in constant communication and interaction with their environment since birth (Çakır & Ceyhan, 2021). In order to raise awareness of the natural environment in Germany, sports and fun activities were carried out for nature places close to the cities (Pasek et al., 2022). With the mobile museum project initiated in a school in England, it has been revealed that students and people who visit the museum create awareness about plants by interacting with objects found in nature (Cornish, Driver, Nesbitt & Willison, 2021). Zikargea et al. (2022), it was revealed in his research that the knowledge and skills of individuals increased thanks to the activities carried out in out-of-school learning environments, and these environments helped to reduce the impact of environmental problems.

### *1.2 Explore importance of the problem*

The aim of the curriculum is to internalize the achievements in the best way by the students. For this, the student should draw all his attention to the subject to be studied without worry (Karbeyaz, 2018). Perhaps one of the reasons why informal learning environments are considered to be leading is that it attracts students' attention (Schmoll, 2013). Planetarium learning environments support students to learn concepts related to astronomy and increase students' attitudes towards astronomy (Schmool, 2013). Thanks to out-of-school learning environments, 21st century skills can be better given to students (Sullivan, Bray & Tangney, 2021). Thanks to out-of-school learning environments, students are interested and excited about the subject, and they get involved with the equipment outside the school or home (Schmoll, 2013). Motivation has a positive effect on long-term memory (Gostev & Weis, 2007). The student has a complex structure that is affected by many variables. No matter how much attention is paid to these variables, there are always elements that are not taken into account. Application of knowledge in real life is very important (Karbeyaz, 2018).

When the content of the life studies textbook taught to the 3rd grade students in the 2021-2022 academic year in Sivas is examined; it is seen that the achievements are tried to be given to the students on the book. However, giving the achievements of the unit "Life in Nature" in out-of-school learning environments is important in terms of providing learning by doing-living for the student. There is unlimited scientific evidence in nature (Dewey,

1929). Out-of-school learning environments support classroom teaching (Richmond, Sibthorp, Gooking, Annarella & Ferri, 2017). For this, in giving the achievements of the course to the student; it is important to carry out activities that the student will have fun and interest while doing the lesson. With field trips, it is possible for students not only to learn the subject, but also to be happy (Eshach, 2007). It is important to carry out activities in which the student cares and takes responsibility. The places where these activities are carried out are out-of-school learning environments. Many field trips help students strengthen the link between their informal and formal learning (Schmoll, 2013). However, some teachers do not want to go to out-of-school learning environments due to reasons such as security and economic inadequacy (Doğan, 2022; Gürbey, Mertoğlu, Sayan & Akgül Macaroğlu, 2022; Taytaş, 2022). In addition, teachers take students on field trips aimlessly, do not know where to go, and thus the interest of the students is lost, they cannot answer the questions correctly and the purpose of the trip cannot be achieved (Eshach, 2007). It is thought that this study will guide teachers who want to take their classrooms to out-of-school learning environments.

### 1.2.1. The problem of research

The problem statement of this research is; What is the effect of teaching the subjects and concepts in the "Life in Nature" unit of the 3rd grade life studies lesson in out-of-school environments on the academic achievement and attitudes of the students? question will be answered.

Sub-problems:

- 1- Is there a statistically significant difference between the life studies lesson achievement test pretest scores of the students in the experimental group and the control group, who performed the lessons in out-of-school learning environments?
- 2- Is there a statistically significant difference between the life studies lesson achievement test posttest scores of the students in the experimental group and the control group, who performed the lessons in out-of-school learning environments?
- 3- Is there a statistically significant difference between the life studies lesson attitude pretest scores of the students in the experimental group and the control group, who performed the lessons in out-of-school learning environments?
- 4- Is there a statistically significant difference between the life studies lesson attitude posttest scores of the students in the experimental group and the control group, who gave the lessons in out-of-school learning environments?

## 2. Method

In the study, a quasi-experimental model with an unequal pretest-posttest control group was used. It may not be possible to use the real experimental model, especially in research on education. It is difficult to appoint people randomly in line with the purpose of the research (Özmen, 2019).

### 2.1. The work plan

The application was carried out by using an experimental group studying in the 3rd grade in Sivas province in the 2021-2022 academic years and a control group classroom that did not receive any intervention. Various meetings were held with the teachers of the experimental group classes. In particular, meetings were held with the classroom teacher of the experimental group at every stage of the application. An achievement test was developed by the researchers in the study. Before the application, a one-week introduction was made to the experimental group about the out-of-school learning environments. Afterwards, the "Achievement Test developed by the researchers and life studies attitude scale" by Oker (2019) were applied to both groups as a pre-test. "Personal Information Form" was applied to the groups before the procedure. In order to guide the teacher about the trip, Guidance Teacher Material and worksheets for the application were developed. After the Guidance Teacher's Material and Worksheets were prepared, they were shown to two faculty members who were experts in their fields and corrections were made in line with the warnings received. The worksheets prepared for

out-of-school learning environments were given to the experimental group for each trip before, during and after the trip. Before the application, the students in the experimental group were given information about the out-of-school learning environments, what to do in these environments, and the places to visit. Since there are six achievements in the "Life in Nature" unit of the 3rd grade life studies lesson, six places to visit were determined beforehand. The out-of-school learning environments in which the application is carried out and the related acquisitions are given in Table 1. After the necessary planning was made, the tour started on March 31, 2022. One excursion area was visited each week. Since there was an Interim Holiday between 11-15 April 2022, there was no trip that week and the last trip was made on 12 May 2022. Worksheets were prepared for the students before the trip, during the trip and at the end of the trip.

Table 1: Activities Related To Out-Of-School Learning Environments

Outcomes of the 3rd Grade "Life in Nature" Unit	Event Name
HB.3.6.1. Understands the importance of plants and animals in terms of human life.	Stray Animal Care and Rehabilitation Center
HB.3.6.2. Researches the growing conditions of fruits and vegetables.	Sapling Foundation
HB.3.6.3. He/she finds directions by taking advantage of nature.	Brothers Urban Forest
HB.3.6.4 He/she gives examples of the influence of people on natural elements from her immediate surroundings.	Garbage Gas Electricity Production Facility and Solid Waste Storage Facility
HB.3.6.5. Takes responsibility for protecting nature and the environment.	Directorate of Nature Conservation and National Parks
HB.3.6.6. He/she gives examples of the contribution of recycling to herself and the environment she lives in.	Environmental Protection Waste Recycling Facility

## 2.2. Development of guidance teacher material

In this study, Counseling Teacher Material was developed in order to realize the achievements of the 2018 Life Studies Curriculum, 3rd grade Life in Nature Unit, in out-of-school learning environments.

The following steps were followed while developing the guide material:

- Determining the Subject: It has been determined that the achievements of the 3rd grade life in nature unit in the 2018 life studies curriculum are appropriate in out-of-school learning environments in line with the expert opinions.
- Identification of subject-related needs: the method-technique to be used in the realization of the 3rd grade Life In Nature unit in out-of-school learning environments was developed by scanning the literature for the material that teachers and students will need before, during and after the trip.
- Material preparation approach: while developing the guide material; students' prior knowledge was taken into account. in addition, the guidance teacher material has been prepared to support out-of-school learning environments for the evaluation of the trip at the end of each application.
- Arrangement of content and learning activities: the application consists of three stages: activities to be done before the trip, during the trip and after the trip. Worksheets were prepared in order to improve the readiness of the students before the trip, to ensure that the trip was productive during the trip, and to reinforce the information that the students learned after the trip.
- Evaluation of measurement and evaluation tools: in line with the relevant acquisitions, worksheets were developed before and after the application and made by students.

- Developing and implementing the material: the developed guidance teacher material was applied to the experimental group. No intervention was made in the control group. The control group conducted the life science lessons according to the 2018 life studies lesson curriculum.

### 2.3. Working grup

Two classes in Sivas in the 2021-2022 academic years were determined for the experimental and control group in this study. The demographic structure of the study group is given in Table 2.

Table 2: Demographic Information of Participants

<b>Gender</b>	f	%
<b>Experimental Group</b>		
Male	18	64.3
Female	10	35.7
<b>Control Group</b>		
Male	14	45.2
Female	17	54.8
<b>Financial Status of the Family (Turkish Lira)</b>		
<b>Experimental Group</b>		
5000-12000	17	60.7
12001-19000	5	17.9
19001-25000	6	21.4
<b>Control Group</b>		
5000-12000	29	93.5
12001-19000	2	6.5
19001-25000	0	0
<b>Number of Trips Made by Students to out-of-school learning environments</b>		
<b>Experimental Group</b>		
who never did	19	67.9
Joining a Trip	7	25
Participating of Two Trips	2	7.1
<b>Control Group</b>		
who never did	24	77.4
Joining a Trip	5	16.1
Participating of Two Trips	2	6.5

When Table 2 is examined; 64.3% of the experimental group were male, 35.7% were female, 45.2% of the control group were male and 54.8% were female; 60.7% of the family income of the experimental group is 5000-12000 Turkish Lira, 67.9% of the family income of the control group is between 5000-12000 Turkish Lira; predominantly 67.9% of the experimental group and 77.4 of the control group did not participate in any excursions.

### 2.4. Measurement tools and data collection

Data collection tools in this research; achievement test and life studies lesson attitude scale.

#### 2.4.1. Achievement test

The Achievement Test was developed by researchers. After the achievement test was administered to a total of 485, 4th grade students in six schools. After scoring, item and test analyzes were started. The difficulty and discrimination index of each item was calculated. After the analysis, the item difficulty of the achievement test was ranging from .45 to .75; achievement test consisting of 30 items with discrimination indexes ranging from .26 to .72 and KR 20 value of .86 was obtained. These results show that the achievement test is reliable enough to be used.

#### 2.4.2. Life studies attitude scale

In the study, the "Life Studies Lesson Attitude Scale" developed by Oker (2019) was used to determine students' attitudes towards life science. The purpose of the scale; the aim of this study is to determine primary school students' attitude level towards life studies lesson and to examine students' attitudes towards life studies lesson in terms of different variables. The sample of the study consisted of a total of 355 students studying in the 2nd and 3rd grades. The scale, which has a total of 16 items, consists of three factors: "Negative Attitudes Towards Life Science Lesson", "Positive Attitudes Towards Life Sciences Lesson Content" and "Positive Attitudes Towards Life Studies Lesson". The level of students' agreement with the scale items is Agree: 3, Partially Agree: 2, and Disagree: 1. Negative items are items 2,4,5,6,7,16 and the level of agreement with these items is Agree: 1, Partially Agree: 2 and Disagree: 3. This scale, which was developed with exploratory factor analysis, explains 46.30% of the total variance. The Cronbach Alpha value for the overall scale is .88.

#### 2.5. Analysis of data

The obtained data were analyzed using the SPSS 20 package program. In the study, levene test was performed on the data in order to find out whether the data were normally distributed or not. Afterwards, non-parametric tests were performed on the distributions with significant differences, and parametric tests were performed on the data with normal distribution. In the research, Mann Whitney-U test, T-test for Independent Groups, %, frequency were used on the data.

### 3. Results

A total of 59 students in the experimental and control groups in which the research was carried out were tested on whether the data showed a normal distribution by using the levene test based on the scores they received from the life studies lesson unit achievement test in life in nature and life science attitude scale. The findings of this test are given in Table 3.

Table 3: Levene Test Normality Findings

Tests	N	Sd	Levene Statistics	p
Achievement Pretest	59	1	18.99	.000
Achievement Posttest	59	1	8.38	.005
Experimental Group Achievement Test pre-posttest	56	1	31.436	.000
Control Group Achievement Test pre-posttest	62	1	2.045	.158
Life Science Attitude Scale Pretest	59	1	.002	.964
Life Science Attitude Scale Posttest	59	1	4.544	.037

Significance value  $p < .05$

When Table 3 is examined; It is seen that the achievement test pre-post test ( $p = .158$ ) and life studies lesson attitude scale pretest ( $p = .964$ ) scores of the control group show normal distribution. Since the scores are normally distributed, parametric tests can be applied on these data. Achievement pretest ( $p = .000$ ), achievement posttest ( $p = .005$ ), experimental group achievement test pre-posttest ( $p = .000$ ) and life studies lesson attitude scale



posttest (P.037) scores do not show normal distribution, so these data are not normally distributed. non-parametric tests can be applied.

### 3.1. Findings regarding the 1st problem of the study

The first problem of the research, is there a statistically significant difference between the life studies lesson achievement pretest scores of the students in the experimental group and the control group, who performed the lessons in out-of-school learning environments? is in the form. Since the life studies lesson achievement pretest score did not show a normal distribution, non-parametric Mann Whitney-U test was performed on the data and the analysis results are given in Table 4.

Table 4: Mann Whitney-U Test Results of the Achievement Pretest according to Group

Groups	n	Rank Average	Rank Sum	U	p
Experiment Group	28	38.88	1088.50	185.500	.000
Control group	31	21.98	681.50		

$p < .05$

When Table 4 is examined; It was observed that there was a statistically significant difference between the life studies lesson achievement pretest scores in favor of the experimental group ( $U=185.500$ ,  $p < .05$ ). Considering the mean rank, it was observed that the pretest scores of the experimental group were higher than the control group. Since the scores for the comparison of the achievement test pre-posttest scores of the experimental group did not show a normal distribution, the Mann Whitney-U test was performed on the data and the analysis results are given in Table 5.

Table 5: U-Test Results of the Experimental Group Achievement Pre-Post-Test according to Group

Groups	n	Rank Average	Arithmetic mean	Rank Sum	U	p
Pretest	28	15.57	17.79	436.000	30.000	.000
Posttest	28	41.43	27.50	1160.00		

$p < .05$

When Table 5 is examined; It was understood that there was a significant change in favor of the experimental group students in terms of achievement pre-posttest scores ( $U=30.000$ ,  $p < .05$ ). It was seen that this difference was in favor of the achievement posttest. In order to compare the achievement test pre-posttest scores of the control group, since the scores showed normal distribution, t-test for independent groups was applied on the data and the results are given in Table 6.

Table 6. T-Test Results of the Control Group Life Science Achievement Pre-Posttest Pretest Scores according to Group

Groups	N	Arithmetic mean	S	sd	t	p
Experiment Group	31	11.87	3.201	60	5.854	.000
Control group	31	17.61	4.425			

$P < .05$

When Table 6 is examined; it was understood that there was a significant change in favor of the posttest score between the achievement pre-posttest scores of the control group students ( $t(60)=5.854$ ,  $p < .05$ ). When the achievement posttest and pretest scores of the experimental and control group students were compared; It was

observed that the achievement posttest (17.79; 27.50) scores of the experimental group students increased more than the achievement posttest scores of the control group (11.87; 17.61).

### 3.2. Findings regarding the 2nd problem of the study

The second problem of the research is, is there a statistically significant difference between the life studies lesson achievement test posttest scores of the students in the experimental group and the control group, who performed the lessons in out-of-school learning environments? is in the form. Since the life studies lesson achievement posttest scores did not show normal distribution, the Mann Whitney-U test, which is a non-parametric test, was performed on the data and the analysis results are given in Table 7.

Table 7. Mann Whitney-U Test Results of Achievement Test According to Group

Groups	n	Arithmetic Average Pretest Scores	Arithmetic Average Posttest Scores	of Rank Average	U	p
Experiment Group	28	17.79	27.50	1251.50	22.500	.000
Control group	31	11.87	17.61	518.50		

$p < .05$

When Table 7 is examined; As a result of the experimental study, which was implemented for 6 weeks, it was understood that there was a significant change in the direction of the experimental group between the life studies lesson achievement posttest scores of the experimental group, who carried out the lesson in accordance with the guidance counselor material in out-of-school learning environments, and the control group, which did not receive any intervention ( $U=22.500$ ,  $p < .05$ ). Considering the mean rank, it is seen that the students who take the life studies lesson in out-of-school learning environments are more successful in the life studies lesson than the students who perform the lesson according to the 2018 life studies lesson curriculum. This finding shows that out-of-school learning environments are effective in increasing students' life studies lesson achievement test scores.

### 3.3. Findings related to the 3rd problem of the study

The third problem of the research; is there a statistically significant difference between the life studies lesson attitude pretest scores of the students in the experimental group and the control group, who performed the lessons in out-of-school learning environments? is in the form. Since the life studies lesson achievement pretest score showed a normal distribution, t-test for independent groups, which is a parametric test, was performed on the data and the result is given in Table 8.

Table 8. T-Test Results of Life Science Attitude Scale Pretest Scores according to Group

Groups	N	Arithmetic mean	S	sd	t	p
Experiment Group	28	40.32	6.177	57	.668	.507
Control Group	31	41.35	5.713			

$p > .05$

When Table 8 is examined; it was found that there was no significant difference in terms of life studies attitude pretest scores ( $t(57)=.668$ ,  $p > .05$ ). The pretest scores of both groups are similar. In the dimension of negative attitudes towards life studies lesson, which is the first sub-dimension of the scale, the results of the independent

groups t-test performed on the data obtained from the students' life studies lesson attitude scale pretest are shown in Table 9.

Table 9: T-Test Results of Pretest Scores of Life Studies Lesson Attitude Scale-Negative Attitudes Towards Life Studies Lesson Sub-Dimension according to Group

Groups	N	Arithmetic mean	S	sd	t	p
Experiment Group	28	16.57	1.854	57	2.484	.016
Control Group	31	14.74	3.473			

$p < .05$

1st sub-dimension of the scale; since the items in the negative attitudes towards life studies lesson sub-dimension are reverse scored (Agree: 1, Partially Agree: 2, and Disagree: 3), a low test score indicates that the group is closer to a negative attitude. When Table 9 was examined, it was seen that there was a difference between the experimental group in terms of pretest scores,  $t(57)=2.484$ ,  $p < .05$ ). It was observed that the students in the experimental group had higher negative attitudes towards life studies lesson pretest scores than the pretest attitude scores of the students in the control group. The perception of negative attitudes towards life studies lesson of the experimental group is less than that of the control group. T-test analysis for independent groups performed on the data from the positive attitudes towards life studies lesson content pretest, which is the second sub-dimension of the scale, is given in Table 10.

Table 10: T-Test Results of Pretest Scores of the Life Studies Lesson Attitude Scale-Positive Attitudes towards the Content of Life Studies Lesson Sub-Dimension according to Group

Groups	N	Arithmetic mean	S	sd	t	p
Experiment Group	28	14.36	1.283	57	6.414	.000
Control Group	31	11.45	2.063			

$p < .05$

2nd sub-dimension of the scale; it was understood that there was a significant change in favor of the experimental group in terms of positive attitudes towards life studies lesson content pretest scores ( $t(57)=6.414$ ,  $p < .05$ ). In Table 10, it was seen that the attitude scores of the students in the experimental group were higher than the students in the control group. The results of the t-test for independent groups performed on the data from the positive attitudes towards life studies lesson pretest, which is the third sub-dimension of the scale, are given in Table 11.

Table 11: T-Test Results of the Pretest Scores of the Life Studies Lesson Attitude Scale-Positive Attitudes towards the Life Studies Lesson Sub-Dimension according to Group

Groups	N	Arithmetic mean	S	sd	t	p
Experiment Group	28	14	1.217	57	4.950	.000
Control Group	31	11.94	1.879			

$p < .05$

3rd sub-dimension of the scale; it was observed that the pretest scores of the experimental group attitudes towards life studies lesson were significantly higher than the attitude scores of the control group students ( $t(57)=4.950$ ,  $p < .05$ ). When Table 11 is examined, it is seen that the pretest scores of the students in the

experimental group for the positive attitudes towards the life studies lesson sub-dimension were higher than the pretest scores of the students in the control group.

### 3.4. Findings related to the 4th problem of the study

The fourth problem of the research; Is there a statistically significant difference between the life studies lesson attitude posttest scores of the students in the experimental group and the control group, who performed the lessons in out-of-school learning environments? expressed as. Since the posttest scores of the life studies lesson attitude scale were not normally distributed, the Mann Whitney-U test was performed on the data, and the analysis results are listed in Table 12.

Table 12: U-Test Results of Life Science Attitude Scale Posttest Results according to Group

Groups	n	Arithmetic Average of Pretest Scores	Arithmetic Average of Posttest Scores	of Rank Average	U	p
Experiment Group	28	40.32	44.93	1143.00	131.000	.000
Control Group	31	41.35	38.13	627.00		

$p < .05$

When Table 12 is examined; as a result of the 6-week experimental study, it was observed that the change in the life studies lesson attitude scale posttest scores of the experimental group students who conducted the lesson in line with the guidance teacher material in out-of-school learning environments was significantly higher than the control group students who did not receive any intervention ( $U=131.000$ ,  $p < .05$ ). Considering the mean rank, it was seen that the students in the experimental group who took the life studies lesson in out-of-school learning environments had higher life studies attitude posttest scores than the students in the control group who performed the lesson according to the 2018 life studies curriculum. This finding shows that out-of-school learning environments are effective in increasing students' attitude scores about life sciences lesson. The Mann Whitney-U Test results for the answers given by the students to the life studies attitudes posttest in the dimension of negative attitudes towards life studies lesson, which is the first sub-dimension of the scale, are given in Table 13.

Table 13: U-Test Results of the Posttest Scores of the Life Studies Lesson Attitude Scale-Negative Attitudes towards the Life Studies Lesson Sub-Dimension according to Group

Groups	n	Arithmetic Average of Pretest Scores	Arithmetic Average of Posttest Scores	of Rank Average	U	p
Experiment Group	28	15.53	16.57	971.00	303.000	.040
Control Group	31	15.41	14.74	799.00		

$p < .05$

1st sub-dimension of the scale; since the related items in the negative attitudes towards life studies lesson sub-dimension were reverse scored (I Agree: 1, Partially Agree: 2, and Disagree: 3), the low test score indicates that the group is closer to a negative attitude. Accordingly, it was understood that there was a significant change between the posttest scores of the groups in terms of the experimental group ( $U=303,000$ ,  $p < .05$ ). According to this, it was observed that the students who took the life studies lesson in non-school learning environments had higher negative attitudes towards the life studies lesson score than the students in the control group. The perception of negative attitudes towards life studies lesson of the experimental group is less than that of the control group. Table 14 shows the results of the Mann Whitney-U Test conducted for the answers given by the

students to the post-test in the dimension of positive attitudes towards the content of life studies lesson, which is the second sub-dimension of the scale.

Table 14: U-Test Results of the Posttest Scores of the Life Studies Lesson Attitude Scale-Positive Attitudes towards the Content of the Life Studies Lesson Sub-Dimension according to Group

Groups	n	Arithmetic Average of Pretest Scores	Arithmetic Average of Posttest Scores	Rank Average	U	p
Experiment Group	28	13	14.36	1177.00	97.000	.000
Control Group	31	12.82	11.45	593.00		

$p < .05$

2nd sub-dimension of the scale; positive attitudes towards life studies lesson content were found to be in favor of the experimental group in terms of posttest scores ( $U=97.000$ ,  $p < .05$ ). Considering the mean rank, it was observed that the students in the experimental group who took the life studies lesson in out-of-school learning environments had higher scores on the positive attitudes towards the content of the life studies lesson than the students in the control group. Table 15 shows the results of the Mann Whitney-U Test conducted for the answers given by the students in the post-test in the dimension of positive attitudes towards the life studies lesson, which is the third sub-dimension of the scale.

Table 15: U-Test Results of the Posttest Scores of the Life Studies Lesson Attitude Scale-Positive Attitudes towards the Life Studies Lesson Sub-Dimension according to Group

Groups	n	Arithmetic Average of Pretest Scores	Arithmetic Average of Posttest Scores	Rank Average	U	p
Experiment Group	28	11.78	14.00	1108.50	165.500	.000
Control Group	31	12.61	11.94	661.50		

$p < .05$

3rd sub-dimension of the scale; it was understood that there was a significant change in favor of the experimental group among the positive attitudes towards life sciences lesson posttest scores ( $U=165.500$ ,  $p < .05$ ). Considering the mean rank, it was seen that the scores of the students in the experimental group, who took the life studies lesson in out-of-school learning environments, in the positive attitudes towards the life studies lesson sub-dimension were higher than the scores of the students in the control group.

#### 4. Discussion

The findings obtained in this section are discussed according to the literature.

*4.1. First research question: discussion on the comparison of the life studie lesson achievement pretest scores of the experimental group and the students in the control group, who conducted the lessons in out-of-school learning environments.*

As a result of the findings, it was seen that there was a significant change in favor of the experimental group in terms of the life science achievement pretest scores of the students in the experimental and control groups ( $U=185.500$ ,  $p < .05$ ). Looking at the mean rank, it was seen that the pretest score of the experimental group was higher.

In the statistical analysis made between the pre-posttest scores of the experimental group students, it was observed that there was a significant change in favor of the posttest score ( $U=30.000$ ,  $p < .05$ ). Considering the

mean rank, it was seen that the life studies lesson achievement posttest scores of the experimental group students increased significantly after the application. When the achievement pre-posttest scores of the control group were compared, it was observed that there was a significant change in the direction of the posttest score ( $t(60)=5.854$ ,  $p<.05$ ).

When the findings are examined; it was observed that the achievement pre-posttest mean scores of the students in the experimental group (17.79; 27.50) increased more than the achievement pre-posttest mean scores of the control group (11.87.17.61).

*4.2. Second research question: discussion on the comparison of the life studie lesson achievement test posttest scores of the experimental group and the students in the control group, who performed in out-of-school learning environments*

When the findings are examined; as a result of the experimental study, which was implemented for 6 weeks, a significant change was observed in favor of the experimental group in terms of the life studies lesson achievement posttest scores of the students in the experimental group who carried out the lesson in line with the guidance teacher's material in out-of-school learning environments and the students in the control group who did not receive any intervention. It can be said that out-of-school learning environments are effective in increasing the academic achievement of students.

When the literature is examined; it has been revealed that out-of-school learning environments have a positive contribution to the academic success of students and effectively support the teaching of knowledge and concepts related to the subject (Schmoll, 2013; Bolat, Karamustafaoğlu & Karamustafaoğlu, 2016; Stubble, Badri, Telford, Hust & Joolingen, 2016; Topaloğlu, 2016; Bakioğlu, 2017; Richmond et al., 2017; Bülbül, 2018; Coll & Coll, 2018; Engel, Coll, Membrive & Oller, 2018; Frerichs, Fenton & Wingert, 2018; Çağlar, 2019; Karslı, Karamustafaoğlu & Kurt, 2019; Bakioğlu & Karamustafaoğlu, 2020; Collins, Corkery, McKeown, McSweeney, Flannery, Kennedy & O'Riordan, 2020; Dannwolf, Matusch, Keller, Redlich & Siegmund, 2020; Kılıç, 2020; Küçük, 2020; Cunningham & Gomez, 2021; Kır, Kalfaoğlu & Aksu, 2021; Sarıgül, 2021; Staus, O'Connell & Storksdieck, 2021; Karakılıç & Uçar, 2022). Thanks to out-of-school learning environments, students learn by doing and experience positive experiences (Yüzbaşıoğlu, Yüzbaşıoğlu & Kurnaz, 2021; Özyıldırım & Durmaz, 2022; Taytaş, 2022; Uğurlu, 2022). In this way, students learn by doing-living and touching objects (Yazıcı, Ertürk & Kulaca, 2022) and in the face of a situation that he does not understand, he/she immediately gets answers to his questions. Thanks to out-of-school learning environments, the information learned becomes more permanent (Kır et al., 2021; Özyıldırım & Durmaz, 2022). There is an interdisciplinary teaching through out-of-school excursions (Özyıldırım & Durmaz, 2022). These environments can be a learning resource not only for students but also for teachers (Telli, 2022). In addition, out-of-school learning environments contribute to the development of students' self-care and motor skills (Dere, 2022). It is important for teaching that teachers give lessons in a comfortable way (Karbeyaz & Kurt, 2021).

In a study conducted by Erten (2016), it was revealed that students improved their scientific process skills thanks to out-of-school learning environments. In addition, these environments are interesting for students, increase their motivation and arouse curiosity (Vollmae, Randler & Greulich, 2018; Coll & Coll, 2018; Dannwolf et al., 2020; Demir & Çetin, 2022; Uğurlu, 2022). Students have fun and are happy in out-of-school learning environments. Positive attitudes and behaviors towards the course also affect the success of the course positively. Ertaş (2012) and Topaloğlu (2016) found in their research separately that out-of-school learning environments increase students' positive attitudes towards their lessons.

Out-of-school learning environments offer many opportunities to students (Simeonova, Zlatanova, Racheva, Angelovb & Asenova, 2009). Thanks to out-of-school learning environments, students learn subjects and concepts better (Schmoll, 2013; Güngör & Demir, 2022; Küçük & Yıldırım, 2022). The subject is better understood during trips to out-of-school learning environments (Simeonova et al., 2009; Lai, Zhu & Gong, 2015; Karbeyaz & Kurt, 2020). In a study conducted by Cunningham & Gomez (2021), it was revealed that black

students support mathematics teaching when out-of-school learning environments are used in addition to mathematics teaching in the classroom.

Museum programs contribute to the cognitive development of children and increase their interest in the subject (Mierdel & Bogner, 2021; Panskyı & Rovinska, 2021; Ratinen, Sarivaara & Kuukkanen, 2021; Stamer, David, Höffler, Schwarzer & Parchmann, 2021). Subjects are learned better thanks to out-of-school learning environments (Stamer, David, Höffler, Schwarzer & Parchmann, 2021; Zimmerman, Weible, Wright, Vanderhof & Jablonski, 2022). Out-of-school learning environments support individuals' language skills (Syahrin, 2021). Students feel comfortable and free in out-of-school learning environments (Röllke & Grobmann, 2022). Out-of-school learning environments offer many educational opportunities to the audience (Newman, 2022). Out-of-school learning environments embody abstract learning (Demir & Çetin, 2022; Doğan, 2022).

*4.3. Third research question: discussion on the comparison of the life studie lesson attitude pretest scores of the experimental group and the students in the control group, who gave the lessons in out-of-school learning environments*

When the findings were examined, it was understood that there was no significant change between the groups in terms of life studies lesson attitude pretest scores  $t(57)=.668, p>.05$ . Life studies lesson attitude pretest scores are similar for both groups.

1st sub-dimension of the scale; it was observed that there was a significant change in favor of the experimental group in terms of pretest scores in the dimension of negative attitudes towards life studies lesson, which is the first sub-dimension of the scale  $t(57)=2.484, p<.05$ ). It was observed that the pretest scores of the students in the experimental group negative attitudes towards the life studies lesson were higher than the pretest attitude scores of the students in the control group. According to this finding, it was revealed that the students in the control group had more negative attitudes towards the life studies lesson. Since the sub-dimension of the scale is reverse scored, higher scores indicate less negative attitudes.

2nd sub-dimension of the scale; it was observed that there was a significant change in favor of the experimental group in terms of the pretest scores of positive attitudes towards the content of life sciences lesson, which is the second sub-dimension of the scale ( $t(57)=6.414, p<.05$ ). In the dimension of positive attitudes towards the content of life studies lesson, it was observed that the pretest scores of the students in the experimental group were higher than the pretest scores of the students in the control group.

3rd sub-dimension of the scale; it was observed that the pretest scores of positive attitudes towards life studies lesson, which is the third sub-dimension of the scale, changed in favor of the experimental group students ( $t(57)=4.950, p<.05$ ). In the dimension of positive attitudes towards life studies lesson, it was observed that the pretest scores of the students in the experimental group were higher than the scores of the students in the control group.

*4.4. Fourth research question: discussion on the comparison of the life studie lesson attitude posttest scores of the experimental group and the students in the control group, who gave the lesson in out-of-school learning environments*

As a result of the experimental study, which was implemented for 6 weeks, it was understood that there was a significant change in favor of the experimental group in terms of the life studies lesson attitude scale posttest scores of the students in the experimental group who taught the lesson in line with the guidance teacher material in out-of-school learning environments and the students in the control group who did not receive any intervention. It was observed that the students who took the life studies lesson in out-of-school learning environments had higher life studies lesson attitude posttest scores than the students who took the course according to the 2018 life studies curriculum. This finding shows that out-of-school learning environments are effective in increasing students' attitude scores towards life studies lesson. Out-of-school learning environments

are environments where students love, have fun and be happy (Simeonova et al., 2009). Out-of-school learning environments positively affect students' attitudes towards the course (Topaloğlu, 2016; Çebi, 2018; Çağlar, 2019; Sosyal, 2019; Kılıç, 2020). It realizes learning by doing-living in out-of-school learning environments (Tafli & Atıcı, 2022; Torun & Yıldırım, 2022). In out-of-school learning environments, students feel more comfortable without class anxiety (Torun & Yıldırım, 2022).

1st sub-dimension of the scale; in the dimension of negative attitudes towards life studies lesson, which is the first sub-dimension of the scale, it was understood that there was a significant change in the life studies lesson attitudes posttest scores in the direction of the experimental group. According to these findings, it was observed that the students who took the life studies lesson in out-of-school learning environments scored higher than the control group. Accordingly, out-of-school learning environments positively affect their attitudes towards life studies lesson.

In the second sub-dimension of the scale, positive attitudes towards the content of life studies lesson, there was a significant change between the posttest scores in favor of the experimental group. According to this finding, it was observed that the scores of the positive attitudes towards the content of life studies lesson of the students who took the life studies lesson in out-of-school learning environments were higher than the attitude scores of the students in the control group. From this point, out-of-school learning environments have been effective in increasing the posttest scores in the positive attitudes towards the content of the life studies lesson sub-dimension.

3rd sub-dimension of the scale; it was understood that there was a significant change between the posttest scores of the groups in the dimension of positive attitudes towards the life studies lesson, which is the third sub-dimension of the scale, in favor of the experimental group. According to these findings, it was observed that the students who took the life studies lesson in out-of-school learning environments had higher positive attitude scores towards the life studies lesson than the students in the control group. From this point of view, the positive attitudes towards life studies lesson sub-dimension of out-of-school learning environments has been effective in increasing the posttest scores.

#### *4.5. Suggestions*

1. It has been concluded that the guidance teacher material developed within the framework of the research is effective in increasing the academic success of the students. For this reason, it is recommended that classroom teachers use the guidance teacher material in out-of-school learning environments.
2. Out-of-school learning environments can be included more in curricula.
3. Due to bureaucratic legislation, teachers do not want to take their students to out-of-school learning environments. In addition, school administration and teachers are held responsible and prosecuted for any harm that may occur to students in out-of-school learning environments. For this reason, bureaucratic obstacles can be further reduced.
4. The school administration and teachers do not want to go to out-of-school learning environments because of travel-related expenses such as vehicles, accommodation and food and beverage. For this reason, it can be suggested to develop various projects and provide resources.
5. University etc. It may be suggested to provide support from these institutions and organizations during the trips carried out within the body of institutions and organizations.
6. It can be suggested that out-of-school learning environments be included in the more application dimension of universities.
7. It can be suggested to consider the age and developmental characteristics of the students when determining the places to go on the trip.
8. It may be suggested that a parent or another teacher who will assist the teacher during the trip participate in the trip.
9. Activities can be suggested for students to share their experiences with their families.



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# A Phenomenological Study of Tutors' Insights on the Meaning of Quality of Education in Selected Primary Teacher Training Colleges (PTTCs) in Uganda

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## Abstract

Due to the pressure exerted by competition among educational institutions to achieve funding and legitimacy in public, achieving quality of education has become a major concern for all the stakeholders not only in higher educational institutions but to the PTTCs as well. So, to achieve this, an understanding of what quality is in teacher training colleges such as PTTCs is highly paramount. The major aim of this study was to explore the insights of tutors in PTTCs on the meaning of quality of education. To achieve this, the study employed a phenomenological research design to attain a deep understanding of the concept of quality of education as perceived by the tutors in PTTCs. Data was collected through semi-structured interviews and analyzed through thematic and content analysis. The study unveiled that PTTC tutors perceive the quality of education in the following ways: meeting students' needs and government quality assurance (QA) standards, students performing well in examinations, work culture involving everyone to achieve the needs of the students, compliance with quality standards, and corresponding to the learners' expectations, meeting criteria in learner support services and the ability to deliver the subject matter to the students. Finally, several recommendations and conclusions were drawn from the study.

**Keywords:** Tutors, Insights, Quality of Education, Primary Teacher Training Colleges (PTTCs)

## 1. Introduction

As the world is currently becoming more economically, politically, environmentally, and technologically interconnected than before, there is a need for teacher training colleges to provide better quality teacher education to teacher trainees to meet such initiatives (Stewart et al., 2013; Hilton, 2016). By doing this, better teachers are trained that will, in turn, educate the students to prepare them for global challenges, innovativeness, and global jobs. While striving to achieve the plans, higher education institutions, as well as teacher training colleges, have applied various processes such as quality audit, accreditation, continuous assessment, self-evaluation, external examinations to ensure the quality of teacher education and to ensure that students not only achieve local standards but also global competence (Jung & Latchem, 2012). Although these processes may seem to have worked in some of the teacher training colleges, their successful implementation may not be achieved without establishing and developing the tutors' perception of quality of education. This view is

underscored by the fact that tutors are the main implementers of the curriculum and most of these realities need their understanding of the quality of education to be achieved fully.

The views mentioned by the previous scholars seem to fit into the context of PTTCs in Uganda too. Like any other developing country, Uganda is on a path to major advancement in political, economic, and social transformation amidst the current era of knowledge and technology. Together with other key areas such as access, equity, quality of teacher education has become the most pressing issue needed for the development of the education system in general. Furthermore, the quality of its activities and outcomes has put a significant impact on Uganda's economy and on other sectors, such as health, agriculture, science and technology, public administration, and democratic governance. In addition, the quality of primary teacher education graduates particularly from the PTTCs has also influenced Uganda's capacity for strengthening its regional cooperation within East Africa, Africa, and international cooperation generally through contributing to Universal primary education as one of the strategies for poverty eradication. For these reasons, the quality of primary teacher education delivered in PTTCs has become a priority area for both higher education institutions and the policymakers in Uganda.

In the 45 public and 7 private PTTCs in Uganda, several strategies have been applied to improve the quality of education provided to the student teachers. Some of these include admitting highly performing students from secondary schools, professional development of tutors through various non-formal and formal training programs, applying quality assurance approaches and processes such as quality audits, accreditation, continuous assessments, external examination, student evaluation of teaching, and inspection.

Regardless of applying these approaches and processes, the performance of pre-service teachers in national examinations has been perceived as being unsatisfying hence leading to a concern from various stakeholders of education regarding the quality of the teachers produced and quality of primary teacher education in general. The blame for this unyielding academic performance has been shifted to the crowded curriculum of the PTTCs and to the tutors for devoting less attention to their teaching, teaching students basing on theoretical rather than practical knowledge, which further emphasizes memorization of facts rather than the thoughtful and critical meaning of the subject content to be taught after qualifying as primary teachers (Kagoda & Ezati, 2013).

Although the aforementioned assertions may hold some degree of truth, the researcher believes that improving the academic performance of pre-service teachers in PTTCs and the quality of primary teacher education requires an understanding of how the tutors perceive the quality of education in PTTCs. Therefore, the major aim of the study was to examine the understanding of quality education among tutors in PTTCs in Uganda.

**Research question:** The study was guided by the following research question.  
How do tutors in PTTCs perceive the concept of quality of education?

## 2. Review of related literature

While drawing from the existing literature, the main purpose of this section is to provide an overview of the key concepts of quality in higher education and its understanding based on the views held by various scholars.

### 2.1 Concept of quality

To date, a comprehensive review of literature on quality of education by several scholars such as Kahsay (2012), Amaral & Rosa (2010), Prisacariu & Shah (2016) and Chivasa et al. (2021) documents that there is a lack of clarity and understanding of the concept of quality in higher education. In support of this, Matei & Iwinska (2016) point out that quality is a complex and multi-faceted concept with no universally accepted definition. Thus, in this literature review, the various views on quality in higher education from both a global and local perspective are presented.

## 2.2 Meaning of Quality in higher education

The most fundamental question raised by most stakeholders and researchers in education is “What is Quality in Higher Education?” Similarly, like other scholars, the researcher views this as it is important to raise this question at the beginning while seeking the various views of tutors on what quality might be in PTTCs in Uganda’s context. In their book, titled “Quality Assurance in Higher Education: A Practical Handbook” Matei and Iwinska (2016) quoted several scholars who expressed overwhelmingly their views of the concept of quality as being perplexing. Fascinatingly, according to them instead of the scholars defining quality instantly they described it with various connotations as being: “notoriously elusive”(Neave,1994),Scott “slippery” (Pfeffer &Coote, 1991); “relative” (Harvey & Green, 1993); “dynamic” (Boyle & Bowden, 1997); “multidimensional(Campbell &Rozsnyai, 2002); “a philosophical concept that lacks a general theory in the literature”(Green, 1994;Westerheijden,1999). Following the aforesaid views, various scholars have come up with various schools of thoughts on how they understand quality in higher education in their own context.

## 2.3 Approaches to understanding quality in higher education

As the scholars from the previous section wonder what a hell quality is, several scholars (Harvey & Green, 1993; Cheng & Tam 1997; Adams 1993; Garvin 1987; &Gibbs, 2010) have attempted to provide various approaches to the understanding of quality in education. These approaches are presented in the following table 1.

Table 1: approaches to understanding quality in higher education

Harvey and Green (1994)	Cheng and Tam (1997)	Adams (1993)	Garvin (1987)	Gibbs (2010)
5 Conceptions of quality <ul style="list-style-type: none"> <li>• Quality as perfection</li> <li>• Quality as fitness for purpose</li> <li>• Quality as value for money</li> <li>• Quality as exceptional</li> <li>• Quality as transformation</li> </ul>	7 Models <ul style="list-style-type: none"> <li>• Goal and specification</li> <li>• Resource-input</li> <li>• Process</li> <li>• Satisfaction</li> <li>• Legitimacy</li> <li>• Absence of problems</li> <li>• Organizational learning</li> </ul>	6 Common Views <ul style="list-style-type: none"> <li>• Reputation</li> <li>• Resources and other inputs</li> <li>• Process</li> <li>• Content</li> <li>• Outputs or outcomes</li> <li>• Value-added</li> </ul>	8 Competing Dimensions <ul style="list-style-type: none"> <li>• Performance</li> <li>• Features</li> <li>• Reliability</li> <li>• Conformance</li> <li>• Durability</li> <li>• Serviceability</li> <li>• Aesthetics</li> <li>• Perceived quality</li> </ul>	3 Dimensions <ul style="list-style-type: none"> <li>• Presage variables</li> <li>• Process variables</li> <li>• Product variables</li> </ul>

Source:Abebe (2014), Matei and Iwinska (2016) and organized by the researcher

From table 1, Harvey and Green (1993) provided five conceptions of quality in higher education which are: *quality as perfection* which emphasizes implementing the process of teaching and learning with no faults rather than the outcomes of the process. Looking at *quality as perfection* focuses on the process of teaching and learning as being flawless or with no defects rather than its inputs or outputs. Furthermore, Harvey and Green in their assertion, they meant that achieving quality of education requires an effective and efficient process; which should occur when the people in institutions perform their duties right first time. While connecting this to the PTTCs, every staff can achieve perfect outputs by delivering their lessons according to the required input standards while collaborating well with other staff members and students. Then looking at *quality as exceptional*, this approach describes quality as something being exceedingly of very high standards. According to this view, being of excellence signifies exclusiveness in the process, inputs and to achieve extra-ordinally outputs of which few institutions can be able obtain. While aligning this approach to the PTTCs, such a perspective of quality remains a dream as the students admitted, educational resources in terms of availability, quality and utilization may not meet the standards to achieve exceptional excellence in performance and graduates as it may be required. Subsequently, this approach of *quality as fitness for purpose* focuses on the purpose a service or product offered to the stakeholders. For instance, in the PTTCs, such a view can be seen in



terms of what purpose primary teacher education and its graduates serve the community or the nation as social service. In conclusion therefore, the assumption behind this view spins around the idea that quality is best understood when a product or service is examined against the purposes it offers rather than set of absolute standards of achieving it. On the other hand, the view of *quality as value for money*, rests on the assumption that quality should portray the cost and economic price of a product or service which meets the high standards but affordable to the customers in terms of cost. Regarding this, PTTCs, should be accountable to the parents, students, employers and the state or sponsors who invest in their money. *Quality as transformation* views quality in terms of a change in students as a result of the teaching and learning process in the education institutions. According to Harvey and Green (1994), the teaching and learning process enhances students' knowledge, skills, and cognitive capabilities thereby effecting significant value added. In addition, the other aspect of transformative education lies on its capacity to empower participants so that they can take ownership of their own learning process, for instance, by actively participating in shaping the model of delivery of teaching, learning and the decision-making process it involves. In the case of PTTCs, this view of quality seems to be comprehensive as it takes account of other approaches of quality ranging from setting standards, meeting definite purposes, value for money while examining the extent of added value to learners by the learning process.

Looking at Cheng and Tam (1997)'s approach to understanding quality using the seven models, they used the following seven related models to explain what the concept of quality means. The *goal and specific model* views quality in higher education in terms of attaining objectives, mission statements and goals set by the education institutions. So, for PTTCs to achieve their desired quality of education, they should set clear goals, objectives, and mission statements and put up strategies to attain them in their programs. The *resource-input model this approach of puts emphasis on the quality of educational resources and infrastructure as in educational institutions to ensure the quality of education.* In the context of PTTCs, this belief stresses that if they are to attain better educational quality they should secure quality, access, and utilization of resources such as admitting high competent students, qualified tutors and top management, better infrastructure, and facilities such as a well-stocked library, laboratory, funding, and financial assistance. The *process model* views educational quality in terms of how effective the teaching and learning process is carried out in the institution. In the situation of PTTCs, achieving a better quality of education needs more than having quality education resources and infrastructure; there is a need for proper leadership, communication channels, participation-ordination, adaptability, planning, decision making, social interactions, social climate, teaching methods, classroom management, learning strategies, and learning experiences as also pointed out by Cheng and Tam (1997). The *satisfaction model* views the quality of education in the extent to which the process of teaching and learning satisfies the learners and other stakeholders in terms of performance. So, according to this model, for the education in PTTCs to be considered as being of quality, they should have an instructional quality that ensures the satisfaction of their learners and other stakeholders through better performance. The *legitimacy model* views the quality of education in terms of achieving legitimacy to survive amidst the prevalent competition for resources, pressures from the market economy, and technology. So, for PTTCs to achieve better quality of primary teacher education they should ensure accountability to their students and other stakeholders, respect value for their money, and succeed in achieving acceptance and respect from the public in general. The *absence of problems model* sees quality in the level of effectiveness and efficiency of the process as having no defects. The approach assumes that the absence of flaws and defects are signs of a healthy functioning education program in institutions such as PTTCs. The *organizational learning model* perceives educational quality in terms of improvement and continuous development that a learning process brings to participants, methods and practices, and outcomes. For instance, in PTTCs, continuous improvement in educational processes impacts the students through providing them an opportunity to take part in activities at the colleges which is a significant learning experience they attain from studying in the institution.

Adams (1993) provides six common views about the quality of education. In his view, he suggested what quality is in the following conceptions: *reputation* which views quality in terms of how stakeholders such as students believe about the education program delivered by the educational institution. In this case, PTTCs work hard to achieve legitimacy through delivering quality education; *quality as resources and other inputs* sights quality *is* seen to the extent to which an education institution/its programs excels in standards of its inputs and resources such as students, faculty, financial resources, and facilities. For *quality as a process*, educational quality is

depicted in relation to the well-being of the teaching and learning process. In the context of PTTCs, this perspective is seen when students and other stakeholders show eagerness of whether the learning process has achieved quality. Then quality *as content* views the quality of education in relationship with institutions (such as PTTCs) ability to deliver relevant and high standard knowledge, skill, and information to its students. Consequently, *quality as outputs or outcomes* is seen in terms of achievement in cognitive skills, promotion of students to the next levels of education, graduation rates, retention of students in the program, and occupational status. For instance, in PTTCs such an approach of quality can be achieved when an educational program equips pre-service teachers with skills and attitudes which are important and crucial to the economy and development of the society and the nation. *Quality as value-added* views educational quality in terms of the extent to which an educational program in the educational institution such as in PTTCs impacts students' (pre-service teachers') potentials that adds value to the quality of their learning.

Garvin (1987) suggested eight conceptions of quality consisting of eight dimensions namely: *performance*; when conceptualizing quality as performance, it directly relates to the fundamental operating characteristics of an outcome of service. For instance, in PTTCs viewing quality in terms of performance indicates the outcome of the teaching and learning process or education. So, in this case, the high the performance, the better the quality of the education process; on the other hand, features, views quality in terms of basic functioning of a service offers to the stakeholders. For example, the features indicate the function of education to its various stakeholders such as the students, teachers, employers, and the state; consequently *reliability*; enlightens quality as the possibility that service encounters malfunctioning, often within some specified period. Although this view is more industrial or business-focused, it can fit into PTTCs in Uganda too. For instance, it can be used to assess the quality of the PTTCs graduates in their role of teaching students in primary schools; *conformance* sees quality as the extent to which the function of a product or service perfectly meets specifications that conform to standards. For example, in Uganda, PTTCs are mandated to conform to prescribed quality standards set by the National Council for Higher Education in the quest for ensuring the quality of education; *durability* sights quality as the level of use or enjoyment of a product or service by the customer before it encounters break downs. For instance, in PTTCs to ensure that the quality of primary teacher education serves the pre-service teachers to their expectations, curriculum reviews are made after a period of five years to make repairs in their delivery of the program; *serviceability* views quality in terms of the conditions related to handling customer complaints and the degree to which a firm or institution demonstrates standards of its professional behavior. Regarding PTTCs in Uganda, this view fits in fact that quality of education is also achieved when the students are given focus to understand and respond to their complaints so that they improve on the services offered to them; *aesthetics highlights* quality on how a product looks, feels, sounds, tastes, or smells as judged by the customers. In the context of educational institutions like PTTCs in Uganda, this facet of quality may include issues such as well-orderliness of campus, the weight of academic certificates/diplomas awarded; *perceived quality* this approach views quality in the perspective of reputation. In the case of PTTCs, such a view is also perceived as a major indicator of primary teacher education which rests on the pre-service' mindset towards studying in the education institution.

Gibb's (2010) three dimensions provide an understanding of quality in three dimensions namely, presage addresses quality in circumstances of the educational institution such as PTTCs covering the time frame before students start the actual process of learning. It includes aspects related to education resources, admission of students, quality and qualification of tutors, quality of pre-service teachers as well as the general condition of an educational institution; the process depicts quality on what is going on during the teaching and learning process. Similarly, in PTTCs, such a view explains the nature of quality and quantity of students' engagement in the teaching and learning process and *product variables* see the quality in relation to the student's cognitive capacity and the final outcomes of an educational process. Like in other educational institutions, in PTTCs also student performance and educational gain are key to capturing both the tangible and intangible impacts of a learning process.

From the afore-discussion, it can be shown that understanding of quality seems to be reflective on individual elucidations, set of principles while being compared to other disciplinary backgrounds, context, personality, academic qualification, and experience. Similarly, it is also clear that the connotations of the concept of quality

have an absolute basis in key social settings such as tradition, value, expectation, and culture. The common facet all the perceptions of quality presented put student as a customer at the center of activities in the institutions. In addition, the views stemming from the afore-mentioned literature is that quality in higher education and student satisfaction are closely related concepts. This is also shown by approaches to quality such as reputation as an aspect of perceived quality, the legitimacy model which emphasizes value for money, and success in achieving public image all of which led to satisfaction of the students. Another approach is the satisfaction model in which educational quality in terms of meeting the expectations and needs of students as the customer of educational institutions (Cheng & Tam, 1997). Another factor that puts the satisfaction of students at the forefront is performance in which quality looks at the extent to which the service offered meets the purposeful requirements of the students (Garvin, 1987). Furthermore, a reputation that also satisfies the students through the way their certificates and diplomas conferred are perceived in the mind of the students and other stakeholders (Adams, 1993).

Conclusively, therefore, there is no single comprehensive and all-inclusive definition of quality that has been provided from the currently existing literature. This means that quality of education is a multi-dimensional concept and cannot be easily be assessed by only one indicator as pointed out by Cheng & Tam (1997). Similarly, Gibbs (2010), Harvey and Green (1994) stress the importance of using a variety of views to understand a range of perspectives on quality of education concurrently. Since defining quality of education is contextual and evolving, the researcher believes that understanding it should take a pragmatic approach accounting for both of its quantitative and qualitative aspects so that the various expectations, interests, views, and contexts of all stakeholders in education are accounted for.

### **3. Methodology**

This section presents the research approach and design, sampling, data analysis, validity, and reliability of the study.

#### *3.1 Research approach and design*

A qualitative research approach with a phenomenological design was used to explore tutors' insight on the concept of quality of education in the PTTC context. The choice of employing a phenomenological design in this study is underscored as it analyzes deeply the perceptions of respondents in this case the PTTC tutors on a current phenomenon in this case quality of education (Padilla-Díaz, 2015; Flynn & Korcuska, 2018). Furthermore, the study design enabled the researcher to explore how tutors perceive the quality of education in PTTCs in Uganda which requires understanding their views through asking broad and general interview questions, collecting data consisting of mainly verbal explanation, describing, and analyzing these words into themes, and conducting further inquiry in their natural settings.

In addition, the phenomenological design provides a suitable method when intending to generate adequate in-depth information on tutors' perceptions and understanding of the meaning of quality of education in the PTTCs perspective. This is in line with van Groenewald (2004), Hesdorffer et al. (2012), Conroy (2003), Thani (2011) who also point out that the appropriateness of such a research design is important in dealing with studies that need to create a deeper understanding of the participants' views of a given phenomenon in their natural settings primarily with the processes.

#### *3.2 Sampling*

The study was carried out in four PTTCs (two public and two private PTTCs) with a total of eight tutors that were purposively selected from central Uganda. This was done to obtain needed from participants who were thought to be knowledgeable on the topic and to maintain decent manageability of the scope of the study. Also, the shortage of time and other resources justify the need for studying a smaller research population. While conducting the study, the real names of the PTTCs and participants were made anonymous using pseudonyms. The researcher believes that the significance of concealing institutional identity is crucial in enhancing the

possibility of cooperation and obtaining the willingness of respondents for interviews. With this regard, the procedure could considerably maintain the comfort and confidence of tutors while disclosing sensitive information about how they perceive quality and the challenges they face while ensuring it in their PTTCs. As well, the anonymity of the PTTCs helped in actualizing the findings of the study without prejudice to the identity of the institution.

### 3.3 Data collection and analysis

The study applied semi-structured interviews to collect data from the purposively selected eight tutors from four PTTCs. The collected data from semi-structured interviews were analyzed qualitatively through transcribing the verbatim, thematic, and content analysis to create emerging themes related to the research questions. Generally, the following steps were followed; coding of the data, initial reading of text data; identify specific text segments related to research objectives; label the segments of text to create coding categories; reduce overlap and redundancy among the categories as stated by Chan et al. (2013), Moser &Korstjens (2018).

### 3.4 Validity and reliability

In the perspective of qualitative study research, validity emphasizes capturing the authenticity of the findings (Beck et al., 1994; Pereira, 2012). The researcher achieved this through giving a detailed account of how tutors feel about; understand the concept of quality and what challenges they face while ensuring the quality of education in their colleges (PTCS). On the other hand, reliability involves scrutinizing the inquiries' various endeavors to maintain, establish consistency and dependability of the study findings (Marques & McCall, 2005).The validity and reliability of the study were established through ways as suggested by Oluwatayo (2012),Lakshmi &Mohideen (2013): member checks in which the researcher took the data back to the respondents in this case the PTTC tutors from whom they were derived to ascertain the plausibility of the findings of the study; prevention of bias where the researcher exercised extensive reflection and reflexivity as he proceeded through the interviews with the tutors. Therefore, validity and reliability of the study is important as it creates credibility and robustness of the study findings. In support of this, Pereira (2012),and Neuman (2014), concur that qualitative researchers strive to show an honest and accountability of respondents' views about phenomena under investigation. The next section presents the findings and discussion of the study.

## 4. Findings of the study

This section presents the findings and discussion of the study as guided by the research questions and objectives.

### 4.1 Tutors' insights on the quality of education

Based on the thematic analysis of the semi-structured interview data, in the form of transcribed interview records while major themes from the categorization and combination of emergent themes related to how tutors perceive quality are presented.

#### Themes related to the perception of quality by the tutors

Research questions	Themes about quality of Education
How do tutors at PTTCs conceive of quality of education?	<ol style="list-style-type: none"> <li>1. Quality refers to meeting students' needs and government QA standards.</li> <li>2. Quality refers to students performing well in examinations.</li> <li>3. Quality refers to the work culture involving everyone to achieve the needs of the students.</li> <li>4. Quality refers to compliance with quality standards and corresponding to the learners' expectations.</li> <li>5. Quality is meeting criteria in learner support services.</li> <li>6. Quality is the ability to deliver the subject matter to the students.</li> </ol>

**Theme 1: Quality refers to meeting students' needs and government QA standards.**

When the tutors were asked how they perceive quality in their colleges, some of the tutors mentioned that:

We think that quality is meeting the students' needs who are our customers and the procedure that are set by the government to ensure high standards of education (KIB-03; NAM-01).

Other tutors had this to say:

Since quality is meant to meet the needs of the students, the curriculum should be designed in such a way as to meet the requirements prescribed under the NCHE QA Framework" (KIB-06; BLB-01; KAB-03).

Similarly, another tutor argued that:

I view quality in terms of meeting students 'academic needs and as it agrees with the Nation Council for Higher education quality assurance framework (NAM-04).

**Theme 2: Quality means a work culture involving everyone within the schools to achieve the students' expectations.**

Views from the different tutors interviewed revealed that the general perspectives on quality have been identified as referring to the culture of involving everyone in the schools to achieve the requirements of the students. One of the tutors clarified that:

I regard quality as a culture in which we must do our best to satisfy the needs of the students as our main customers. We need to find out the students' requirements so that we can deliver to their expectations (NAM-02).

Another tutor made further clarification on what he thinks quality is, he mentions that:

So, to me I tell you that quality is a culture ... quality may not be head of the department only to work. It involves and is owned by all the staff and tutors. To achieve quality everybody must contribute, and everybody must take responsibility for achieving quality (BLB-04).

Other tutors referred to their perspective of quality according to the quality assurance framework for the national council for tertiary and higher education. For instance, these tutors unanimously acknowledged that:

To address in terms of meeting and satisfying the needs of the students, we should follow the QA framework for the NCHE manual in which we the tutors should adopt common values in performing our errands so that students' requirements are satisfactorily met (BLB-01; NAM-03; KAB-05).

While basing on the perspective of honesty, this tutor commends that:

The common values and work culture aimed at meeting and satisfying the needs of the students, there is a need to look at quality in terms of integrity, professionalism, caring, innovation, and teamwork while serving the students in our colleges (KAB-04).

**Theme 3: Quality means a standard criterion for supporting students' learning**

In a more precise perspective, these tutors (NAM-01; NAM-06; KAB-03; KIB-02) view quality in terms of support given to learners in their learning. They asserted that QA refers to the conformity with the college's aim of providing quality teaching services to our students who are indeed our customers. In support of the previous tutors' view, another tutor mentioned that:

To me, quality involves ... keeping up with the standards of teaching that we are supposed to use while delivering support content to the students... The class should be very conducive, comfortable, and then convenient to the students in terms of space and sitting, capacity should be convenient for learning (KAB-05).

While emphasizing more on providing space to students, other tutors mentioned that:

If the students need enough space for discussion, we must provide space for them for discussion. If the students need space for exploring additional reading, we must have the library.... We should have enough space for students to have a break in between classes so that the students have space for sitting down and discussing, we must also have a discussion room.... We should have our place very informative meaning that we must have a prayer room, coffee table, and such things like that. (NAM-06; BLB-01).

#### **Theme 4: Quality means compliance with quality audit standards corresponding to the students' expectation**

Quality standards in PTTCs have been evolved and revised to meet the requirements of internal quality criteria and external QA standards set by the National Council for Higher Education. This review of the quality standards in the PTTCs aligns quality with external quality standards aimed at meeting students' expectations. One of the tutors explained that:

To me, quality must be aligned to what the auditors say about the standards set especially in terms of students. Therefore, quality should refer to students' satisfaction and compliance to the external quality auditors' standards as it is written in the quality assurance framework for tertiary and higher education prepared by the national council for higher education (NCHE) (BLB-03; KAB-04).

Another tutor mentioned that:

To me, quality means putting up strategies that aim at providing services that fit the students' expectations (KIB-01)

#### **Theme 5: Quality refers to learners performing well in examinations.**

Some of the tutors consider students' performance in final examinations as being an aspect of quality of education. The tutors believe that when the students pass their examinations, they can go from one level to another and join the employment world successfully. Regarding this, one of the tutors said that:

To me, I view quality as making my students pass highly in the final examinations. What parents and employers understand is seeing good grades after students sit for the examinations. So....me I don't understand any other issue stated on quality of education other than student performance (NAM-04).

Similarly, these tutors mentioned that:

Our students mind of passing rather than how we teach them... they don't care about getting teaching skills and content. One day in a meeting one of our students reasoned that "what is the use of knowing good content to teach yet you have poor grades?" so we think that any plan that is meant to ensure quality, should consider student performance in examinations (BLB-02; KIB-04; NAM-05).

Furthermore, another tutor commented that:

The quality of education in PTTCs is ranked according to student performance ...those with a higher percentage of students' performance are ranked higher in terms of quality. Even in my college when students fail and retake a subject...the head of the department comments that my teaching is of poor quality...this makes me feel that I should consider my student passing with better grades as having a good quality of education than getting good content and teaching skills (KAB-03).

## **Theme 6 quality as the ability to deliver the subject matter to the students**

Regarding this, this tutor pointed out that:

According to my own view quality of education is seen in the way subject matter is given to the students. If students are taught well, they perform better and they will be able to teach as they were taught by their tutors (NAM-06).

### **5. Discussion of the findings of the study**

This section presents the discussion of the findings obtained from the respondents during the study. The first aim of the study was to explore the insights of tutors on the meaning of quality of education.

#### *5.1 Tutors' insights on the meaning of quality of education:*

These included the following:

##### **5.1.1 Quality refers to meeting students' needs and government QA standards**

Some tutors perceived quality as meeting students' needs and government QA standards. In this view, the tutors see their responsibility as teaching diligently towards meeting the student's needs of becoming better primary school teachers. However, the process of teaching must be in line with the government and QA guidelines set by the National Council for higher education and the ministry of education and sports of Uganda. This view is in line with Cheng and Tam (1997)'s satisfaction model which views the quality of education in the extent to which the process of teaching and learning satisfies the learners and other stakeholders in terms of performance. Furthermore, the fact that tutors also view quality as meeting the QA standards set by the government, this view by the tutors also fits in Garvin (1987) school of thought in which quality of education is also seen as the extent to which the service, in this case, the teaching as conforming to the set standards.

##### **5.1.2 Quality means a work culture involving everyone within the schools to achieve the students' expectations**

PTTC tutors also view quality in terms of collective responsibility of all the staff and tutors in providing services that are aimed at seeing students achieving their expectations. Additionally, the tutors believe that quality of education must be of and for all the stakeholders in the PTTCs. This view is also in agreement with Cheng and Tam (1997) who asserts in his process model that perceives the quality of education in terms of how effective the teaching and learning process is carried out in the institution which goes beyond having proper infrastructure but also there is need for proper leadership, communication channels, participation, coordination, adaptability, planning, decision making, social interactions, social climate, teaching methods, classroom management, learning strategies, and learning experiences all of which need inclusion of all the stakeholders in the educational institution.

##### **5.1.3 Quality means a standard criterion for supporting students' learning**

Regarding this, tutors believe that quality of education is in conformity with the colleges'(PTTCs) aim of providing quality teaching services to the students which also includes having in place a learning environment that is conducive, comfortable, and convenient to the students. A conducive environment should include a space for reading (well-stocked library), a well-equipped laboratory, having breaks in between lessons, and students' space for personal reading, discussion, and recreational activities.

##### **5.1.4 Quality means compliance with quality audit standards corresponding to the students' expectation**

Tutors in PTTCs perceive the quality of education as conformity to the standards which correspond to students' expectations as set by the National Council for higher education and the Ministry of education of Uganda. These requirements are set and revised to meet the requirements of internal quality criteria and external QA standards

set by the National Council for Higher Education (Kasozi, 2006). In this perspective, quality is aligned to students' satisfaction and compliance to the quality assurance framework for tertiary and higher education written and enforced by the national council for higher education (NCHE). This agrees with Garvin (1987) who also asserts that quality as conformance views quality as the extent to which the function of a product or service perfectly meets specifications that conform to the set standards.

#### 5.1.5 Quality refers to learners performing well in examinations

From the study, some of the tutors see the quality in terms of outcomes of the assessment of the education process. They believe that when the learners perform well, they get promoted to another level, or graduate and to them that is quality. Consider students' performance in final examinations as being an aspect of quality of education. Although this is perceived by the tutors, a similar view is also considered by the policymakers, parents, and employers who view a good teacher first from the grades he or she attains from the National examinations taken at the PTTC. This also agrees with Adams (1993) who also perceives quality in terms of outputs or outcomes which reflects the achievement in cognitive skills, promotion of students to the next levels of education, graduation rates, retention of students in the program, and occupational status.

#### 5.1.6 Quality refers to the ability to deliver the subject matter to the students

In this point of view, tutors also believe quality in how best the process of teaching is conducted in the classroom while teaching the students. To them when the teacher delivers the subject content well, the learners are learning and developing various skills that they will apply in the future when they go to teach. So, this also points to the fact that when student teachers are taught well, they perform better, and they will be able to teach as they were taught by their trainers. This is also consistent with Adams (1993) who views quality in terms of the process. He further mentions that educational quality is depicted in relation to the well-being of the teaching and learning process.

## 6. Conclusion

From the study, the researcher found out that tutors in PTTCs perceive quality along with the following insights: Quality as meeting students' needs and government QA standards, students performing well in examinations, work culture involving everyone to achieve the needs of the students, compliance with quality standards and corresponding to the learners' expectations, meeting criteria in learner support services, and the ability to deliver the subject matter to the students. Since the quality of education is regarded by many scholars as an elusive concept, and so are its definitions. Due to this, the results of this study indicated that the perception of quality of education varies from individual-to-individual tutor among the various PTTCs in Uganda.

## 7. Recommendation

For further studies, the researcher recommends the investigation of the perception of the quality of education from policymakers, students, parents, and employers' perspectives.

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# EFL Pre-service Teachers' and Interns' Expectations and Satisfaction of International Practicum: An Exploratory Study on Patterns and Influential Factors

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## Abstract

This exploratory study explored EFL pre-service teachers' and interns' expectations and satisfaction of their overseas practicum. The data was collected from in-depth interviews with five fourth-year students in a regional university in Viet Nam, who participated in their international practicum in Thailand. Analyzed on the basis of a conceptual framework of personal, supervising, professional, and contextual elements, the results showed three distinctive patterns: (1) high expectations - high satisfaction, (2) medium expectations – high satisfaction, and (3) medium expectations – medium satisfaction. The findings also indicated various influential factors for each pattern such as confidence, creativity, supervision, mentors' manners, and expectation (mis)match. The research results highlighted three significant emergent issues: the role of personal element, the impact of the supervisor, and the importance of practicum work-load. The study suggested practical implications for EFL trainee teachers, EFL teacher trainers, and practicum organizers and administrators.

**Keywords:** International Practicum, Pre-service Teachers, Interns, Expectations, Satisfaction

## 1. Introduction

International practicum has now become a trend as a result of curriculum internationalization (Kabilan, 2013; Uusimaki & Swirski, 2014; Jin et al., 2019). In response to the trend, higher education institutions initiated various international partnership projects. One such a project is Pre-service Student Teacher Exchange in Southeast Asia or SEA-Teacher Project, for short, launched by SEAMEO in 2015 to provide opportunities for teaching practicum. Since then, various multilateral or bilateral partnerships have come into existence in various countries in the region as in Malaysia (Hendra et al., 2019), Thailand (Gilliland, 2015), and China (Yan & He, 2020; Jin, et al., 2020). Through these partnership initiatives, we do believe that the targets of all these practicum programs extend beyond the provision of professional opportunities. As Florio-Ruane (2001, p.30) confirmed, the value of “immers[ing]

students in cross-cultural experiences” lies in personal growth resulting from “learning about [them[selves as [they] try to learn about others’.

A great number of researches investigating overseas practicum have revealed a wide variety of benefits. The benefits can vary from gaining a global perspective (Parr & Chan, 2015; Tambyah, 2018), developing cross-cultural experience (Sahin, 2008; Wikan & Klein, 2017; Jin et al., 2020), developing partnerships between cooperating teachers and per-service teachers (Major & Santoro, 2016; Kahn-Horwits et al., 2017), to professional and personal growth (Fitzsimmons & McKenzie, 2006; Pence & Macgillivray, 2008; Ateskan, 2016). However, research themes are not just limited to benefits but open to other themes such as supervision or mentorship (Gilliland, 2015; Kahn-Horwitz et al., 2017), and expectations and satisfaction (Heng et al., 2012; Rahman & Nurullal, 2016; Marinakou & Giousmpasoglou, 2017). The last theme, expectations and satisfaction, can be considered one of the least explored among the ones listed as research tends to focus more on study abroad experiences with such sub-themes as the effects of short-term study abroad programs on students’ L2 proficiency (Cutrone & Datzman, 2015; Hamoano-Bunce et al., 2019), and EFL students’ motivation to study abroad (Williams & Oikonomidou, 2017). The most evident problem with the studies following the theme is that they tend to concentrate on either students’ expectations or their satisfaction, and it is hard to find any research that combines both aspects. Besides, in the EFL field, studies pursuing this theme tend to be more scarce. This gap ignites this study that aims to seek answers to the two research questions:

1. What patterns of expectations and satisfaction do they experience during their international practicum?
2. What factors can affect their patterns of expectations and satisfaction?

The research focus will be of great significance as the discovery of the patterns and their influential factors would help orient practicum organizers, coordinators, supervisors, and mentors towards better response to preservice teachers’ diverse expectations and, therefore, better facilitation of preservice teachers and interns in the fulfillment of their expectations, thus generating better learning outcomes.

## 2. Literature Review

### 2.1. *Expectations and Satisfaction*

Lam & Ching (2007) indicated that gaining hands-on work experience, developing personal and professional skills and gaining professional knowledge were some of their expectations. Students majoring in different specializations tend to have different expectations. English for Tourism students normally focus their expectations on future career development while tourism and hospitality students concentrates on high or good prospects for promotion and personal growth (Chan et al., 2002). Andrade (2006) and Sherry et al. (2009) pointed out that researchers can also explore a wide variety of expectations within their interns, ranging from learning new ways of thinking and behaving, to making new friends, and improving their cross- cultural knowledge and skills.

Paulins (2008) found that practicum satisfaction offers students a great advantage as those who have satisfying practicum experiences tend to have a more positive outlook toward their career searching process and their educational institution. Interns acquire different satisfaction levels depending on what they receive from the practicum. Gupta et al. (2010) discovered that interns’ satisfaction is affected by the benefits they gain from the practicum while Cord et al. (2010) showed that tasks assigned to interns may impact on their levels. Okay & Sahin (2010) indicated that students have greater levels of satisfaction when they receive job offers from the companies where they perform their internships than the others do not.

### 2.2. *Factors Affecting the Fulfillment of Expectations*

Different influential factors discovered in different studies conducted in different contexts are framed according to the four general categories, namely, personal, supervisor, professional, and contextual.

Personal factors refer to the characteristics of students as interns. Wen (2010) found that characteristics necessary for their internship success may include academic preparedness, positive attitude and self-initiative; so to promote internship satisfaction, interns need to have their background knowledge or skills relevant to their practicum placements. In addition, personal qualities such as maturity and responsibility are expected to influence interns' performance which would eventually impact their satisfaction with the program (Heng et al., 2012). Paulins (2008) suggested that students express greater satisfaction with internships that provide them with positive experiences, by which they perceive greater personal benefits. If all these of personal qualities apply to certain internships, the results would be their personal growth, which, in turn, means satisfactory experiences of internships.

Mentors' or supervisors' fundamental duties may include guiding, supervising and providing verbal feedback to prospective teachers (Bonilla & Rivera, 2008). Rahman & Nurullah (2016) emphasized the role of feedback as its quality can generate confidence and a high level of contentment. Besides, as Fagan & Wise (2007) asserted, a supervisor's willingness and readiness to provide assistance can be significant for trainees, especially those who face difficulties. Moreover, mentors or supervisors' experience can play an important role. As Jaszay & Dunk (2003) remarked, if their supervising experience is limited, students will certainly suffer.

Professional factors comprise tasks assigned and work environment. Hackman and Oldham (1980) claimed that task characteristics were also associated with work satisfaction, motivation, and performances. Heng et al. (2012) indicated that work environment include learning and career development opportunities, supervisory and co-worker support, networking opportunities and organization satisfaction, which may become the essential elements of internship satisfaction. Mansour & Achoui (2008) suggested that practicum satisfaction is influenced by a mixture of both task and environment characteristics.

Contextual factors vary from characteristics of accommodation and internship locations to social interaction with people involved and school communities. Barton et al. (2015) revealed that the factors may become challenges due to the differences of their prior life experiences, language proficiency, and knowledge of practicum settings. Ruhanen et al. (2013) indicated that accommodation and places of an internship or practicum may affect satisfaction. According to Nur (2016), social factors are also very important for interns as interns need to interact with other people, especially with older people in school communities and that such interactions can strengthen their relationships and assist them in shaping their personalities.

### 2.3. Conceptual Framework

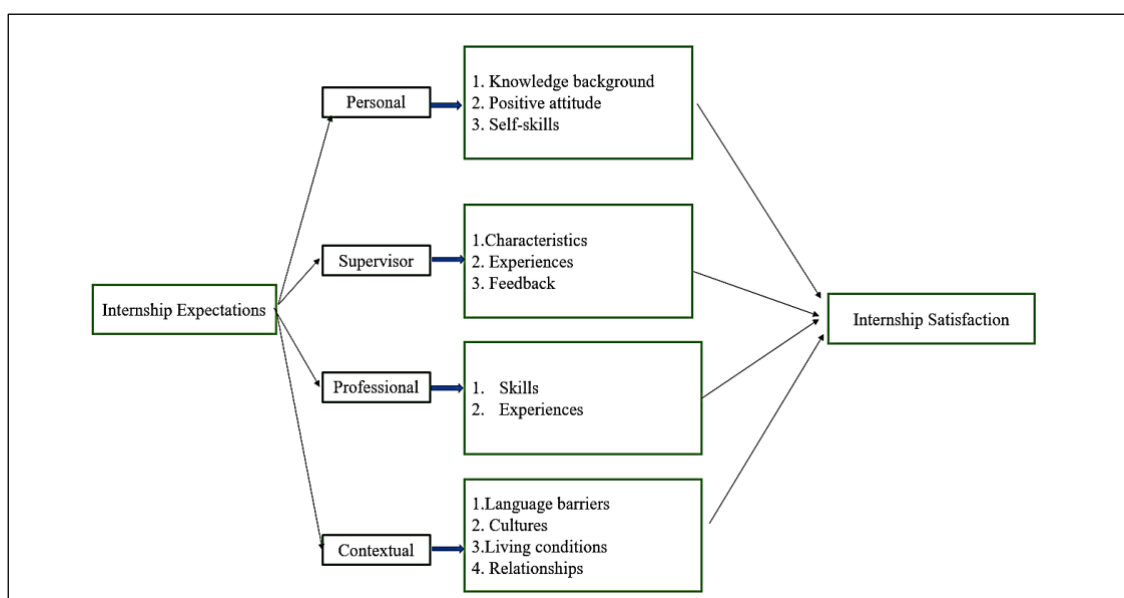


Figure 1: Conceptual framework of expectations and satisfaction in international practicum

On the basis of the four different factors presented in the previous section, we would argue that all the factors can be combined so as to construct a logical conceptual framework for the study. These factors can be termed 'elements' as combined in the framework and all the details within each element can be called 'aspects'. As shown in Figure 1 below, detailed aspects can be added to each element. Personal elements may include such aspects as knowledge background, positive attitudes, and self-skills. Supervisor elements may consist of aspects like characteristics, experiences, and feedbacks. Professional factors can be composed of skills and experiences. And contextual elements comprise aspects such as language barriers, cultures, living conditions, and relationships. All these elements and aspects would contribute to some extent to internship satisfaction.

### **3. Method**

#### *3.1. Research Context*

The practicum in this research is the result of the partnership between two universities, one in Viet Nam and the other in Thailand. The practicum, which lasts for 4 weeks, aims to offer students opportunities to gain deeper and wider professional knowledge and practice, and to raise their awareness of global citizens, as well as and to explore potential labor market when ASEAN countries joined a unified economic community in 2015. Besides, students are able to exchange culture, thus strengthening the relationship between the universities. Every year, in May, from the list of Thai universities that have agreed to receive interns, Vietnamese students begin their process of registration for the program. Then they are required to participate in a short orientation course about Thai culture, society, and people before starting their practicum in Thailand in early July or August.

#### *3.2. Design*

The main research method is an exploratory case study. With the aid of in-depth interviews, the study aimed at collecting narrated experiences after their practicum. The whole inquiry process was recursive and reflexive in nature, starting from collecting lived narratives through constructing interim texts to writing research texts as reports.

#### *3.3. Participants*

Five third-year students at University of Foreign Languages were selected with three of them majoring in English Language Teaching and two others majoring in English Language. Four criteria were used as the basis for the selection. Firstly, the international practicum was their first overseas endeavor. This criterion guaranteed that their expectations were real and true ones. Secondly, all the participants had to participate in a full four-week program. This criterion warranted that all of their expectations, whether fulfilled or not, would operate for the whole period of time. Thirdly, all of the participants would be at different language and professional proficiency levels. Finally, all of the participants would voluntarily participate in the study. The last two criteria ensured that the collected data would be enriched.

#### *3.4. Data Collection*

In-depth interviews were chosen as the main instrument of data collection because interviews could allow the researchers to explore and understand the researched subjects deeply and comprehensively as human expectations and satisfaction are completely subjective, unique, and totally individualistic.

Open-ended questions were used to facilitate enriched and nuanced data. Interviews were divided into two rounds with the first one focusing on expectations and the second on satisfaction. Such a division offered the researchers ample time for scrutinizing all the expectations before satisfaction data were collected.

### 3.5. Data Analysis

The coding process began with the detection of expectations and satisfaction with the use of their linguistic markers. For example, such phrases as “*I expected ...*” or “*I hope...*” were evident markers of expectations. Similarly, such markers as “*I am happy to...*”, “*I found .... very helpful*” were typical examples of satisfaction. Then the process proceeded to the allocation of identified expectations and satisfaction to their relevant element, either personal, supervisor, professional or contextual. Illustrative quotes representing codes were also numbered in a systematic way for in-text citation. For example, IN01.04 meant an expectation or satisfaction appeared in the first interview and was listed as the fourth expectation or satisfaction in the same interview.

The analyzed data showed that expectations and satisfaction differed in their extents. Some expectations were high as participants placed a high hope for them while others were not as high for the degrees of hope placed on them were low. The same was true for satisfaction.

The degree of expectation would be determined according to the five criteria. An expectation which was listed as low or medium or high was to meet three-fifth of the following criteria. Firstly, the degree could be determined according to how strongly a participant self-evaluates his/her expectations. Secondly, the extent could be estimated according to how frequently their concerns or worries about the practicum were expressed. Thirdly, it could be evaluated according to how explicitly frequent the evidence of fear of difficulties or problems were. Fourthly, the extent could be identified in accordance with how strongly expectations were expressed. Finally, the degree could be ranked low, medium, or high according to how many expectations were expressed.

In the same way, satisfaction could be determined on the basis of the five criteria. The degree can result from the meeting of three-fifth of the criteria. Firstly, it could be detected according to how satisfied they felt, low, medium or strong. Secondly, it could be identified according to how many expectations were fulfilled. Thirdly, the extent could be discovered in accordance with how strongly their satisfaction was expressed. Fourthly, it could also be measured on the basis of how frequently dissatisfaction was evident. Finally, the degree could be estimated according to how strong their commitment to helping their future counterparts was expressed.

## 4. Results and Discussion

### 4.1. The Three Different Patterns

The data analysis showed the three distinctive patterns: high expectations – high satisfaction, medium expectations – high satisfaction, and medium expectations – medium satisfaction. The pattern of high expectations and high satisfaction was represented by only one participant, trainee teacher 01PL; the pattern of medium expectations and medium satisfaction was represented by two participants, 01HN and 03QH; and the pattern of medium expectations and high satisfaction was represented by two participants, 02TN and 04NT. The following description of each of the three patterns will be framed according to the four elements of the conceptual framework: personal, supervisor, professional and contextual.

#### 4.1.1. The First Pattern: High Expectations and High Satisfaction

##### ***High expectations***

The trainee teacher claimed that he was quite confident in his professional knowledge and skills, and that he believed he was able to apply all these knowledge and skills, especially lesson planning, class management, and communicative skills. He confidently claimed, “Communicative skills and management skills will be able to be applied in the practicum effectively” (05PL-IN1.1).

The participant believed that a supervisor played a very important role. The type of supervisor he expected was a “friendly, well-qualified mentor who set up proper requirements for the practicum” (05PL-IN1.3). The types of feedback he would want from his supervisor were “quick, brief and fast” and “direct and easy to understand” (05PL-IN1.5).

What this participant expected the most regarding the professional element centered around two major things: creative teaching styles and improvement in students’ skills. For a creative style to develop, he emphasized one important factor: high language proficiency. As he explained, “This good competence would definitely inspire students and then make the lesson deeply dug. If not, both the teacher and students would feel very bored” (05PL-IN1.7). In addition, although he thought he would keep his lesson plans as “simple” (05PL-IN1.8) as he could, what he would like to aim at in his lessons was to improve his students’ skills, not their language knowledge by helping them during his teaching process.

In the last element, contextual, the participant mentioned three major aspects: the language barrier, cultural and living conditions. He believed that the language difficulty would directly affect his teaching process. Therefore, he seemed to figure out the challenge clearly, explaining, “I had to explain everything in English teaching lesson while students’ language competence was not high.” (05PL-IN1.9). However, with self-confidence in his language proficiency and also with his supervisor’s support, he said he would not be too concerned about this. As far as culture is concerned, what he would expect was to understand the differences between Thai and Vietnamese students with a view to help him improve his instructional skills. He said, “I want to know how different Thai students were in terms of their attitude or their need, in order to teach better” (05PL-IN1.10). As for living and working conditions, he said he would prefer to work in a place, which was a “comfortable” (05PL-IN1.11) and “well-equipped” dormitory (05PL-IN1.12). Finally, he would want friendly relationships with the supervisor, and collaborative and supportive relationships with the staff.

### ***High satisfaction***

The participant was quite satisfied with the application of professional knowledge and skills in the practicum. He reported that he managed to apply what he learned in his teaching process as well as what he had expected to. He explained, “I applied well what knowledge I accumulated because the practicum requirements were not too high. I was able to adapt easily” (05PL-IN2.1). He realized that he had taught his lessons smoothly and controlled all the skills fairly well, especially lesson planning, class management, and communicative skills. As he confirmed, “My students could understand the lesson I taught” (05PL-IN2.2), and “they were eager to learn” (05PL-IN2.3).

The trainee teacher was completely satisfied with his supervising teacher and his feedback. He remarked that his supervisor was not only “friendly” and “well-qualified” (05PL-IN2.1), but also “enthusiastic” and “open-minded.” For him, the supervisor was especially “flexible” (05PL-IN2.10). He also showed high appreciation for the feedback that was “quickly and effectively” (05PL-IN2.4).

Most of his satisfaction resulted from three main sources: creative teaching styles, students’ skill improvement, and valuable instructional experience. He received a lot of praise from the supervisor regarding his initiative to use “Thai language to explain the English vocabulary” (05PL-IN2.5) with the assistance of the translation tool on the Internet. He was quite sure that he gained more experience in teaching the foreign students, which was the key to his satisfaction in the professional element.

The trainee teacher claimed that he managed to overcome his language barrier. He explained that his friends as well as he were lucky to find some Thai people who they were able to communicate with in English. Besides, he found it worth attempting to learn from the Thai culture as all the people he met were “friendly”, “good [in their] nature” and “gentle” (05PL-IN2.7). In terms of living conditions, he contented with the clean and convenient dormitory as he expected, but he seemed unsatisfied with the urban transportation. Finally, for relationships with his roommates, he used three words to describe: “happy”, “friendly” (05PL-IN2.8) and “pleasant”.

#### 4.1.2. The Second Pattern: Medium Expectations and Medium Satisfaction

##### **Participant 01HN**

##### ***Medium expectations***

With her confidence in her professional knowledge and skills, the participant claimed that she would apply her communication skills and improve her classroom management skills.

Regarding the supervising teacher, she expected to work with the one who was “devoted, thoughtful and easy going” (01HN-IN1.7). She believed that her supervisor could provide necessary documents, offered good suggestions and feedback about the trainee teacher’s instructional performance. In addition, she hoped to communicate with the supervising teacher easily. And the kind of feedback she would like to receive most was direct ones as she thought the supervising teacher might not have sufficient time to provide comments by email. Moreover, she indicated that she would like to receive both “positive” and “negative” feedback (01HN-IN1.13), as positive feedback would encourage her to develop skills further while negative feedback would help her to avoid repeated mistakes.

In the professional element, she hoped to find an easy but effective way for designing lesson plans “creatively” and organizing classroom activities “smoothly”. However, she did not seem to expect her student’s language skills to improve within a short length of time. The trainee teacher thought that the practicum should be an opportunity to enhance her English fluency.

Besides, she expected accommodation to be “well-equipped” and “convenient” (01HN-IN1.20), and transport to be “easy to commute” (01HN-IN1.18). For social relationships, she would like to be “close to students or the supervising teacher to learn about their culture” (01HN-IN1.21).

##### **Medium satisfaction**

The preservice teacher reported that almost all her students were not English-majored, so their proficiency was too limited. Therefore, she had to reply on the supervisor to explain the lessons in Thai when the students did not understand, which made her dissatisfied.

As for the second element, she seemed not to be pleased with her supervising teacher’s experience and expertise except for his characteristics that were a “nice, enthusiastic, easy-going” (01HN-IN2.6). She reported that her supervising teacher’s English proficiency seemed to be limited as she found it difficult to understand all of her requirements. In addition, the supervising teacher’s instructions seemed not to be clearly expressed so she found it very hard to conduct instructional activities well. As for the feedback, she expected to receive “direct”, “positive” and “negative” ones (01HN-IN2.12; 01HN-IN2.9). Besides, she reported that her supervisor always praised her in general without showing the mistakes she had made and needed to avoid.

Regarding the professional element, her satisfaction was slightly reduced when she applied her instructional skills, especially classroom management. She explained that the students’ English proficiency was so limited to communicate that she could not manage her class smoothly, and that this major problem made it hard for her to design various teaching activities.

As for the contextual element, her satisfaction was related to the three aspects: language barrier, culture and living conditions. She was satisfied when she managed to overcome her language barrier. She was quite pleased with the way Thai people behaved, especially when they greeted. Besides, she found Thai people “gentle, polite and helpful” (01HN-IN2.17). In terms of living conditions, she stayed in the dormitory which was not as properly equipped as she expected. Finally, as for social relationships, she was pleased with her friendly roommates who were ready to share their teaching experiences.



## **Participant 03QH**

### ***Medium expectations***

With her confidence in her professional knowledge, the trainee teacher hoped to be able to apply all the instructional skills and communication skills she had acquired. She explained that once her teaching skills, especially her classroom management, were fully applied, she would have more valuable experience relevant to her future career. She added that to make classroom management more effective and to practice communication skills well, she hoped for “creating an active class and keeping good contacts with the students” (03QH-IN1.3).

The preservice teacher also expected her supervisor to act as a “counsellor or supporter” (03QH-IN1.6). She would also like her supervisor to be not only “friendly and open-minded” (03QH-IN1.7) but also “experienced and high expertise” (03QH-IN1.8). She expected that she would also learn much teaching experience from her supervisor. In addition, she seemed to expect to receive the “direct” feedback (03QH-IN1.11) since she would like to discuss directly with her supervisor who would help her to understand her teaching practice more deeply. Besides, she said that she would like to receive both kinds of feedback, positive and negative. As she explained, a trainee teacher would definitely have very limited teaching experience, so positive feedback may boost her knowledge and skills while negative feedback would help her overcome her weaknesses.

She also expected to improve her instructional skills, especially lesson planning. But she did not expect classroom management to be smooth. She thought that the language barrier would be the reason for management tasks being a real challenge.

The participant did not believe that she would overcome any language barrier because she was not quite confident in her English language proficiency, which was a real obstacle. She hoped that she would do more research into Thai culture, especially Thai people, since she was impressed by their “friendliness [and] kindness” (03QH-IN1.18). Regarding living facilities, as she thought the dormitory would be comfortable, she did not expect much from the accommodation. Finally, in terms of social relationships, she would prefer that relationships between staff and trainees would be more collaboratively supportive.

### ***Medium satisfaction***

The participant was fairly satisfied with the internship. She said, “[’ve] applied all of my acquired knowledge in my teaching process and realized that my students were able to adapt to the lesson well” (03QH-IN2.2). She was fairly pleased to communicate successfully with students in class.

In contrast, the teacher participant claimed she was not satisfied with her supervisor who had limited experiences and expertise. The type of feedback that she received was indirect, via e-mail, with which she was not contented because it did not facilitate direct discussion.

The participant, however, was quite satisfied with her designed lesson plans, which were effectively applied in classes. She noticed that all of her students were excited about the lessons she taught. In terms of class management, she found she managed her class quite well thanks to her knowledge of the English language. She pointed out that she was able to communicate with students in class without any problems.

She was also satisfied with overcoming the language barrier and social relationships with her roommates except for accommodation. She explained that she was not comfortable staying with Thai students. Besides, dormitory facilities were a real nuisance for her. She said, “I was uncomfortable using the public restroom in Thai student’s dormitory” (03QH-IN2.12).

#### 4.1.3. The Third Pattern: Medium Expectations and High Satisfaction

##### **Participant 02TN**

###### *Medium expectations*

The participant expected communication skills to be applied in the practicum. Before the internship, she was concerned about her English language proficiency which might limit her communication with her mentor and friends. Therefore, she hoped that her English language proficiency would be improved.

The intern seemed not to show any worry about what type of mentor she was going to meet. She hoped for the one who was both “enthusiastic” and “patient” (02TN-IN1.4). She explained that a mentor should be patient in assigning work and supporting them. She expected to receive “direct”, “positive and negative” feedback (02TN-IN1.6). As she explained, positive feedback, once given, would promote her strength, and negative feedback, once received, would help overcome her mistakes.

The participant, who majored in English for Tourism, expected her language skills to be applied. She also hoped to develop planning skills relevant to duties at the international office at the university.

The intern said that as she had learned about the Thai people via the video or the internet, she hoped to communicate with Thai people better and made more Thai friends. She claimed that a language barrier can be both a challenge and motivation to explore Thai culture more deeply. As she explained, it would be difficult to communicate with Thais, whose English language was too limited, but it was also a motivation for her to improve her language proficiency. As for transportation, she could commute anytime and anywhere by shuttle bus. Regarding social relationships, she hoped she would make more sociable and cheerful friends.

###### *High satisfaction*

The participant was quite pleased with the performance of her communication skills in the office as she had numerous chances to practice “listening and speaking skills”(02TN- IN2.5). As a result, she felt quite confident in communicating with the mentor. Soft skills such as “computer skills, photocopying, or typing” (02TN-IN2.6) were also frequently practiced, which she thought would be very important for her future job.

The intern reported that her mentor was “enthusiastic” and “patient” as she had hoped for. She added that the mentor himself guided her to visit various historical places after work. She also reported that she received direct comments which showed her both positive and negative aspects of her performance. She also had a chance to discuss the comments directly with her mentor.

On the professional side, she recalled that when she attended a number of university events, she “communicated with a lot of people” (02TN-IN2.15) and used various soft skills such as “organizing activities or events, text printing, translating” (02TN-IN2.16). She seemed to be very satisfied with her performance of these skills.

The student teacher demonstrated her great satisfaction with learning Thai culture, overcoming the language barrier and enjoying favorable living conditions. She was very pleased that Thai culture was not so much different from Vietnamese one, except for the greetings. She was also very satisfied with her communication with Thai people without any difficulties as a result of her attendance at a training course called “survival communication”. She was very happy with her dormitory without a kitchen, which was clean and modern. Finally, she was very pleased with her kind staff and roommates, who were always willing to lend whatever equipment she needed.

##### **Participant 04NT**

###### *Medium expectations*

The participant's main expectation was to apply her acquired knowledge and skills. With her confidence in language skills, knowledge and skills in English for tourism as well as soft skills, she expected to be able to apply "communication, negotiation, problem and solving skills, and teamwork" (04NT-IN1.1) as well as "time management" and "computing skills" (04NT-IN1.3).

The intern expected to meet a mentor who could provide useful guidance on "not only professional knowledge, but also communication skills and computing skills" (04NT-IN1.4). She also hoped she would be instructed by the one who was not only "experienced" but also "friendly, enthusiastic" (04NT-IN1.4). In addition, because of possible language barriers she might face, and her very limited experience as an intern, she would not expect to communicate directly with the mentor. The kind of feedback she would like to receive should be "indirect" (04NT-IN 1.10). As she explained, this type of feedback would give the mentor more time to comment more deeply. Besides, she would want to receive feedback that was "more positive than negative" (04NT-IN 1.7). The reason was that negative feedback would help her to improve her personal skills, and to avoid unexpected mistakes.

The participant would hope to work in the university office so that she could use skills such as working on the computer, editing texts and using a copier.

Finally, the participant thought language barrier was a real challenge for her to overcome. Besides, she expected to stay in the dormitory, commute more easily, communicate more friendly with foreign friends.

### ***High satisfaction***

The participant was totally satisfied with the internship as she mentioned her effective application of professional knowledge and skills. She was able to communicate with the mentor and staff without any difficulty. She was fairly content with her receptionist skills. She performed fairly smoothly in the events of the university when she came into contact with Thais who could not communicate in English. She also found various opportunities to practice and develop soft skills, such as computer skills, time management skills. She demonstrated her confidence in the use of the software on computers, printers and photocopiers.

As for the mentoring element, "enthusiastic" and "good quality" (04NT- IN2.3a) were the exact words she used to describe the characteristics of her mentor. At work, her mentor was willing to assist her in completing her assignments. After work, the mentor was also a tour guide who took all the interns to different historic places and introduced the culture of Thai people. Besides, she admired the mentor's enthusiasm and good competences because he was not only ready to share all the experience of the work suitable for all staff, but also handled the job very well. Although his feedback was direct, which contrasted with her expectation, she found it useful as this helped her identify her strengths and weaknesses immediately. She confessed that her satisfaction with the mentor was beyond her expectations.

The intern was highly satisfied with her professional skills. She reported that all the skills she expected to apply were successfully applied. Soft skills such as typing texts editing, designing posters were practiced smoothly. She found much contentment with learning some new photocopying skills. In addition, she properly arranged her work, her studies, and her friend's meetings to improve her management skills.

For the contextual element, her satisfaction was manifested in these aspects: the language barrier and living conditions. She confirmed that she was not worried about language barrier as she was lucky to meet enthusiastic and helpful Thais. She was also satisfied with clean dormitory, comfortable transport, and good relationships. The intern was pleased with her helpful international students and sociable roommates.

### ***4.2. Influential Factors on the Fulfillment of Expectations***

The data analysis showed different influential factors that emerged in the three different patterns of expectations and satisfaction. These factors were considered as a decisive role in determining the degrees of the participants' expectations and contributing largely to the maintenance of the degrees of their satisfaction.

#### 4.2.1. Influential Factors in the First Pattern

In this pattern, there were four different factors: confidence, creativity, extensive experience of the supervisor, and expectation matches. Firstly, the participant clearly showed his confidence in not only his professional knowledge but also his application of the knowledge and skills. He was also confident in his teaching effectiveness. As he reported, "As I was able to communicate with my students during my teaching process, my students were eager to learn"(01PL.F3).

Secondly, his creative abilities were manifested in his very smart initiative of using Thai language. His creative solution to students' lack of understanding was highly appreciated by his supervising teacher. His satisfaction with this action continued to increase when other trainees learned from him and applied this technique to their classroom teaching.

The third factor was the knowledge management of the supervising teacher. During the practicum, the supervising teacher assigned proper work and discussed to find the best solution for the trainee's lesson plan.

Finally, expectation matches were the last factor in this case. Before the practicum, the participant expected to receive a "quick" and "effective" feedback. After the completion, he reported he received all the kinds of direct and positive feedbacks with praises.

#### 4.2.2. Influential Factors in the Second Pattern

In the second pattern three factors identified in this pattern include confidence in language proficiency, mentor/supervisor's positive personality and expectation matches. Participant 02TN who demonstrated her most evident confidence in her English proficiency remarked that she was able to understand what everybody said, and felt more confident. Similarly, participant 04NT showed her ability to deal with real communication as a receptionist. She reported that she communicated well with the people who did not know English well. Besides, she was lucky to meet friendly and helpful Thai friends, who supported her to overcome the language barrier.

Both participants 02TN and 04NT agreed that their mentors were friendly and enthusiastic. They said, "After working, she enthusiastically guides my group in the office to visit historic places and introduces Thai culture." (02TN and 04NT. F5). The participants indicated her mentor was not only ready to share all the experience of the work, but also completed every work very well.

Finally, expectation matches were an important factor. Participant 04NT reported that she did not receive indirect feedback, but she was not disappointed. Instead, she realized the benefit of this way and pleased to learn to apply it.

#### 4.2.3. Influential Factors in the Third Pattern

In the pattern, the three main factors include supervisors' limited experience, lack of facilities and expectation mismatches. Both participants 01HN and 03QH confirmed that the limited experience of their mentors was the main reason why they were not very satisfied. Participant 01HN said that her supervisor did not offer clear instructions so she did not know if she taught in the right path. Similarly, participant 03QH reported that she did not learn much from the teacher's experience.

The second factor was the lack of facilities in their dormitory. Both of them felt uncomfortable as staying there was a real nuisance. The last factor indicated in this pattern was an expectation mismatch. Participant 01HN was dissatisfied when her supervising teacher gave her only the positive feedback and no negative one. Similarly, participant 03QH was not pleased to receive the indirect one via email, which was contrary to her expectations.

#### 4.3. Discussion

The discussion will concentrate on the three emerging issues: (i) the role of the personal element, (ii) the impact of the supervisor on the participants' satisfaction, and (iii) the importance of practicum length and workload.

##### 4.3.1. The Role of the Personal Element

The findings indicated that the personal element played a decisive role in the determination of the participants' satisfaction. Participant 05PL was a typical example of the role of this element. The two factors that made him a unique case in the pattern of high expectations and high satisfaction included confidence and creativity. As the findings indicated, this participant showed his great confidence in his strong expectations. In addition, he revealed no signs of worries before and during the practicum at all. The most decisive factor was his initiative of using Thai language to explain when Thai students showed signs of lack of comprehension during his lessons. The fact that this initiative was replicated by other participants, and praised by his supervisor increased his confidence, which in turn boosted his desire to apply more creative techniques. The findings support those of a study by Yazidu (2016), which confirmed that confidence is significant for setting up a positive sense of self-accomplishment and professional growth during practicum. It is evident that such factors as confidence and creativity could trigger and maintain trainee teachers' satisfaction.

However, both participants 04NT and 02TN showed another side of the role of this personal element. Although these participants did not show any clear signs of confidence before the practicum, they all claimed that their confidence grew significantly during and after the practicum. They reported that their confidence grew gradually in such areas as professional knowledge and skills and communication skills and that this increase contributed greatly to the increase in her satisfaction. These findings are in line with those of the study conducted by Muhammad et al. (2017), who showed that once conducted, the practicum, which was totally out of the comfort zone, definitely affected confidence level positively, especially in teaching. In addition, the result supported that of the study conducted by Cruickshane & Westbrook (2013), who asserted the impacts of the practicum on preservice teachers' confidence and autonomy.

##### 4.3.2. The Impact of the Supervisor

This second element showed obvious effects on the participants' satisfaction in the different patterns. The impacts could be both positive and negative. Supervisors' positive personalities such as friendliness, enthusiasm, flexibility and open-mindedness contributed significantly to the satisfaction of all the participants. These findings were in line with those of Rahman & Nurullah (2016) that emphasized the significance of amicable, dialogical and friendly rapport between supervisors and interns.

Conversely, other factors related to the supervisors exerted negative impacts on the trainee teachers, decreasing their satisfaction. Participant 01HN reported that her supervisor's feedback was too general to be learned professionally, and that his expertise seemed not to be up to the standard, which was responsible for her dissatisfaction. These findings are in line with those of Rahman & Nurullah (2016), which emphasized the phenomenon of the scarcity of the comprehensive and detailed provision of feedback from mentors. The problem can also be explained by the findings from the study of Hobson et al. (2009), confirming that because of differences among the quality and procedures of the mentoring process, some supervisors failed to fully understand their interns. Moreover, participants 02TN and 03QH reported that the language proficiency level of their supervisor was limited, and that they did not receive feedback as expected, decreasing their satisfaction. The study of Barton

et al. (2015) indicated that ineffective supervisors were those who did not communicate clearly, and that the opportunity of the intern would not improve during their practice when regular and effective feedback was not provided in time. In short, although this element was not decisive, it contributed to the increase or decrease of the participants' satisfaction.

#### 4.3.3. The Importance of Practicum Length and Workload

This issue emerged in the findings of all the participants. Unlike the important role of previous ones, this issue did not increase or decrease the degree of the participants' satisfaction, but it might affect the extent of satisfaction if combined with other issues.

Both participants 05PL and 01HN reported that the teaching hours for them were so limited that he could not accumulate sufficient teaching experience to grow professionally. Besides, participant 03QH confessed that the practicum length of time, which was one month, was too short for her to develop her professional skills. Participant 04NT indicated that her workload fluctuated, making it impossible for her to establish stable working habits. The findings are in line with those of the study conducted by Yazidu (2016), which confirmed that limited practicum time made it impossible for student teachers to get accustomed to their students and, therefore, they experienced a variety of conflicts with their students. It was evident that the majority of the participants realized that the length of time could affect their professional development.

## 5. Conclusion and Implications

The results revealed the EFL preservice teachers' expectations and satisfaction were manifest in the three distinctive patterns: high expectations – high satisfaction, medium expectations – high satisfaction, and medium expectations – medium satisfaction. The study also discovered various influential factors for each pattern, including those connected with the interns (language proficiency confidence, creativity), and those associated with supervisors (professional knowledge, positive personality, experience) and those related to environments and patterns (facilities, (mis)matches).

From the results of the study, several important implications are suggested for students, teachers and administrators. For a successful international internship, prospective students should pay due attention to the following factors. First, EFL students should be fully aware of their expectations as awareness will ensure their preparedness and readiness. They should also pay special attention to such important factors as confidence, creativity, and language proficiency. Besides, they should make every attempt to improve their professional and cultural knowledge so that they can easily overcome potential language and cultural barriers. Moreover, students should also be prepared for necessary soft skills and communication competences.

The study identified the influential factors which may help cooperating teachers and supervisors in the host and home universities to have a general picture of what makes a successful internship. Therefore, if they are fully aware of the factors when they prepare their students for internships, it will be of great help for them.

Administrators need to pay attention to their interns' expectations and influential factors as an understanding of these will guide them in constructing the content of a pre-internship orientation course to prepare interns better for their future practicum.

The study has two major limitations. Firstly, the interview is the only tool utilized. The lack of triangulation may affect the validity of the research. Therefore, future studies should use additional methods of data collection such as journals or observation to ensure the capture of multiple dimensions of the same phenomenon. Moreover, due to the outbreak of the COVID-19 pandemic, the 2020 practicum or internship was ceased; as a consequence, the main participants of the case study were chosen from the prior-to-2020 cohorts of preservice teachers and interns. This may undoubtedly affect the objectivity and precision of the data collected for the study as the participants who finished their practicum before the year 2020 may not remember what happened as exactly as they could.

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# Metaphorical Connotations of Preservice Teachers on the Concept of Nomophobia

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## Abstract

The diversity of temporal needs in the world has increased the people's rate of communication and interaction. Many factors play a role in increasing the rate of communication and interaction. One of these factors is mobile devices. It can be said that various mobile devices have features that affect human life in many dimensions in today's world. Therefore, these devices have a very important place for individual and social sustainability. Mobile phones are the most important of the various mobile devices in the globalizing world. The excessive use of mobile phones has produced the concept of nomophobia, which is a new type of addiction in the world. In this study, based on this type of disorder, it was aimed to determine the metaphorical connotations of preservice teachers regarding the concept of nomophobia. In this study, which was carried out with a qualitative research method and a phenomenological design, the study group members were asked an open-ended question in the form of "Nomophobia is like ..... because ....." and by which, the metaphorical connotations of the preservice teachers were aimed to be determined. The analysis of their answers revealed that the preservice teachers had remarkable metaphorical connotations regarding the concept of nomophobia. The connotations compiled in the study were combined under certain themes by the researchers and presented in the findings section.

**Keywords:** Nomophobia, Preservice Teacher, Mobile Phone, Metaphorical Connotation

## 1. Introduction

Technology can be said to be the greatest revolution of the modern age. Technology plays an important role in meeting needs and facilitating human life. Consequently, a daily increase in the utilization of technology is observed. In addition to the benefits provided by the technological instruments used today, they also bear harmful aspects. The leading technological devices used are mobile devices and smart phones. Especially smart phones provide meaningful conveniences in people's lives. The conveniences provided by these multi-dimensional phones offer significant advantages to individuals in terms of saving time. Apart from their basic function, individuals benefit from smart phones through many functions such as shopping, using e-mail and

social media, banking transactions and virtual games. It can be stated that the multidimensional functionality of these devices and the fact that they can easily meet the needs bring about the excessive use of these devices. It is seen that addictions to these devices occur due to excessive use. When evaluated in the context of human health, it can be said that addictions cause many problems primarily in terms of social, cultural, physical, psychological and economic aspects. It can be stated that the current situation continues to escalate daily.

Nomophobia is a concept that has entered the literature as the fear of being without a smartphone or the fear of mobile phone deprivation. The addiction caused by this fear can be defined as one of the addictions brought by the age we live in. Therefore, the use of smartphones, in contrast to keypad phones, causes an increase in the level of nomophobia. It can be said that this fear brought by the age of technology will increase in the future and studies on nomophobia will increase in the same direction. Therefore, this study on nomophobia is important in terms of facilitating academics, educators and graduate students in their studies and helping taking preventive actions regarding nomophobia. Thus, it will be easier to progress in a healthy way regarding the studies to be conducted and the measures to be taken. It is also expected that the study will contribute to the literature on the theme of nomophobia.

### *1.1. Literature Survey*

Nomophobia can be defined as a digital age phobia stemming from the fear of being without a smartphone (Galhardo, Loureiro, Massano-Cardoso & Cunha, 2022). At the point where human interaction with technology has reached, the concept of nomophobia has been chosen as the word of the year by the Cambridge Dictionary via a public vote in 2018 (Eren, Kılıç, Günel, Kırçalı, Öznacar & Topuzoğlu, 2020). It has been determined that nomophobia has four different dimensions which are not being able to communicate, losing connectedness, not being able to access information and giving up convenience (Yildirim & Correia, 2020).

Based on these dimensions, it can be said that with smart phones taking center stage of life, it carries various problems. Being constantly accessible causes problems in the context of work and family relations, although it is sometimes deemed as positive. In terms of social relations, individuals experience difficulties in socializing, and games and social media addiction cause anxiety when the individual cannot access the internet (Öz & Tortop, 2018).

With the increase in the use of smart phones, there has been an increase in the use of the internet. For example, in Turkey in 2021, the rate of internet access at home was 92% (Turkish Statistical Institute (TÜİK), 2021). This rate is quite high and is an indicator of the level of internet use at home. It can be said that the cheapness of the internet and ease of access to the internet bring about senseless use. Güler and Veysikarani (2019), further, stated that excessive and uncontrolled use of the internet leads to phone addiction. In cases where mobile phone deprivation is experienced due to addiction, the fear termed nomophobia arises.

The concept of Nomophobia, which is a type of fear, was introduced into the literature as a result of a research conducted in England in 2008. The concept has started to become widespread, especially with the development of smartphone technology. Expressed as "fear of being without a phone", nomophobia is derived from the abbreviation of the English words "no mobile phobia". In the case of nomophobia, individuals feel a fear of being deprived of telephone communication. It can be said that this discomfort caused by fear increased with the introduction of smartphones. The concept of nomophobia has been mentioned since the use of the first touch phone in Turkey in 2009. It is seen that the probability of nomophobia is higher due to the use of the phone, especially in the generation named "Generation Z", born after the 2000s (Bartwal & Nath, 2020; Saraç, 2021), and it has started to become a rapidly spreading problem, especially among university students (Apak & Yaman, 2019). In addition, it can be said that the use of smartphones in society has become one of the most important actions of life. Hence, it is seen that a society that does not worry about feeding but does not think of going anywhere without a smart phone and internet is being built. It has been determined that there is an increase in the addiction of not only young people, but also people from all age groups to smartphones. Waking up even in the early hours of the morning and looking directly at their phones, constantly checking the phone screen during the day, and feeling anxious when they cannot find their phones are considered the most important indicators of

nomophobia (Kalaskar, 2015). In short, it can be said that accessing internet getting easier causes nomophobia by increasing social media and smartphone addiction (Gezgin, Şumuer, Arslan & Yıldırım, 2017).

### 1.2. Research Aim and Research Questions

The aim of this study is to determine the metaphorical connotations of preservice teachers regarding the concept of "nomophobia". In accordance with the purpose of the study, answers to the following questions were sought;

- ✓ What are the metaphorical connotations of preservice teachers regarding the concept of nomophobia?
- ✓ Under which conceptual categories can the metaphorical connotations expressed by preservice teachers be classified according to their common characteristics?

## 2. Method

### 2.1. Study Design

This study aims to determine the metaphorical connotations of preservice teachers regarding the concept of nomophobia. Qualitative research method and phenomenological design were used in accordance with the nature of the study. Qualitative research method is a research method in which methods such as observation, interview and document analysis are used and perceived situations are processed in a realistic and holistic way in a natural environment. It is also a perspective that aims to research and understand social phenomena in their natural environment, based on theory building (Groenewald, 2004; Göçer, 2014; Koopman, 2017). Phenomenology, on the other hand, deals with phenomena that we are aware of but for which we do not have an in-depth and detailed perspective. Phenomenology emerges as a research design that is suitable for studies aiming to investigate phenomena whose meaning we do not fully understand (Koopman, 2017; Yıldırım & Şimşek, 2018).

### 2.2. Participants

The study group of the research consists of preservice teachers studying at İnönü University Faculty of Education. In today's world, where the use of smartphones has turned into an addiction, young preservice teachers' perspectives on the subject are worth examining. A total of 125 preservice teachers, 90 female and 35 male, participated in the study carried out in this direction. The participation of preservice teachers in the study was voluntary based.

Table 1: Demographic characteristics of the study group

Gender	Frequency	Percentage (%)
Male	35	28
Famale	90	72
Total	125	100

### 2.3. Instrument

In order to collect the data for the study, a metaphorical connotation questionnaire was created by the researchers. The metaphorical connotation questionnaire where questions are formed as "Nomophobia is like ....., because ....." was given its final form following experts' opinion. The questionnaire, which was completed after receiving experts' opinion, was distributed to preservice teachers after they were briefed on required information on the subject. The preservice teachers completed the distributed questionnaire in line with their own opinions.

### 2.4. Data Analysis

The "content analysis" technique was used in the evaluation of the study data. Content analysis is a technique that allows working indirectly to understand human behavior and nature. This technique is based on the

systematic collection of important words under the same categories with coding created with certain methods (Huberman & Matthew, 1994; Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2018).

### 3. Research Results

In this part of the study, the data obtained within the scope of the research and the metaphorical connotations of the preservice teachers regarding the concept of nomophobia are presented. In addition, in this section, 40 different mental images developed regarding the concept of nomophobia are given, supported by sample metaphorical connotations expressed by the participants. The 40 mental images obtained through the content analysis were compared in terms of the gender variable of the members in the study group. According to the findings obtained from the study, it was determined that female and male preservice teachers produced a total of 125 valid metaphorical connotations for the concept of nomophobia. Metaphorical connotations are presented in Table 2.

#### 3.1. Metaphorical Connotations of Preservice Teachers Regarding the Concept of "Nomophobia"

When the metaphorical connotations of the preservice teachers regarding the concept of nomophobia are examined, it is seen that 35 male preservice teachers and 90 female preservice teachers produced 125 metaphorical connotations in total. It can be said that preservice teachers associate the metaphorical connotations they produce with regard to the concept of "nomophobia" with different perspectives and generally different concepts.

Table 2: Perceptions of the study group regarding the concept of nomophobia

Code	Name of Metaphorical Connotation	Gender der	Frequency(n)	Percentage(%)
1	Enduring pain	1 f	1	0.8
2	Forest with no trees	1 f	1	0.8
3	Loosing one's mind	1 f	1	0.8
4	Alcohol addiction	1 f	1	0.8
5	Separation	5 f*- 1 m*	6	4.8
6	House with no balcony	1 f	1	0.8
7	Something insignificant	1 f	1	0.8
8	Lack of five senses	1 f	1	0.8
9	Emptiness/feeling of incompleteness	4 f	4	3.2
10	Loosing a valuable belonging	4 f - 3 m	7	5.6
11	Depression	3 f - 1 m	4	3.2
12	Resting	1 f	1	0.8
13	Captivity	1 f	1	0.8
14	Prison	1 f	1	0.8
15	Detachment from life	1 f	1	0.8
16	Pleasure	1 m	1	0.8
17	Nothing	1 m	1	0.8
18	Primitive age	1 f	1	0.8
19	Loosing one's dignity	1 m	1	0.8
20	Person and object addiction	1 f	1	0.8
21	Fear-Worry-Anxiety	9 f - 4 m	13	10.4
22	Blindness	1 f	1	0.8
23	Gambling addiction	1 f	1	0.8
24	Substance addiction	4 f - 2 m	6	4.8
25	Inability to breathe	7 f	7	5.6

26	Obesity	2 f	2	1.6
27	Lack of organs	4 f - 3 m	7	5.6
28	Death	4 f - 1 m	5	4.0
29	Poverty	2 f - 3 m	5	4.0
30	Platonic love	1 f	1	0.8
31	Shelter	1 f	1	0.8
32	Smoking addiction	3 m	3	2.4
33	Thirst	6 f - 3 m	9	7.2
34	Inability to taste	1 f	1	0.8
35	Technology addiction	1 f	1	0.8
36	Sleep	1 f	1	0.8
37	Loneliness	9 f - 4 m	13	10.4
38	Eating and drinking	5 f - 4 m	9	7.2
39	Loosing one's way	1 f	1	0.8
40	Falling from height	1 f	1	0.8
<b>Total</b>		<b>F: 90 M: 35</b>	<b>125</b>	<b>100</b>

\*In the table, the following notations are used m: male and f: female. The letters m and f represent the number of preservice teachers representing each metaphorical connotation by gender. These notations have the same meaning for all tables given in the categorization.

Table 2 reveals that 40 different metaphorical connotations have been generated for the expression "Nomophobia is like..... because .....". When the resulting metaphorical connotations are examined, it is seen that the study group has different, original and negative perceptions regarding the concept of nomophobia. The frequency distributions of the connotations most emphasized by the members of the study group are given below. Considering this distribution, it was determined that nomophobia was perceived negatively by the members of the study group. In addition, connotations with the highest frequency; loneliness (n-13), fear-worry-anxiety (n-13), thirst (n-9), eating-drinking (n-9), loss of a valuable item (n-7), inability to breathe (n-7) and lack of organs (n-7). As a result of the analyzes made on the basis of the data obtained; The data are presented below as tabulated under 9 different categories.

### 3.2. Distribution of Metaphorical Connotations Regarding the Concept of "Nomophobia" by Common Features

#### 3.2.1. The Concept of Nomophobia as Health Perception

When the metaphorical connotations of preservice teachers regarding the concept of nomophobia are evaluated from the perspective of "health perception", it is seen that 21 participants produced 8 different metaphorical connotations.

Table 3: Distribution of metaphorical connotations of the concept of nomophobia as a health perception

Code of Metaphorical Connotation	Nomophobia as Health Perception	Gender	Frequency (n)	Percentage (%)
3	Loosing one's mind	1 f	1	0.8
8	Lack of five senses	1 f	1	0.8
22	Blindness	1 f	1	0.8
25	Inability to breathe	7 f	7	5.6
26	Obesity	2 f	2	1.6
27	Lack of Organs	4 f - 3 m	7	5.6
34	Inability to taste	1 f	1	0.8
40	Falling from height	1 f	1	0.8
<b>Total</b>		<b>18 f - 3 m</b>	<b>21</b>	<b>16.8</b>

Metaphorical connotations of the category comprise inability to breathe (n-7), lack of organs (n-7), obesity (n-2), losing one's mind (n-1), lack of five senses (n-1), blindness (n-1), inability to taste (n-1) and falling from height (n-1). When the metaphorical connotations in the theme of "nomophobia as a health perception" are analyzed; of the 8 metaphorical connotations gathered, 7 metaphorical connotations (losing one's mind, lack of five senses, blindness, inability to breathe, obesity, inability to taste, falling from height) were only stated by female preservice teachers, and 1 metaphoric connotation (lack of organs) was expressed by both male and female participants. In this theme, it is seen that preservice teachers associate the concept of nomophobia with not being able to breathe and lack of organs. Thus, it can be said that nomophobia has a vital meaning such as not being able to breathe and is perceived as important as the lack of an organ in the body.

*"Nomophobia is like shortness of breath because when we lack something, our pulse rises, our heart rate quickens, and we experience shortness of breath."* (**Female preservice teacher, 12**)

*"Nomophobia is like the longing for a kidney of a patient waiting for a kidney transplant in the hospital, because our phones have become as important as a vital organ today."* (**Male preservice teacher, 8**)

### 3.2.2. The Concept of Nomophobia as Perception of Addiction

When the metaphorical connotations of preservice teachers regarding the concept of nomophobia are evaluated from the perspective of "addiction perception", it is seen that 13 participants generated 6 different metaphorical connotations.

Table 4: Distribution of metaphorical connotations of the concept of nomophobia as a perception of addiction

Code of Metaphorical Connotation	Nomophobia as Perception of Addiction	Gender	Frequency (n)	Percentage (%)
4	Alcohol addiction	1 f	1	0.8
20	Person or object addiction	1 f	1	0.8
23	Gambling addiction	1 f	1	0.8
24	Substance addiction	4 f - 2 m	6	4.8
32	Smoking addiction	3 m	3	2,4
35	Technology addiction	1 f	1	0.8
<b>Total</b>		<b>8 f - 5 m</b>	<b>13</b>	<b>10.4</b>

Metaphorical connotations of the category were substance addiction (f-6), smoking addiction (n-3), alcohol addiction (n-1), person and object addiction (n-1), gambling addiction (n-1) and technology addiction (n-1). When the metaphorical connotations in the theme of "nomophobia as a perception of addiction" are analyzed, of the 6 metaphorical connotations obtained, 4 metaphorical connotations (alcohol addiction, person and object addiction, gambling addiction, technology addiction) were only expressed by female preservice teachers, 1 metaphorical connotation (smoking addiction) was expressed only by 1 male preservice teacher, 1 metaphorical connotation (substance addiction) was expressed by both male and female preservice teachers. In this theme, it is seen that preservice teachers associate the concept of nomophobia with addiction. Thus, it can be stated that nomophobia is perceived as a form of addiction (alcohol, smoking, drugs, etc.) which harms human health and it harms the human body. The statements which stand out among the metaphorical connotations of the theme of "nomophobia as perception of addiction" are given below.

*"Nomophobia is like drug addiction, because technology addiction is now a life-threatening condition."* (**Female preservice teacher, 20**)

*"Nomophobia is like smoking because it is addictive. Quitting, forgetting and staying away from it makes one nervous."* (**Male preservice teacher, 13**)

### 3.2.3. The Concept of Nomophobia as Perception of Human Situations

When the metaphorical connotations of preservice teachers regarding the concept of nomophobia are evaluated from the perspective of "perception of human situations", it is seen that 15 participants generated 6 different metaphorical connotations.

Table 5: Distribution of metaphorical connotations of the concept of nomophobia as a perception of human situations

Code of Metaphorical Connotation	Nomophobia as Perception of Human Situations	Gender	Frequency (n)	Percentage (%)
5	Separation	5 f - 1 m	6	4.8
13	Captivity	1 f	1	0.8
15	Detachment from life	1 f	1	0.8
19	Loosing one's dignity	1 m	1	0.8
28	Death	4 f - 1 m	5	4.0
39	Loosing one's way	1 f	1	0.8
<b>Total</b>		<b>12 f - 3 m</b>	<b>15</b>	<b>12.0</b>

Metaphorical connotations of the category are separation (n-6), death (n-5), captivity (n-1), detachment from life (n-1), losing one's dignity (n-1) and losing one's way (n-1). When the metaphorical connotations in the theme of "nomophobia as a perception of human situations" are analyzed of the 6 metaphorical connotations obtained, 3 metaphorical connotations (captivity, detachment from life, losing one's way) were only expressed by female preservice teachers, 2 metaphorical connotations (separation, death) were expressed by both male and female preservice teachers, and 1 metaphorical connotation (losing one's dignity) was generated by 1 male preservice teacher. In this theme, it is seen that preservice teachers associate the concept of nomophobia with a number of human situations. Thus, the metaphorical connotations of nomophobia expressed as separation, captivity, detachment from life, losing one's dignity, death and losing one's way, reveal that preservice teachers have negative perceptions about nomophobia in comparison with human situations. The statements that are remarkable among the metaphorical connotations regarding the theme of "nomophobia as perception of human situations" are given below.

*"Nomophobia is like losing your life, surrendering your soul, because I can never do without a phone."* (**Female preservice teacher, 18**)

*"Nomophobia is like the friend I love very much, because I get sad when I lose the friend I love too."* (**Male preservice teacher, 17**)

### 3.2.4. The Concept of Nomophobia as Perception of Emotional States

When the metaphorical connotations of preservice teachers regarding the concept of nomophobia are evaluated from the perspective of "perception of emotional states", it is seen that 36 participants generated 6 different metaphorical connotations.

Table 6: Distribution of metaphorical connotations of the concept of nomophobia as the perception of emotional states

Code of Metaphorical Connotation	Nomophobia as Perception of Emotional States	Gender	Frequency (n)	Percentage (%)
1	Enduring pain	1 f	1	0.8
9	Feeling of Emptiness/ incompleteness	4 f	4	3.2
11	Depression	3 f - 1 m	4	3.2
21	Fear-worry-anxiety	9 f - 4 m	13	10.4
30	Platonic love	1 f	1	0.8

37	Loneliness	9 f - 4 m	13	10.4
<b>Total</b>		<b>27 f - 9 m</b>	<b>36</b>	<b>28.8</b>

Metaphorical connotations of the category are fear-worry-anxiety (f-13), loneliness (n-13), feeling of emptiness/incompleteness (f-4), depression (n-4), enduring pain (n-1), and platonic love (n-1). Analysis of the metaphorical connotations in the theme of "nomophobia as the perception of emotional states" reveal that of the 6 metaphorical connotations obtained, 3 metaphorical connotations (enduring pain, feeling of emptiness/incompleteness, platonic love) were generated only by female preservice teachers, and 3 metaphorical connotations (depression, fear-worry-anxiety, loneliness) were generated by both male and female preservice teachers. In this theme, it is seen that preservice teachers compare the concept of nomophobia with various emotional states. Thus, the nomophobia induces in preservice teachers various negative emotions such as enduring pain, feeling of emptiness/being incomplete, depression, fear-worry-anxiety, platonic love and loneliness. Remarkable expressions among metaphorical connotations related to the theme of "nomophobia as perception of emotional states" are given below.

*"Nomophobia is like loneliness, because being without a phone makes you feel lonely."* (**Male preservice teacher, 16**)

*"Nomophobia is like a beautiful big kite slipping out of the hand of a small child in a strong wind, because that's exactly what the state of anxiety will feel like."* (**Female preservice teacher, 25**)

### 3.2.5. The Concept of Nomophobia as Perception of Location

When the metaphorical connotations of preservice teachers regarding the concept of nomophobia are evaluated from the perspective of "perception of location", it is seen that 4 participants expressed 4 different metaphorical connotations.

Table 7: Distribution of metaphorical connotations of the concept of nomophobia as perception of location

Code of Metaphorical Connotation	Nomophobia as Perception of Location	Gender	Frequency (n)	Percentage (%)
2	Forest with no trees	1 f	1	0.8
6	House with no balcony	1 f	1	0.8
14	Prison	1 f	1	0.8
31	Shelter	1 f	1	0.8
<b>Total</b>		<b>4 f</b>	<b>4</b>	<b>3.2</b>

Metaphorical connotations of the category are forest with no trees (n-1), house with no balcony (n-1), prison (n-1) and shelter (n-1). When the metaphorical connotations in the theme of "nomophobia as perception of location" are analyzed; 4 of the 4 metaphorical connotations (forest with no trees, house with no balcony, prison, shelter) were generated by female preservice teachers. In this theme, it is seen that preservice teachers associate the concept of nomophobia with various places. Thus, it can be stated that nomophobia inspires a spatial perception in some preservice teachers. The outstanding expressions of the metaphorical connotations related to the theme of "nomophobia as a perception of space" are given below.

*"Nomophobia is like a forest with no trees, because without trees there is no forest."* (**Female preservice teacher, 69**)

*"Nomophobia is like a prison because you want to get off the phone but you have nothing to do or entertainment so you stay there to pass the time."* (**Female preservice teacher, 57**)

### 3.2.6. The Concept of Nomophobia as Perception of Physiological Needs



When the metaphorical connotations of preservice teachers regarding the concept of nomophobia are evaluated from the perspective of "perception of physiological needs", it is seen that 21 participants produced 5 different metaphorical connotations.

Table 8: Distribution of metaphorical connotations of the concept of nomophobia as perception of physiological needs

Code of Metaphorical Connotation	Nomophobia as Perception of Physiological Needs	Gender	Frequency (n)	Percentage (%)
12	Rest	1 f	1	0.8
16	Pleasure	1 m	1	0.8
33	Thirst	6 f - 3 m	9	7.2
36	Sleep	1 f	1	0.8
38	Eating-drinking	5 f - 4 m	9	7.2
<b>Total</b>		<b>13 f - 8 m</b>	<b>21</b>	<b>16.8</b>

Metaphorical connotations of the category are thirst (n-9), eating-drinking (n-9), rest (n-1), pleasure (n-1) and sleep (n-1). When the metaphorical connotations in the theme of "nomophobia as perception of physiological needs" are analyzed; Of the 5 metaphorical connotations obtained, 2 metaphorical associations (rest, sleep) were expressed by female preservice teachers, 1 metaphorical connotation (pleasure) by 1 male preservice teacher, and 2 metaphorical connotations (thirst, eating-drinking) by both male and female preservice teachers. In this theme, it is seen that preservice teachers compare the concept of nomophobia with several physiological needs. Thus, it can be stated that nomophobia is associated with physical needs such as rest, pleasure, thirst, sleep and eating and drinking. The statements that are remarkable among the metaphorical connotations regarding the theme of "nomophobia as perception of physiological needs" are given below.

*"Nomophobia is like fasting without sahur\*, because when I don't have my phone, I feel sluggish, devastated and so incomplete." (Male preservice teacher, 9)*

*\*last meal before dawn when fasting starts, during ramadan*

*"Nomophobia is like being thirsty in the desert because I get all my work done with it." (Female preservice teacher, 21)*

### 3.2.7. The Concept of Nomophobia as Perception of Economical Situations

When the metaphorical connotations of preservice teachers regarding the concept of nomophobia are evaluated from the perspective of "perception of economical situations", it is seen that 12 participants produced 2 different metaphorical connotations.

Table 9: Distribution of metaphorical connotations of the concept of nomophobia as a perception of economical situations

Code of Metaphorical Connotation	Nomophobia as Perception of Economical Situations	Gender	Frequency (n)	Percentage (%)
10	Loosing a valuable belonging	4 f - 3 m	7	5.6
29	Parasızlık	2 f - 3 m	5	4.0
Total		6 f - 6 m	12	9.6

Metaphorical connotations of the category are losing a valuable belonging (n-7) and lack of money (n-5). When the metaphorical connotations in the theme of "nomophobia as a perception of economical situations" are analyzed; The 2 metaphorical connotations obtained (losing a valuable belonging, lack of money) were produced

by female and male preservice teachers. In this theme, it is seen that preservice teachers associate the concept of nomophobia with some economical situations. Thus, it can be stated that nomophobia induces a negative economic perception in some preservice teachers. The statements that are remarkable among the metaphorical connotations regarding the theme of "nomophobia as a perception of economical situations" are given below.

*"Nomophobia is like being without money, because it's like a part of our life, we get nervous when it's not with us."* (Female preservice teacher, 15)

*"Nomophobia is like a millionaire who has lost all his fortune, because all the young people today have are their phones."* (Male preservice teacher, 11)

### 3.2.8. The Concept of Nomophobia as Perception of Insignificance

When the metaphorical connotations of preservice teachers regarding the concept of nomophobia are evaluated from the perspective of "perception of insignificance", it is seen that 2 participants produced 2 different metaphorical connotations.

Table 10: Distribution of metaphorical connotations of the concept of nomophobia as perception of insignificance

Code of Metaphorical Connotation	Nomophobia as Perception of Insignificance	Gender	Frequency (n)	Percentage (%)
7	Something unimportant	1 f	1	0.8
17	Nothing	1 m	1	0.8
Total		1 f - 1 m	2	1.6

Metaphorical connotations of the category are something unimportant (n-1) and nothing (n-1). When the metaphorical connotations in the theme of "nomophobia as a perception of insignificance" are analyzed; It is seen that the 2 metaphorical associations obtained (something unimportant, nothing) were generated by 1 female and 1 male preservice teacher. In this theme, it is seen that preservice teachers associate the concept of nomophobia with unimportant things. Thus, it can be stated that nomophobia creates a perception that is not considered important in 2 preservice teachers. The statements that are remarkable among the metaphorical connotations regarding the theme of "nomophobia as perception of insignificance" are given below.

*"Nomophobia is like pressing the light switch, because I don't have a social media account and I don't like to do things that I know won't really benefit me. (I mean it is something unimportant for me)."* (Female preservice teacher, 19)

*"Nomophobia is like nothing for me, because I am not very addicted."* (Male preservice teacher, 21)

### 3.2.9. The Concept of Nomophobia as Perception of Backwardness

When the metaphorical connotations of preservice teachers regarding the concept of nomophobia are evaluated from the perspective of "perception of backwardness", it is seen that 1 participant produced 1 metaphoric connotation.

Table 11: Distribution of metaphorical connotations of the concept of nomophobia as a perception of backwardness

Code of Metaphorical Connotation	Nomophobia as Perception of Backwardness	Gender	Frequency (n)	Percentage (%)
18	Primitive age	1 f	1	0.8
Total		1 f	1	0.8

The metaphorical connotation of the category is expressed as the primitive age (n-1). When the metaphorical connotation in the theme of "nomophobia as a perception of backwardness" is analyzed; 1 metaphorical association (primitive age) obtained was generated by 1 female preservice teacher. In this theme, it is seen that the female preservice teacher associates the concept of nomophobia with primitive age. Thus, it can be stated that nomophobia creates a perception of time in this female preservice teacher showing their backwardness. The metaphorical connotation of the theme of "nomophobia as a perception of backwardness" is given below:

“Nomophobia is similar to the primitive age, because being away from technology today means not keeping up with the necessities of the age.” (Female preservice teacher, 11)

### 3.2.10. Gender Comparison of Themes Obtained Regarding the Concept of Nomophobia

The metaphorical connotations of the preservice teachers for the concept of nomophobia were compared in terms of gender and presented under themes. Presenting the themes in a single table with a holistic perspective may be beneficial for researchers to evaluate the study. For this reason, the themes obtained are presented below in a single table.

Table 12: The table of the comparison of the themes obtained regarding the concept of "nomophobia" by gender

Name of the Theme	Female	Male	Total	Total
	Preservice Teacher	Preservice Teacher	Frequency (n)	Percent age (%)
1. Nomophobia as Health Perception	18 f	3 m	21	16.8
2. Nomophobia as Perception of Addiction	8 f	5 m	13	10.4
3. Nomophobia as Perception of Human Situations	12 f	3 m	15	12.0
4. Nomophobia as Perception of Emotional States	27 f	9 m	36	28.8
5. Nomophobia as Perception of Location	4 f	-	4	3.2
6. Nomophobia as Perception of Physiological Needs	13 f	8 m	21	16.8
7. Nomophobia as Perception of Economical Situations	6 f	6 m	12	9.6
8. Nomophobia as Perception of Insignificance	1 f	1 m	2	1.6
9. Nomophobia as Perception of Backwardness	1 f	-	1	0.8
Total	90 f	35 m	125	100.0

In Table 12 the metaphorical connotations generated by preservice teachers grouped under the themes (nomophobia as health perception, nomophobia as addiction perception, nomophobia as perception of human situations, nomophobia as perception of emotional states, nomophobia as perception of location, nomophobia as perception of physiological needs, nomophobia as perception of economical situations, perception of insignificance and nomophobia as a perception of backwardness) were compared in terms of gender. Thus, it is seen how many male and how many female preservice teachers gave answers for each theme. Looking at the table, it can be said that preservice teachers have strikingly different perceptions of the concept of nomophobia according to the gender variable, and this difference brings about the diversity of metaphors. It can be stated that the resulting diversity stems from the difference in meaning that men and women attribute to smartphones.

## 4. Discussion, Conclusions and Implications

It can be said that the most important change in the 21st century has taken place in the field of science and technology. Considering that the advances in science are transferred to the development of technology, it is seen that there is a very rapid change. The rapid change in technology has its benefits as well as its harmful aspects. Rather than the beneficial aspects, it is necessary to focus on the prominent harmful aspects and to improve them. Today, the dependency on technological tools is increasing rapidly and people suffer from it to a certain extent. Hence, it is seen that the use of smartphones has increased immeasurably. The addiction that develops due to the excessive use of smartphones reveals the fear of not being able to disconnect from the phone or staying away from the phone. It can be stated that the fear of being away from the phone negatively affects the lives of university-age youth. Therefore, nomophobia, which is called the fear of being away from the mobile phone, stands out as a subject that needs to be studied. With this study, it was aimed to determine the

metaphorical connotations of preservice teachers about nomophobia and it was seen that the individuals in the study group had different perceptions. The fact that the metaphorical connotations produced regarding the concept of nomophobia are grouped under nine different themes proves this.

This study was carried out with the data obtained from the metaphorical connotations of the preservice teachers studying at different grades regarding the concept of nomophobia. When we look at the metaphorical connotations produced by the preservice teachers regarding the concept of nomophobia, which is described as the fear of being away from the mobile phone, it is seen that generally negative perspectives are dominant. Based on the metaphorical connotations obtained, it can be said that preservice teachers have nomophobic addiction. In addition, 13 preservice teachers' associated nomophobia with addiction to alcohol, smoking, substances, etc. Analogies to addictions can be accepted as an indication that nomophobia has reached dangerous levels among young preservice teachers. The research is important in terms of measures to be taken and studies to be carried out by drawing attention to the prevalence and dimensions of nomophobia.

Based on the findings obtained from this study, it can be said that preservice teachers have generally negative connotations on the concept of nomophobia and nomophobic behaviors are observed in preservice teachers. A number of studies yielded that the majority of university students have moderate or higher nomophobia levels (Adnan & Gezgin, 2016; Erdem, Kalkın, Türen & Deniz, 2016; Yılmaz, Köse & Doğru, 2018; Apak & Yaman, 2019; Atılgan, 2020; Gürol, Apay, Özdemir, Uslu & Güven 2020; Ramazanoğlu, 2020; İdil, Çakır & Akman, 2022; Masalimova, Khairullina, Lapidus, Orekhovskaya, Zheltukhina & Baranova, 2022; Özsavran & Kuzlu Ayyıldız, 2022; Üstündağ Öcal & Öztürk, 2022), nomophobia prevalence is higher in women (Erdem, Türen & Kalkın, 2017; Gezgin, Şahin & Yıldırım, 2017; Yılmaz, Köse & Doğru, 2018; Karakuyu & Ata, 2019; Pekin, Yırtıcı & Olgun, 2021; Avcı, 2022; Gökbulut, 2022; S. Karabatak, Ay & Karabatak, 2022) and according to a study conducted with only male university students, 28.6% of male university students are mildly, 57.3% are moderately and 14.1% are severely nomophobic (Özalp, Kurnaz, Güler, İnamlık, Berkmen, Ömer & Hayran, 2021). Hence, it can be said that the study has similar characteristics with the related studies in the literature.

Nomophobic behaviors are observed not only in the university-age Z generation, but also in the middle aged and mature X and Y generations. For example, adults also exhibit behaviors as spending too much time on a smartphone, checking it at regular intervals, sleeping with the telephone nearby, keeping the charger with them at all times, experiencing anxiety in situations such as losing the phone, not being able to locate the phone, being out of coverage, and running out of credit and battery (Bak, 2019). For example, it is seen that there is a significant relationship between the frequency of individuals checking their smartphones and their nomophobia levels (Büyükoçulpan, 2019). It has been determined that nomophobic university students also have the behavior of delaying sleep (Yorulmaz, Kıraç & Sabırlı, 2018). It can be said that this has negative effects on the standart of living and achievement levels of young people. It is also thought that introducing restrictions/obstacles on the use of smartphones in higher education institutions will positively affect the individual's intrinsic motivation and success (Bayram, Zeybek Yılmaz, Sözen & Bayer, 2019). As inferred from the studies, it can be stated that nomophobia has become common not only among preservice teachers and university students, but also in the general population. The fact that the conceptual findings of the results obtained in the studies (dependence, fear of being away from and losing, not being able to do without it, etc.) are similar to those of this study can be considered as a remarkable situation in terms of expressing the importance of the study. As a result, it is seen that this study conducted on preservice teachers comprises important information about the current time frame. Based on the results obtained in the study the following recommendations are presented below;

- ✓ In order to reach a wider general picture of the results, similar studies involving more prospective teachers can be conducted in different universities.
- ✓ Comparisons can be made by conducting field-based studies regarding nomophobia in all departments of education faculties. For example, it can be investigated whether there is any difference between computer science teachers and social studies teachers in terms of nomophobia. Similarly, metaphorical connotations of students from different departments regarding the concept of nomophobia can be examined.
- ✓ Considering that nomophobia is escalating daily, suggestions have been developed such that awareness raising activities can be carried out through projects to be carried out by ministries, especially the Ministry of National Education and the Ministry of Health, in order to prevent this rise.

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# Universal Design Study of Circulation Systems at the Faculty of Engineering, Hasanuddin University Gowa

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## Abstract

The Campus of the Faculty of Engineering, Hasanuddin University Gowa (FT Unhas Gowa) is one of the buildings built where issues and problems regarding human rights equality have been discussed. However, the circulation system in the FT Unhas Gowa area has implemented a universal design concept with guide lanes, and the provision of ramps seems to only partially meet users' needs in terms of facilities' affordability. This research will be conducted using evaluative research with qualitative analysis. Evaluative research is a research activity that evaluates an activity/program that aims to measure the success of an activity/program and determine whether the success of a program has been as expected. This study aims to evaluate the infrastructure of educational facilities in tertiary institutions. Activities in the data analysis of the Spradley model consist of domain analysis, taxonomic analysis, componential analysis, and analysis of cultural themes. In addition, validity testing is done by using the triangulation technique. The results of studies describe the horizontal circulation system (open hallways, doors, corridors, tactile pavings) and vertical circulation (ramps, stairs, elevators) in the FT Unhas Gowa. The research shows that these facilities still need to meet the standards fully, therefore recommending the design of providing facilities that implement Universal Design to meet the convenience of all visitors and building users in the FT Unhas Gowa area.

**Keywords:** Universal Design, Circulation System, Hasanuddin University

## 1. Introduction

Awareness of human rights at this time is fundamental in people's lives, where everyone has equal rights regardless of differences in religion, ethnicity, race, ethnicity, group, class, social status, economic status, gender, and gender. so on (Risdiyanto, 2017; Syaifuddin, 2006). The fulfillment of human rights cannot be separated from using facilities without being limited by physical ability, age, and gender. Equality in the use of facilities as stated in the Regulation of the Minister of Public Works Number 30/PRT/M/2006 (Permen PU No. 30/PRT/M/2006) concerning Technical Guidelines for Facilities and Accessibility in Buildings and the Environment.



Philosophically, the state's responsibility for respecting and recognizing human rights is contained in Article 28I paragraph (4) of the 1945 Constitution of the Republic of Indonesia, which states that the protection, promotion, enforcement, and fulfillment of human rights are the responsibility of the state, especially the government (Ardinata, 2020; Trimaya, 2016). The issue of equality of human rights is also discussed in Universal Design, where universal design is a concept that emerged as an answer to problems in using a product or facility. Universal design aims that a product in the built environment can be used by everyone regardless of age, gender, limited ability, and differences in body size (Levarinda, 2021).

In Indonesia, universal design is stated in the Regulation of the Minister of Public Works and Public Housing Number 14/PRT/M/2017 (Permen PUPR No. 14/PRT/M/2017) Concerning the Ease of Building Requirements that a building must be free from obstacles (barrier-free), where the condition of the building and the environment is built without physical, information, or communication barriers so that everyone can reach and utilize the building and its environment safely, comfortably, efficiently, and independently. This refers to a universal design that aims so that a building and its facilities can be used by everyone together without requiring adaptation or special treatment (Soleh, 2016; Wibawa & Widiastuti, 2020).

The campus of the Faculty of Engineering, Hasanuddin University Gowa (FT Unhas Gowa) is one of the buildings that was built where issues and problems regarding human rights equality have been discussed. In the Master Plan of the Faculty of Engineering, Hasanuddin University Gowa; it is stated that the context of planning the FT Unhas Gowa Campus building based on Law Number 4 concerning Persons with Disabilities (1997). Furthermore, government Regulation of the Republic of Indonesia Number 43 of 1998 concerning Efforts to Improve Social Welfare of Persons with Disabilities, and Decrees Minister of Public Works concerning Technical Requirements for Accessibility in Public Buildings and the Environment (1998), is planned to apply the concept of "Universal Design"/ "Barrier-Free Design" to maximize and facilitate accessibility for all prospective students and visitors including persons with disabilities and the elderly in accessing buildings.

The circulation system in the FT Unhas Gowa area has implemented a universal design concept with tactile pavings, and the provision of ramps seems to only partially meet users' needs in terms of the affordability of facilities. The phenomenon is that there are differences in floor height at several points of the circulation path that can endanger users, especially elderly and wheelchair users (Kurniawan, 2014). Buildings in the FT Unhas Gowa area, such as the CSA building and the Department building, have provided ramps, but they are still insufficient to meet the needs of wheelchair users because they are not equipped with handrails. This condition indicates that the circulation system on the FT Unhas Gowa has not fully accommodated the users of the circulation system. Hence, so it needs to be analyzed further based on universal design principles and PUPR Ministerial Decree No. 14/PRT/M/2017 concerning Requirements for Building Ease of Building.

The universal design concept's benefit is creating inclusive design solutions and improving accessibility and usability, enabling people of all levels of ability to live independently (Limantoro, 2014). However, the universal design only partially accommodates the limited capabilities. Some things are unique, so the universal design concept only sometimes meets the needs of users with certain conditions, such as people with physical uniqueness or people with abnormalities in body size. That someone cannot move or use facilities independently. These factors should be considered, so they must be considered in a universal design system to meet legal equality in using facilities in a built environment. The research questions are:

- 1) Has the circulation system planning for the FT Unhas Gowa implemented a standardized universal design concept?
- 2) Has the universal design at the FT Unhas Gowa catered to the special needs of certain users?
- 3) What are the design recommendations for developing a circulation system design that applies a universal design concept that accommodates not only standardized systems but also the uniqueness of certain users at FT Unhas Gowa?

## 2. Method

This research will be conducted using evaluative research with qualitative analysis. Evaluative research is a research activity that evaluates an activity/program that aims to measure the success of an activity/program and determine whether the success of a program is as expected (Hamdi & Bahrudin, 2015; Kadarudin & MH, 2021). So, this study tries to evaluate the results design of the infrastructure of educational facilities in FT Unhas Gowa by understanding the activities and subjective views of the actors at the research location. This study used methods of collecting data from the literature, field observations on the research object, interviews, photos, measurements, and other documents.

Researchers in qualitative research are research instruments (human instruments) because researchers can adapt to respondents or informants and their activities (Rukajat, 2018). The direct involvement of researchers as research instruments aims to make respondents or informants as data sources more open to providing helpful information in the research process. The research location chosen is the Campus of the Faculty of Engineering, Hasanuddin University Gowa (FT Unhas Gowa Campus), which is located on Jalan Poros Malino Km. 6, Bontomarannu, Gowa Regency, South Sulawesi Province.



Figure 1: Satellite image of research site

This study uses data analysis techniques Spradley model. Spradley's data analysis was carried out interactively and took place continuously until it was completed so that the data was saturated (Sugiyono, 2020). Activities in the data analysis of the Spradley model consist of domain analysis, taxonomic analysis, componential analysis, and analysis of cultural themes. In addition, validity testing is done by using the triangulation technique.

### 3. Results

This research aims to determine circulation system in FT Unhas Gowa can aid the users activities safely, easily, and independently. The measurement result and participant activities in tte FT Unhas Gowa circulation then compared with universal design guide from Permen PUPR No. 14/PRT/M/2017 and Centre for Excellence in Universal Design (CEUD) as comparison to find similarities and difference between guides and existing conditions.

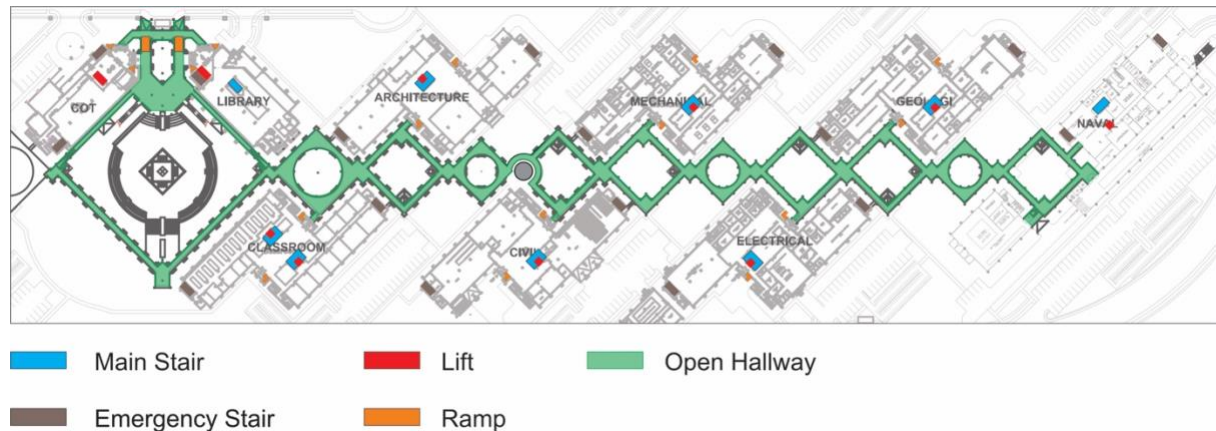


Figure 2: Vertical and horizontal circulation maps

### 3.1 Comparison of Standards and Measurement Results of Vertical Circulation

Report any other analyses performed, including subgroup analyses and adjusted analyses, indicating those that were pre-specified and those that were exploratory (though not necessarily in the level of detail of primary analyses). Consider putting the detailed results of these analyses on the supplemental online archive. Discuss the implications, if any, of the ancillary analyses for statistical error rates.

#### a. Stairs

Existing Condition:

- 1) The entrance steps have 8.2 cm - 21.5 cm height and 119.8 cm – 235 cm depth.
- 2) Internal stair steps have 16 cm - 18 cm height and 30 cm depth.
- 3) Internal stair handrails positioned 105.5 cm - 133 cm above floor level.
- 4) Internal star handrails using oval shape with 10.5 cm - 11.8 cm wide and 6.5 cm - 7.5 cm height.

Permen PUPR No. 14/PRT/M/2017:

- 1) Steps height in the range 15 cm – 18 cm dan at least 30 cm depth.
- 2) Handrails should be continuous throughout the flight and positioned 65 cm - 80 cm above floor level, at least on one side of the wall.
- 3) Handrails have a cross-sectional diameter of at least 5 cm.

Centre for Excellence in Universal Design:

- 1) Riser height between 15 cm – 18 cm and the tread height at least 30 cm.
- 2) Handrails should be positioned with the upper surface 90 cm – 100 cm above the pitch line of the stair flight. The provision of a second handrail with the upper surface positioned 60 cm - 75 cm
- 3) Handrails should be easy to grip with a diameter of 4 m - 5 cm, and a diameter of 25 cm – 32 cm for the second handrail.

The results of the comparison between the stair condition and the universal design guidelines show that some parts of the stairs follow the universal design guidelines but do not fully meet the user's needs. There are different conditions between the existing conditions and the universal design guidelines

From site conditions, it is known that users are more comfortable using stairs with a height of 15 cm - 16 cm. Stairs with a height of 17-18 cm are less comfortable to use because they give a tiring effect to crutches users and the elderly. Non-uniform footing heights can cause blind users to trip. There are stairs with a height of 21.5 cm which are less comfortable for users to walk (Fig.3)

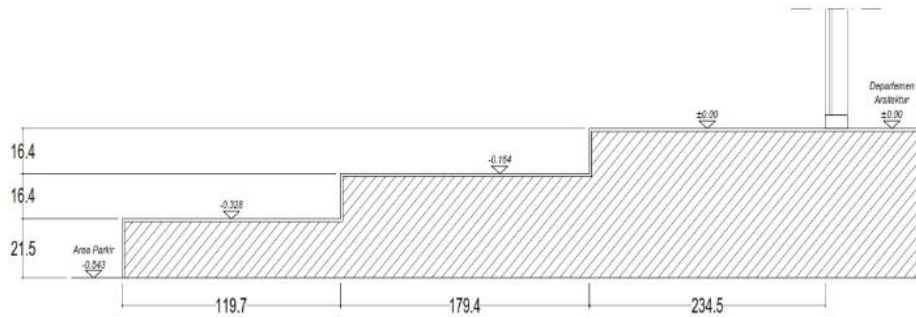


Figure 3: Entrance stair

Handrail with 105.5 cm - 113 cm height above the floor can still be reached by the user. There are conditions where there are handrails at a distance of 130 from the floor that is difficult for users with small stature to reach (Fig. 4a). The size of the handrail on the internal stairs has a size that is larger than the standard which is less comfortable for the user to hold (Fig. 4b).

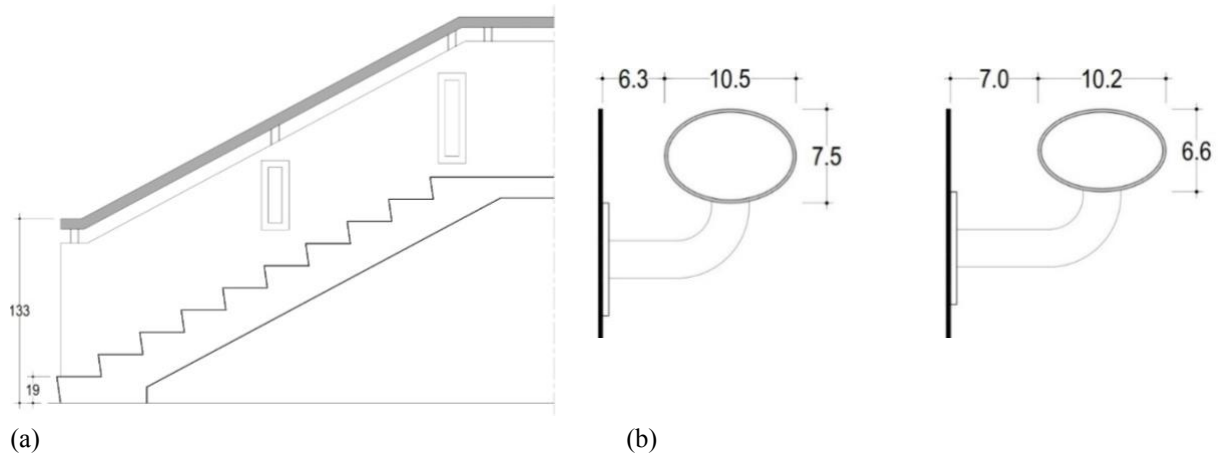


Figure 4: (a) Internal stair; (b) handrail profile.

## b. Ramps

### Existing Condition:

- 1) The ramp on site has a gradient of  $3^\circ - 7^\circ$
- 2) The ramp in the FT Unhas Gowa Campus has a minimum width of 130 cm.
- 3) There are no canteen/curb and handrails on every ramp on the FT Unhas Gowa Campus.

### Permen PUPR No. 14/PRT/M/2017:

- 1) External ramps have a maximum gradient of  $5^\circ$  or a ratio of 1:12.
- 2) Effective width should not be less than 95 cm without a low curb and 120 cm with a low curb. Low curb available with a maximum height of 10 cm.
- 3) Equipped with two layers of continuous handrails on both sides with a height of 65 cm and 80 cm.

### Centre for Excellence in Universal Design:

- 1) The gradient of the ramp should not exceed 1:20.
- 2) The clean width of the ramp should not be less than 150 cm.
- 3) Incorporate curbs with a height of 10 cm.
- 4) Equipped with two layers of continuous handrails on both sides with a height of 90 cm - 100 cm and 60 - 75 cm from the surface of the ramp and landing with a diameter of 4 cm - 5 cm.

From the comparison of the ramp and universal design guidelines, it is known that ramp users are more comfortable using ramps with a 3° gradient. A ramp with a 5° gradient or equivalent to the maximum slope of PUPR makes it difficult for ramp users to move a wheelchair. Ramps that are not equipped with curbs and handrails can potentially hazard to the users (Fig. 5).

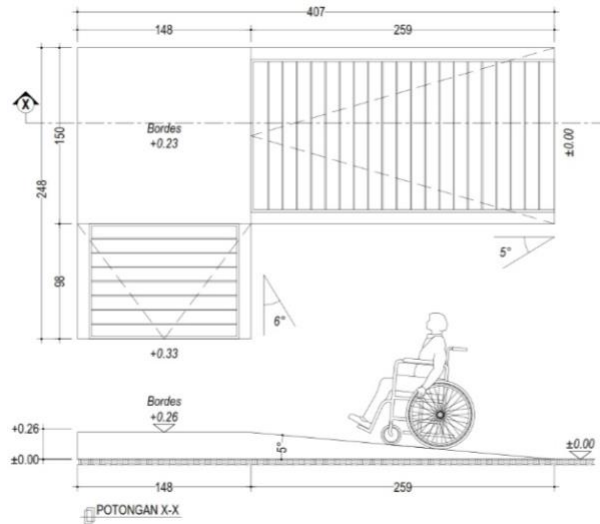


Figure 5: Ramp with 5° gradient.

There is a condition where there is a 20 cm difference in label height from the floor surface that unable the wheelchair users to use the ramp (Fig. 7). Another condition where the 2 cm level difference at the end of the ramp causes the wheelchair to get stuck while crossing (Fig. 8).

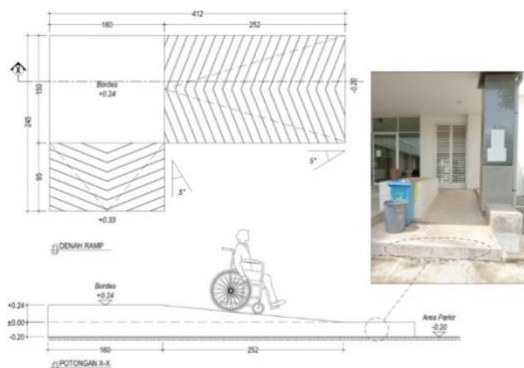


Figure 7: Ramp at Architecture Department back entrance.

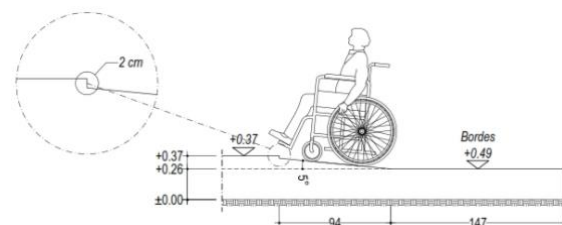


Figure 6: Ramp at Civil Department entrance.

c. Elevator

Existing Condition:

- 1) The elevator has a door opening width of 90 cm - 120 cm.
- 2) The button panel in the elevator lobby is positioned 107 cm - 113 cm from the floor level.
- 3) The button in the elevator is positioned 98 cm - 133 cm from the floor level.
- 4) The elevator door is fully open for 5 - 6 seconds before closing automatically.
- 5) Elevator buttons are not provided with braille.
- 6) The handrail on the elevator wall is positioned 85 cm – 90 cm from the floor.

Permen PUPR No. 14/PRT/M/2017:

- 1) The width of the elevator door opening is at least 110 cm.
- 2) The outer panel is installed in the lobby with a maximum height of 90 cm from the elevator floor.

- 3) The inner elevator panel is installed with a maximum height of 90 cm from the face of the elevator floor.
- 4) Ensure elevator doors are fully open for at least 8 seconds.
- 5) Equip all buttons on the panel braille.
- 6) Provide handrails on three sides of the elevator with a distance of 80 cm - 85 cm from the elevator floor.

Centre for Excellence in Universal Design:

- 1) Elevator doors must have a clear opening width of 95 cm.
- 2) The elevator panel should be positioned 90 cm - 110 cm from the elevator floor to the center line of the button.
- 3) The elevator doors must remain fully open for at least 8 seconds.
- 4) The numbers and symbols on the buttons are embossed and equipped with braille.
- 5) Handrails are available on each elevator wall at 90 cm from the elevator floor.

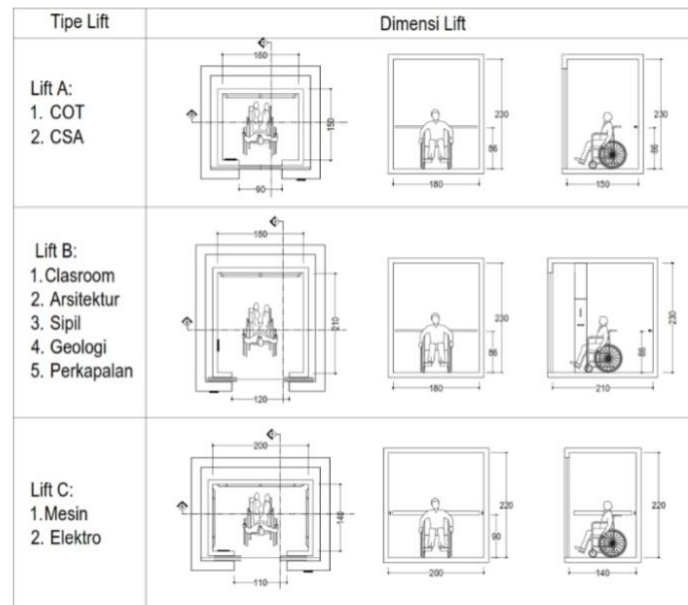


Figure 8: Types of elevator at FT Unhas Gowa

The elevator on the FT Unhas Gowa consists of three types. As shown in figure 8, the size of the Type B elevator is quite comfortable for wheelchair users, while the Type A and C elevators are smaller and narrower for wheelchair users than other users. The Type A elevator doors are smaller than standard but still adequate for wheelchair users.

The duration of the elevator door opening for 5-6 seconds makes it difficult for wheelchair users, crutches users, and visually impaired persons to enter the elevator. The position of the lobby panel of 107 cm – 113 cm from the floor causes wheelchair users to have difficulty pressing the button. Some buttons have heights that are difficult for wheelchair users to reach. The handrail in the elevator has a fairly standard distance. In Type A and B elevators, the handrail is only available on the rear wall giving more distance to reach the handrail. In Type C elevators, handrails are available on three sides of the elevator but have a shape that is less comfortable to hold (Fig. 9)

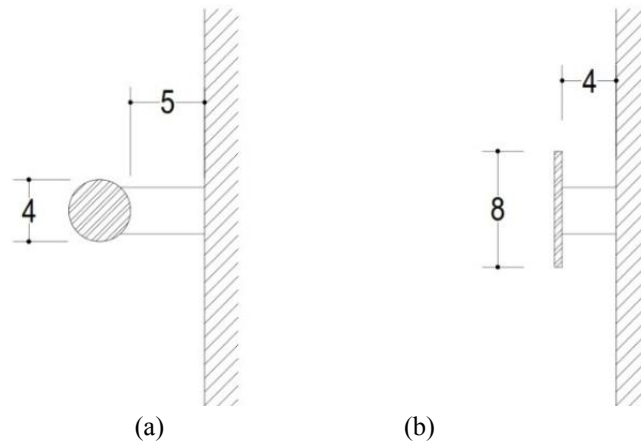


Figure 9: Handrail on elevator Type A and B; (b) Handrail on elevator Type C

The elevator buttons are not equipped with braille, which makes it difficult for visually impaired users to use the elevator. Buttons with embossed characters are not enough to provide convenience for blind people who do not recognize the alphabet and numbers.

### 3.2 Comparison of Standards and Measurement Results of Horizontal Circulation

#### a. Doors

Existing Condition:

- 1) Building entrance doors are double glass doors with a width of 170 cm, 250 cm, and 200 cm.
- 2) The internal double-door building has a size of 160 cm.
- 3) The student toilet door has a size of 70.5 cm and the lecturer's toilet door has a size of 76.5 cm.
- 4) The internal door handle uses a lever type with a height of 100 cm from the floor level.

Permen PUPR No. 14/PRT/M/2017:

- 1) The effective width of the entrance door opening is at least 90 cm, and other doors have effective opening width of at least 80 cm.
- 2) The clean width of the toilet door is at least 70 cm and 90 cm for disabled toilets.
- 3) The door handle uses a push/pull or lever type that can be operated with one closed fist, installed at most 110 cm from floor level.

Centre for Excellence in Universal Design:

- 1) The clean width of the entrance door is 85 cm - 100 cm. The internal door has an opening width of 85 cm.
- 2) Doors for toilet and bathroom facilities used by disabled users must have a clean opening of at least 95 cm.
- 3) Using lever or push/pull type door handles, installed 80 cm - 100 cm from the floor surface.

From the comparison of the existing condition of the door and the universal design guidelines, it is shown that the COT and CSA building entrance with a 170 cm width has a door opening design that causes the width of the opening to decrease causing wheelchairs to be unable to pass through the door if it is only open on one side (Fig. 10a). Department Building doors with 250 cm and 200 cm widths have wide openings that wheelchairs can easily pass through (Fig. 10 b). Entrance doors that are heavy when opened cause certain users to have difficulty opening the door.

The toilet doors have a size that does not match the guidelines, causing wheelchair users to be unable to pass through the toilet door (Fig 11). The lecturer's toilet door has a wider size and can only be passed by a small wheelchair (Fig. 11 b).

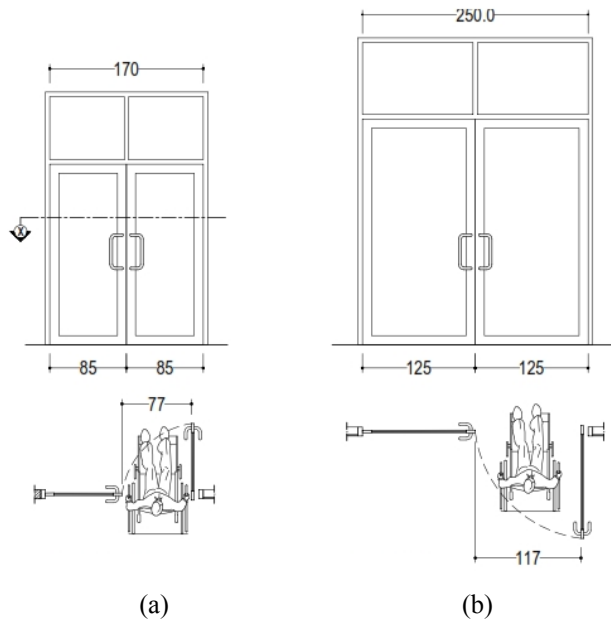


Figure 11: (a) COT Building and (b) Department Building entrance doors.

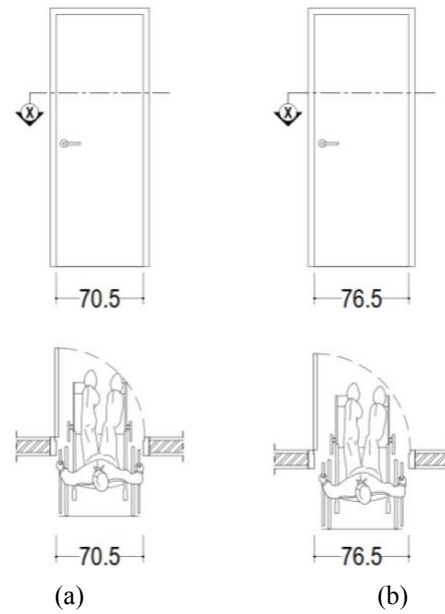


Figure 10: (a) Student toilet and (b) lecturer toilet doors

#### b. Open Hallway

##### Existing Condition:

- 1) Open hallways are 217 cm to 480 cm wide.
- 2) The surface has a rough and non-slip surface. There is a mossy surface and puddles when it rains.
- 3) Signboards are available in front of each department building.
- 4) There are no curbs or handrails at the edge of the hallway.
- 5) The rest area in front of the Department building is not protected from the weather and is located far apart

##### Permen PUPR No. 14/PRT/M/2017:

- 1) Have a minimum effective width of 140 cm.
- 2) Slippery floor surfaces are not allowed.
- 3) Equipped with informative and easily visible directions.
- 4) Buildings used by persons with disabilities and the elderly must be equipped with a handrail at least on one side of the hallway.
- 5) Can be equipped with seats every 900 cm distance.

##### Centre for Excellence in Universal Design:

- 1) The access route with 200 cm wide to enable two people or wheelchair users to pass each other
- 2) Surfaces must be firm, solid, and slip-resistant and not cause glare.
- 3) There are signs installed without blocking the circulation path.
- 4) Provide a guardrail with a height of 120 cm that visually contrasts with the surrounding surface.
- 5) Provide a bench or resting places at intervals on long routes.

The results of the comparison between the existing condition and the universal design guidelines show that the open hallway has a wide access route that allows wheelchair users to pass comfortably together with other users (Fig 12). The concrete surface in the open hallway is quite comfortable for participants to pass by. The zigzag shape and circular path in the open hallway increase mileage and can cause fatigue to the users, especially for crutches, wheelchair users, and the elderly.



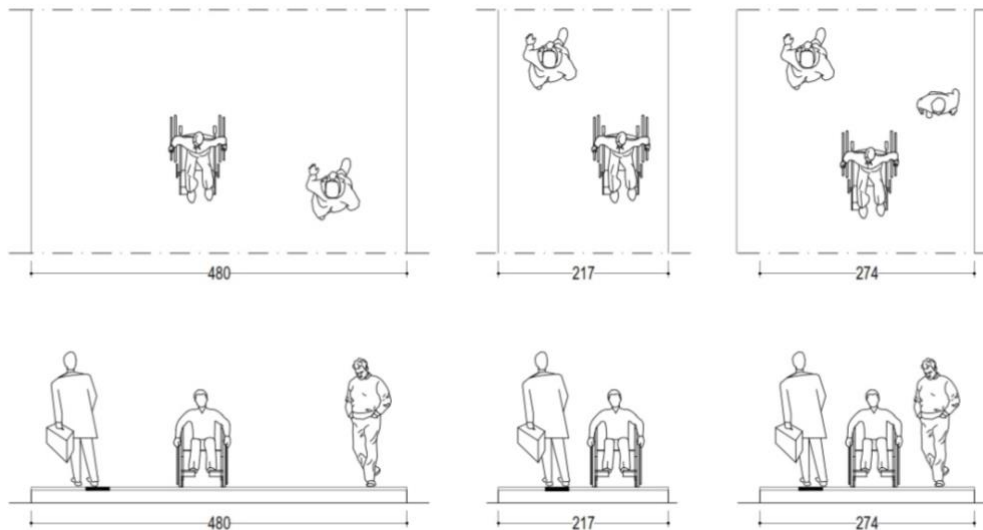


Figure 12: The existing width of the open hallway

The resting area located in front of each department building has a large distance between each resting area and is not protected from weather conditions causing people to use the flowerpots along the hallway to rest. Signboards with directional information are only available in front of each department building causing users to lose their way at the intersection of open hallways.



Figure 13: Resting area along the open hallway

### c. Corridor

Existing Condition:

- 1) The internal corridor has a 180 to 233 cm width.
- 2) Floor maps are available in some building units. There are no signs or directions in the corridors.
- 3) There are unprotected columns embossed on the walls.

Permen PUPR No. 14/PRT/M/2017:

- 1) The effective width of the corridor is at least 152 cm, or at least 204 cm for two wheelchairs passing by.
- 2) Equipped with signs or directions that are informative and easily visible.
- 3) Free from all kinds of obstructions that interfere with the user's movement.

Centre for Excellence in Universal Design:

- 1) Corridors of public buildings should have a 200 cm width or a minimum of 150 cm.
- 2) Signs on circulation paths should be placed in an easily accessible location.
- 3) Projections on walls such as columns should be guarded permanently.

The comparison between the corridor condition and the universal design guidelines show that the internal corridors have a width that allows wheelchair users to pass easily. There are conditions where embossed columns in the corridor cause hazards for a visually impaired person who uses the wall as a guide (Fig. 14). The tactile paving in the building only leads the users from entrance elevators causing difficulty for visually impaired users to access certain facilities or rooms.

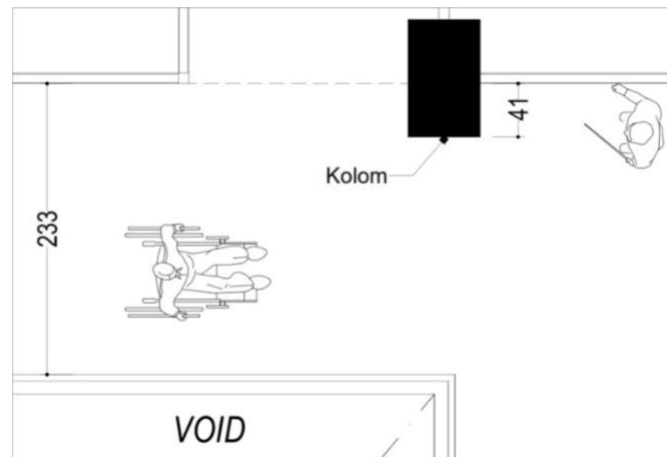


Figure 14: Embossed column in the internal corridor

#### d. Tactile Paving

Existing Condition:

- 1) Tactile paving on the site consists of guiding blocks and warning blocks.
- 2) Tactile pavings are installed on the edge of the open hallway and installed continuously through the entrance to the building elevator.
- 3) Warning blocks are installed at the intersection, the edge of the stairs, in front of the entrance, and in front of the elevator door.
- 4) Tactile pavings are installed along the open hallway at a distance of 45-50 cm from the edge of the hallway.
- 5) Some of the tactile pavings have the same color as the surrounding surface.

Permen PUPR No. 14/PRT/M/2017:

- 1) Tactile paving consists of guiding a line-patterned guiding block to indicate the direction of travel and a round patterned warning block to warn of changes in the surrounding situation.
- 2) Tactile paving must be installed, among others, at building entrances, along the edges of pedestrian paths, and towards crossing facilities with different floor heights;
- 3) Tactile paving must be made from solid material, not slippery, and should contrast with the surrounding surface.

Centre for Excellence in Universal Design:

- 1) Blister paving is used to mark the end of the pedestrian path and where the carriageway begins. Corduroy Paving is used as a warning when the users approach hazards or should be cautious.
- 2) Red blister paving is used at the controlled crossing point only. Buff blister paving is used at uncontrolled crossings points. Offset blister units are used to mark the edge of platforms at Train and Tram stations. Corduroy Paving is installed at the beginning and end of steps, placed 40 cm from the first step, and extended 80 cm depth.
- 3) The surface should visually contrast with the surrounding pavement. The red color is used only to blister paving at controlled crossing points.

The results of the comparison between the existing conditions and the universal design guidelines show that tactile pavings along the open hallway are installed 45 to 70 cm from the edge of the hallway. In Figure 15 c, the distance of the tactile pavings that follows the guidelines still poses a potential hazard for visually impaired users where

they fall while passing. The absence of protective barriers such as curbs or railings along the hallway makes it difficult for visually impaired users to identify the edge of the hallway.

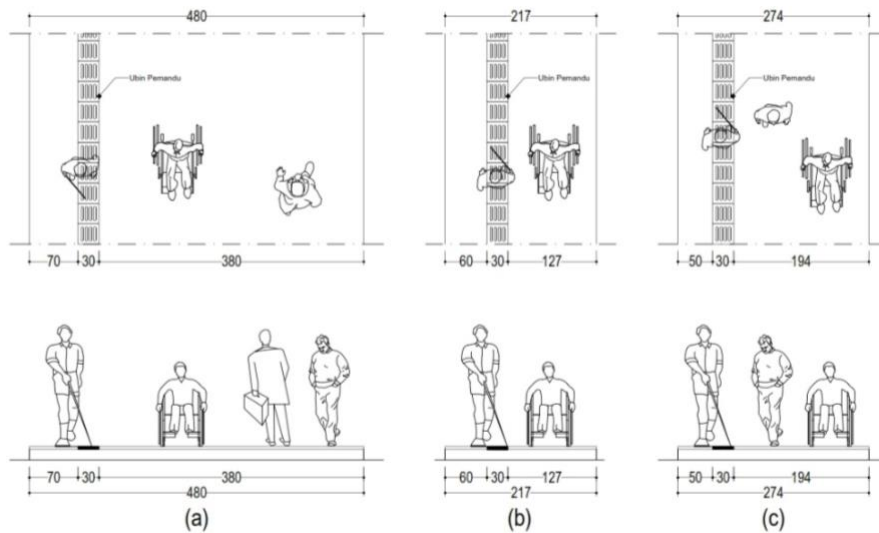


Figure 15: Different distances of the tactile pavings on the open hallway

Textured surfaces with a 30 cm distance from the tactile pavings and the additional facilities above the paving can cause disorientation and danger to visually impaired users (Fig. 16). Tactile paving installed following the shape of the open hallway with an angle of less than 90° causes users to have difficulty finding the right way, causes disorientation, and can provide potential hazards (Fig. 17).

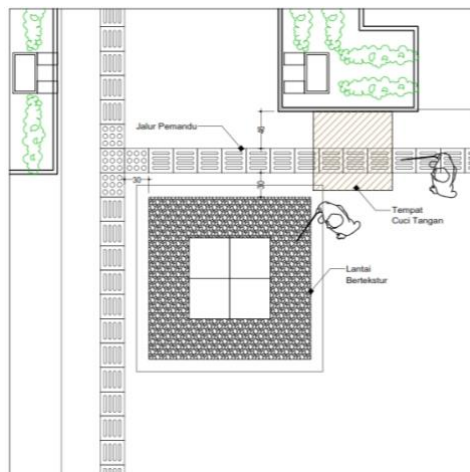


Figure 16: Textured surfaces and barriers on the tactile paving

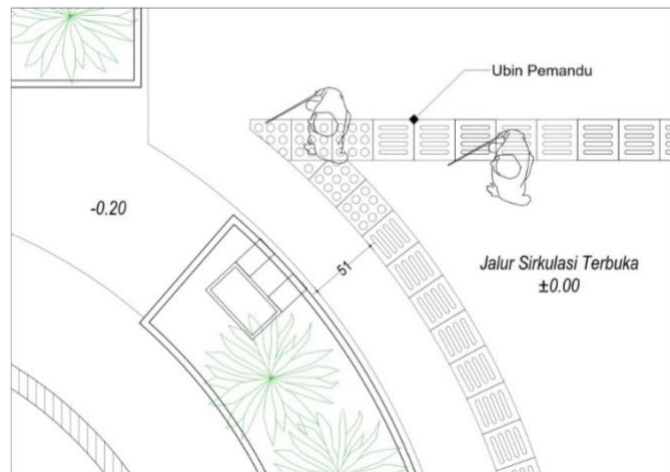


Figure 17: Tactile paving on the circular path of the open hallway

Warning blocks at building entrances installed continuously with the guiding block on stairs and doors can cause hazards because the visually impaired can be tripped or bump the doors because they can't identify it easily (Fig. 18). Tactile pavings on the ground floor of the building lead directly to the elevator door causing the visual impairment users to bump into the door or the person exiting the elevator, also causing difficulty finding the elevator button (Fig.19).

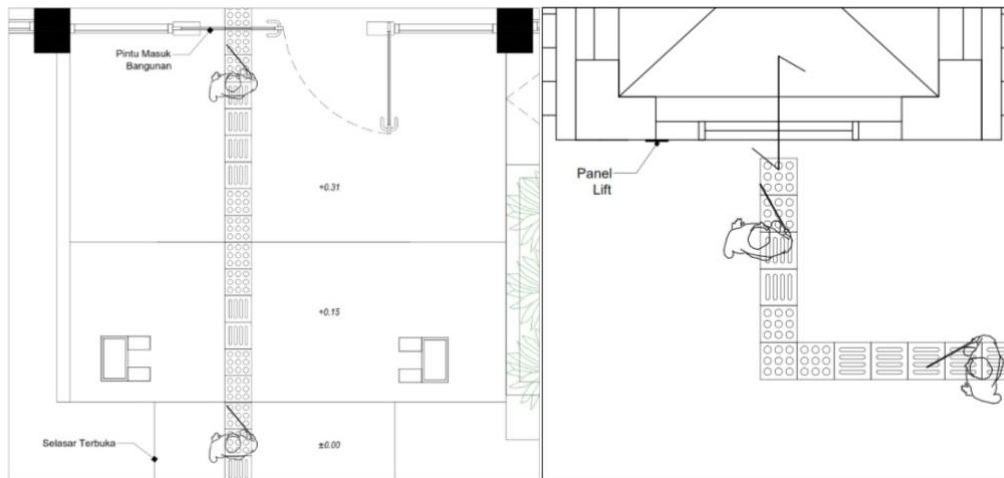


Figure 19: Tactile pavings on the stairs and building entrances Figure 18: Tactile pavins on the building elevator

#### 4. Conclusion/Discussion

##### 4.1 Conclusion of Universal Design Study on Circulation Systems at FT Unhas Gowa

###### VER NAIM

The results of studies conducted on horizontal circulation systems (open hallways, doors, corridors, tactile paving) and vertical circulation (ramps, stairs, elevators) in the FT Unhas Gowa shows that the circulation system in the FT Unhas Gowa not fully implemented the universal design concept to facilitate the movement of visitors and building users. Some parts of the circulation system have met the standard of Permen PUPR No. 14/PRT/M/2017 and the Center for Excellence in Universal Design, yet need to be sufficient comfort, safety, and independence for building users. Based on the activities carried out by participants on the circulation system in the FT Unhas Gowa, wheelchair users and the visually impaired are a group of participants who have difficulty accessing the circulation route. There are particular conditions where one of the wheelchair participants is anxious to use the elevator (claustrophobia), causing the participant to be unable to access and carry out activities on the 1st floor of the building. Therefore, with the results of a study on the circulation system in the FT Unhas Gowa, we recommend the design providing facilities that implement the universal design to meet the comfort of all visitors and building users in the FT Unhas Gowa.

##### 4.2 Design Recommendation on Circulation System of FT Unhas Gowa

The design recommendations for the vertical circulation system at the FT Unhas Gowa Campus are as follows:

###### a. Stairs

- 1) Addition of handrails on both sides of the building entrance stairs with a maximum height of 100 cm. Can be given an additional handrail with a maximum height of 75 cm.
- 2) Stair steps at the entrance should be uniform, with a 15 - 16 cm of height.
- 3) The internal staircase uses a circular handrail with a diameter of 4 cm - 5 cm and 2.5 cm - 3.5 cm for the second handrail.
- 4) Using non-slip material and nosing with anti-slip material on the internal stairs.
- 5) Added a second handrail on the internal staircase with a maximum height of 75 cm

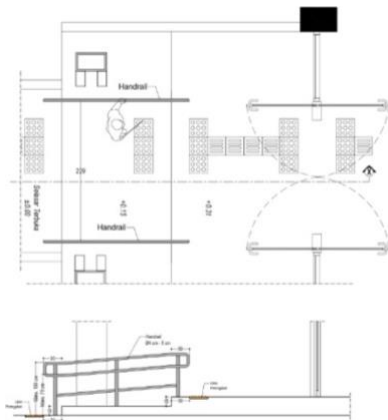


Figure 20: Entrance stair design recommendations

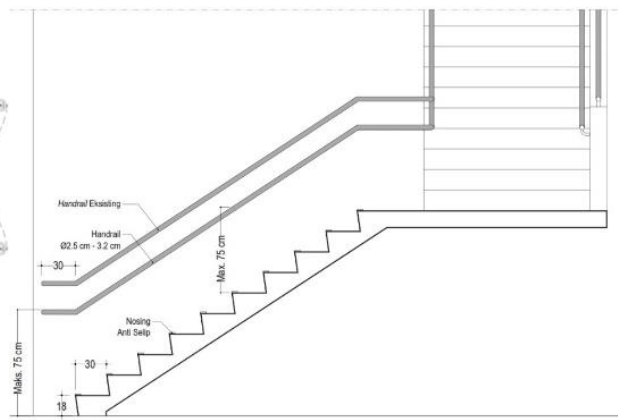


Figure 21: Internal staircase design recommendations

b. Ramps

- 1) Use a textured, non-slip surface on the ramp, and remove objects that can block the ramp user's access point (doors, trash cans, etc.)
- 2) Install continuous handrails on both sides of the ramp with a maximum height of 90 cm. Can be given a second handrail with a height of 65 cm.
- 3) Eliminate changes in height at the end of the ramp at the Civil Department (Fig. 7) so as not to hinder access for wheelchair users, and use a non-slip surface on the ramp, as shown in Figure 22.
- 4) Changing or improving the ramp design in the Architecture Department (Fig. 6) is recommended to make it accessible for wheelchair users, as shown in Figure 24.

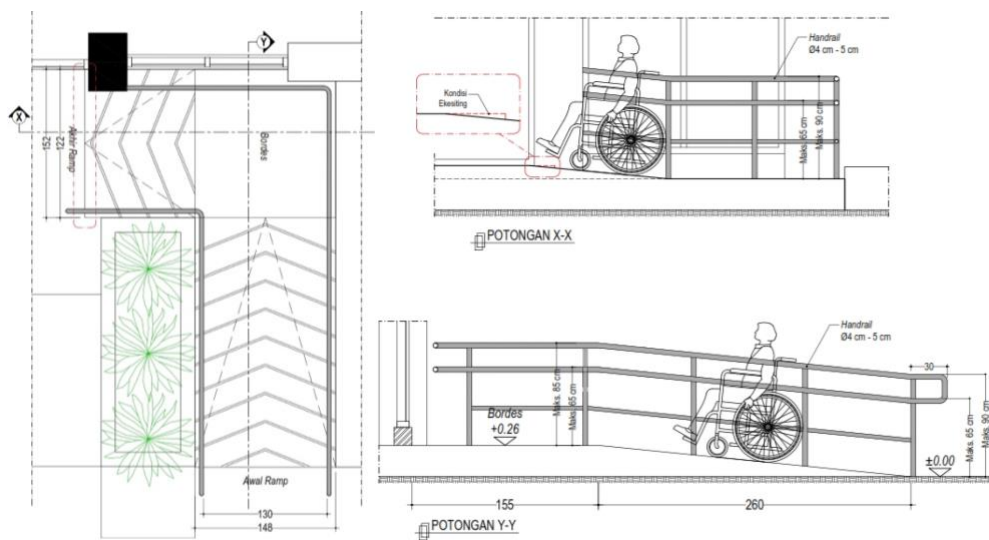


Figure 22: Civil Department ramp design recommendation.

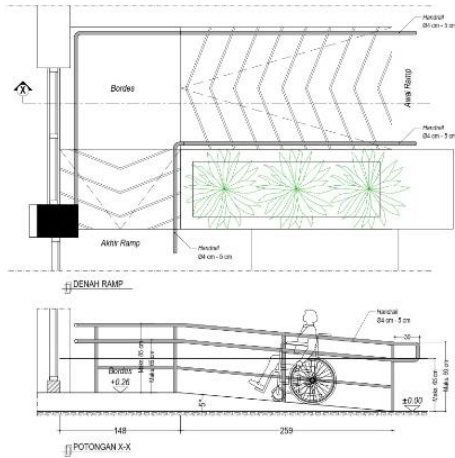


Figure 24: Department building ramp design recommendations

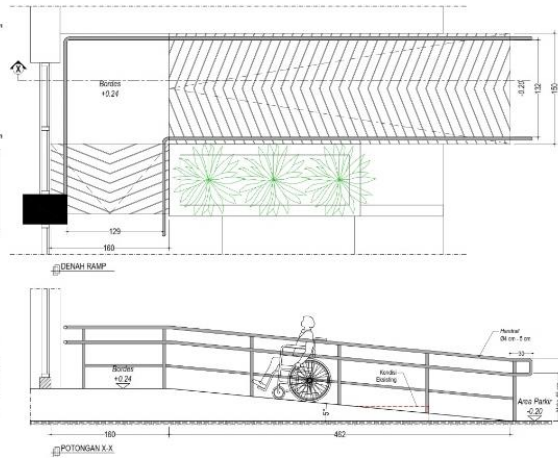


Figure 23: Architecture Department back entrance ramp design recommendation.

c. Elevators

- 1) External elevator panel should be installed at a height of 90 from the floor of the elevator lobby
- 2) Using elevator buttons with raised letters and numbers and equipped with braille.
- 3) Ensure the elevator remains open for at least 8 seconds.
- 4) Install a mirror on the back wall of the elevator at a distance of 90 cm from the elevator floor
- 5) Addition of a handrail with 4 cm - 5 cm diameter on the right and left walls of the elevator with a height of 80 cm from the elevator floor.
- 6) Equip the Architecture Department elevator (Point 4) with a sound indicator indicating the lift is arriving.
- 7) In Type C lifts, such as in the Electrical Department (Point 9), the number of passengers is given information if used together with wheelchair users to prevent the lift from being complete.
- 8) Provide information on the floor space of the building on one side of the elevator room.

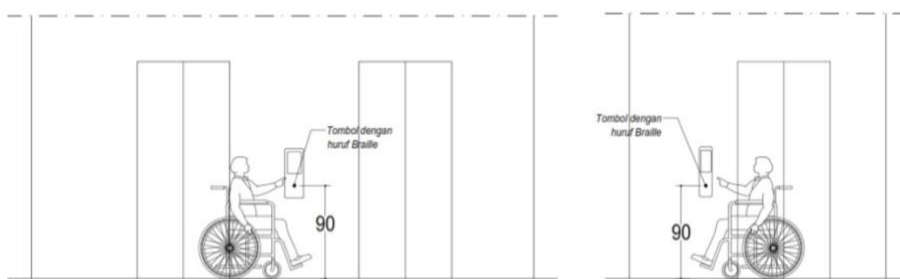


Figure 25: Recommended panel positions in elevator lobbies

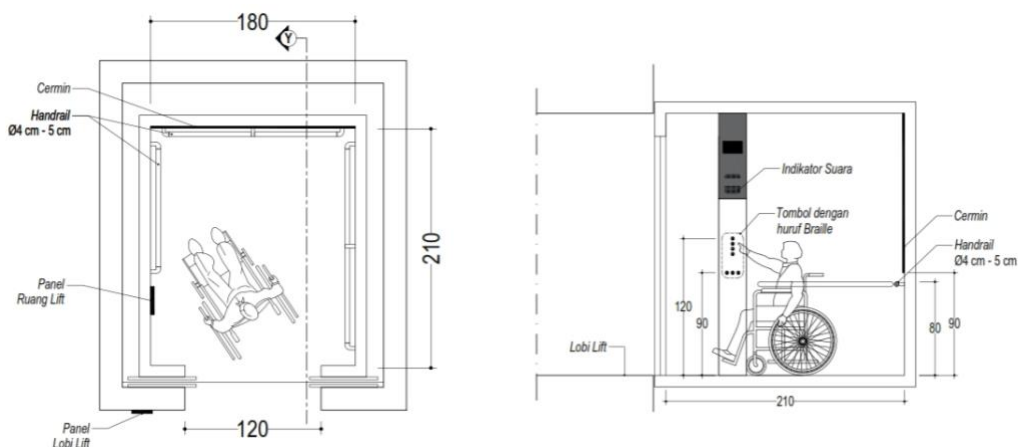


Figure 26: Elevator design recommendations

The design recommendations for the horizontal circulation system at the FT Unhas Gowa Campus are as follows:

a. Doors

- 1) Entrance doors should be easy to push/pull when closed. Have an effective width of at least 85 cm.
- 2) Incorporate colored marking strips that contrast visually on all glass doors with a height of 100 cm and 160 cm from the floor.
- 3) The internal door must have a clear opening of 80 - 85 cm to allow the wheelchair to pass easily.
- 4) The self-closing device of the door must have a pressure regulator to suit the user's physical capabilities.
- 5) It is recommended to change the function of the lecturer's toilet in the department building to an accessible toilet. The door of the accessible toilet has a minimum opening width of 90 cm and is given an iron plate under the door as high as 40 cm.

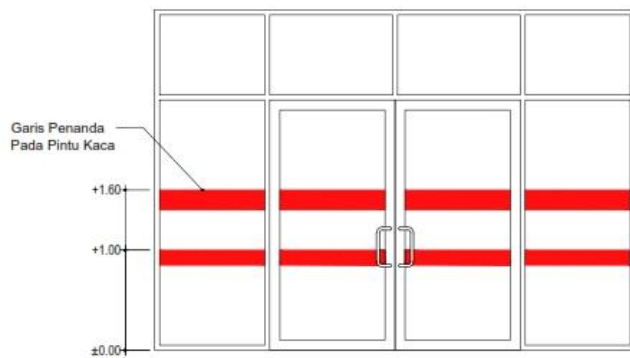


Figure 28: Recommended colored marking strip on glass doors

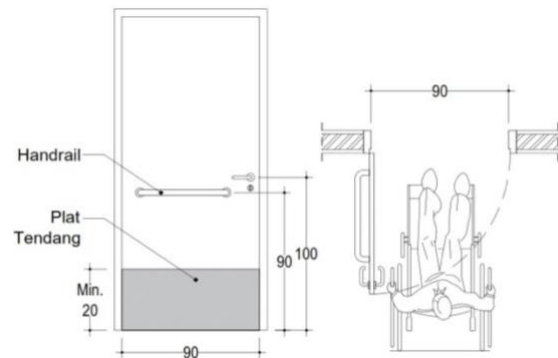


Figure 27: Recommended accessible toilet doors

b. Open Hallway

- 1) Provide a map of the area in the drop-off area or open lobby driveway.
- 2) Provide benches at the intersection of the open hallway and resting area should be protected from the weather.
- 3) Provide protective barriers such as curbs or railings on the edge of the hallway adjacent to the tactile paving or on both edges of the hallway.
- 4) Avoid the installation of facilities (trash cans, hand washing facilities, etc.) that can become obstructions and reduce the width of the circulation path.
- 5) Added information in Indonesian on the signboard on the circulation path.
- 6) Provide the same elevation on the open hallway and resting area.

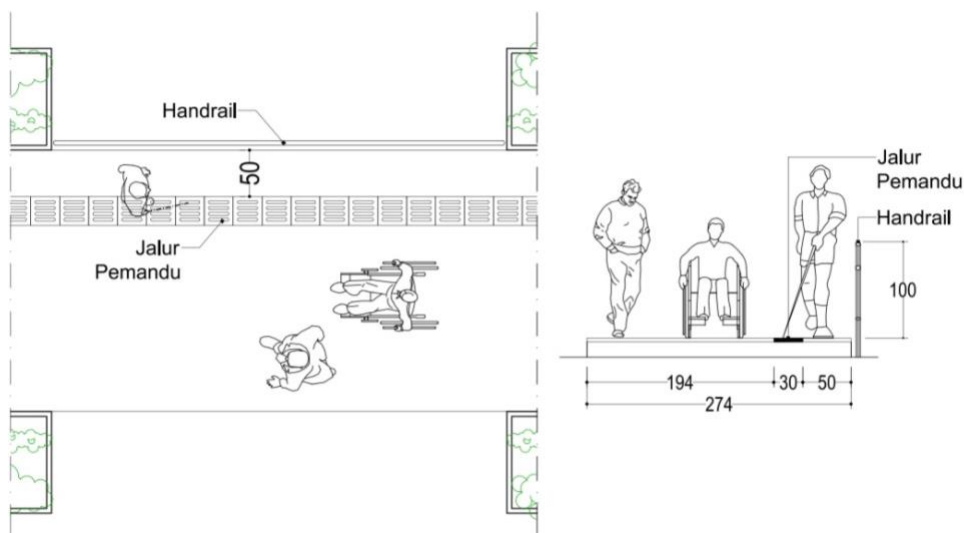


Figure 29: Protective barriers recommendation on the Open Hallway

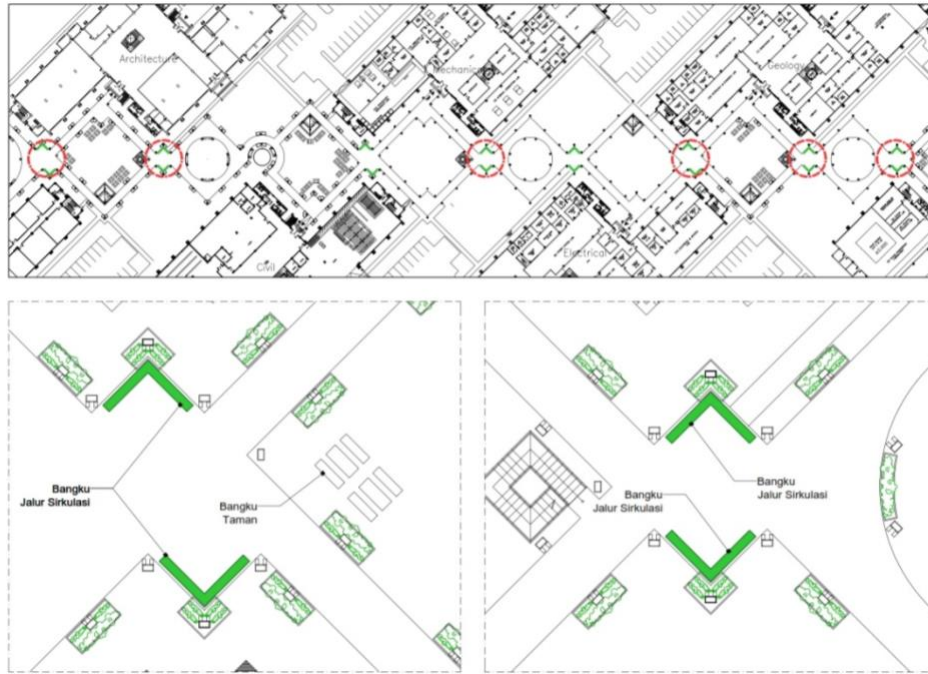


Figure 30: Resting bench at the intersection of open hallway

#### c. Corridors

- 1) Recommended to permanently protect all embossed projections on the wall such as columns.
- 2) Complete the nameplate of the room with Indonesian and braille letters. The position of the nameplate is recommended 140 cm from the floor.
- 3) The building floor map does not use reflective materials, adds information in Indonesian, and is installed 140 cm from the centerline of the map and the floor.

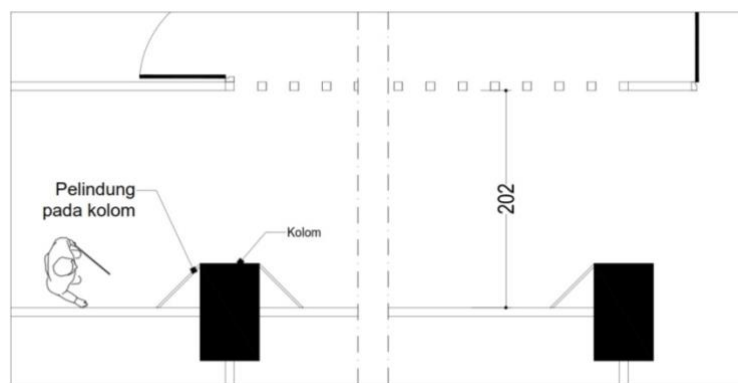


Figure 31: Recommended column protection in corridors

#### d. Tactile Pavings

- 1) Warning blocks are installed 30 cm in front of the building entrance, at the beginning and end of the stairs, and hazard area.
- 2) Tactile pavings at the elevator are directed to the panel in the lobby to ensure visually impaired users can find the button easily and avoid collisions with other users (NRCD, 2003).
- 3) Avoid installing warning blocks in front of elevator doors to avoid obstacles to wheelchair users (NRCD, 2003).
- 4) Changed the tactile paving design (Fig. 17) on the circular path of the open hallway to 90°
- 5) Removes textured surfaces and obstacles around the tactile paving.



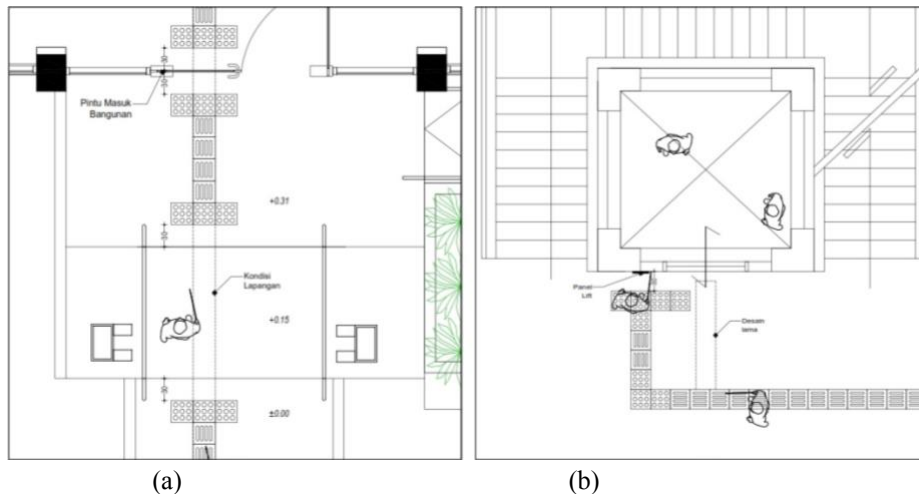


Figure 32: (a) Recommended tactile paving design at the entrances and (b) elevators

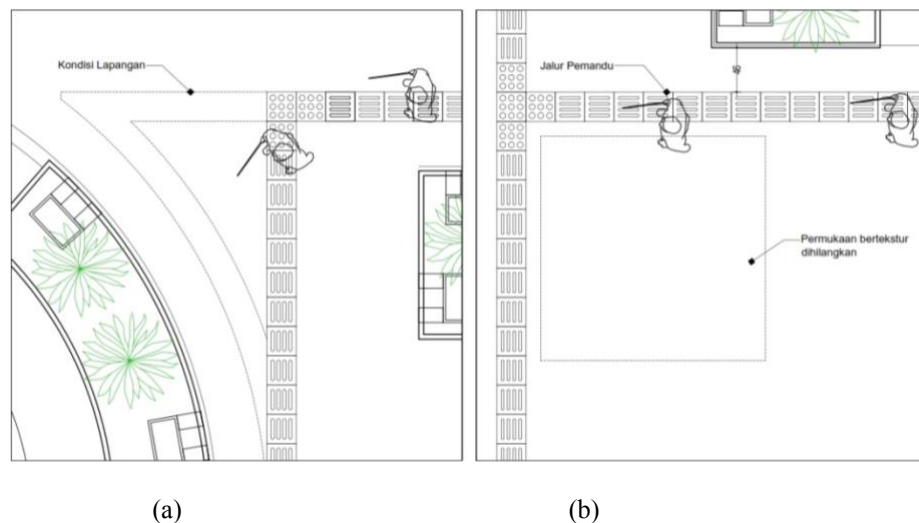


Figure 33: (a) Recommended tactile paving design at the circular path and (b) Open Hallway

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# Government Expenditure on Education and Its Impact on Access: A Narrative of the Czech Republic

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## Abstract

The paper presents a pictorial trend of the Czech government's educational expenditure on education as a percentage of the country's GDP from 1998 to 2017. It begins with a brief profile of the country and its educational system. Its primary concern is focused on the government's funding source of education; how much percentage of the GDP is spent on education; how much is spent on each student; how these funds are spent; which of the levels of education receives more funding; and how this funding affects educational access at all the levels of education in the country. In an attempt to achieve the research aim, the study employed descriptive statistics to examine and analyze the funding trends at the various levels of education and their impact on enrolments using secondary data from the UNESCO Institute Statistics website. The study reveals taxation from the public as the main source of funding for education; the decentralized system is used to fund education; and the average expenditure between 1998 and 2017 is 3.5% lower than the OECD average of 5%. The findings further reveal that the Czech government's gross expenditure on education as a whole increased steadily over the years, even though it has been below the average standard of 5% of the OECD for the period of study. The government spent more on secondary education than the other levels, and lastly, government funding on education has a significant impact on students' gross enrolment, especially at the secondary and tertiary levels.

**Keywords:** Government Expenditure, Secondary Education, Primary Education, Tertiary Education, Gross Domestic Product

## 1. Introduction

Education is viewed as the most significant investment by governments around the world in increasing economic growth, equity, and sustainability, as well as the overall change of communities (Nurudeen et al. 2020). Human capital is crucial to the global economic development and stability of nations (Topel, 1999). This human capital may be cultivated and developed by providing people with the essential skills and competence to ensure the success of these countries' labor markets (Nurudeen et al. 2020). Education is essential to a country's growth because it develops human capital for high-level science, technological, vocational, and management roles in both the public

and commercial sectors. In the Czech Republic, investing in education benefits both individuals and society as a whole. It boosts economic growth and development in order to meet the constitutional mandate of universal education. This is in line with the United Nations Sustainable Development Goals, which set a variety of goals. It ensures that all children, regardless of gender, have free access to a basic education of high quality. As a result, more relevant and effective learning feedback is provided, as well as gender balance in education and equitable access to all levels of school. People with disabilities, indigenous peoples, and young children in danger will all have access to vocational opportunities by 2030. (UNESCO, UIS Education Survey, 2017).

Governments around the world fund education to promote access and quality, and funding has been shown in studies to boost access and quality in education (Nurudeen et al. 2020; Dynarski & Scott-Clayton, 2013; Solis, 2017; Meneses & Blanco, 2010; Castleman & Long, 2016; Hossler, 2000 & Singell, 2004). The European Community's views on educational funding are consistent with what these researchers have stated. The European Community's policy recommendations also emphasized the importance of "efficiency" and "equity" in the provision of education (EC, 2006), but stressed that European countries must provide educational services while minimizing the amount of public money devoted to them, given the need to strictly control public budgets (European Commission Report, 2020). Surprisingly, the amount of public money committed to education varies greatly across EU countries, owing to their distinct characteristics and policy orientations in this area (Busemeyer, 2007; Wolf & Zohlhofer, 2009). The expenditure on basic and secondary education (up to the International Standard Classification of Education, level 3) reported by the OECD (across several years) varies greatly, ranging from roughly 2.5 percent of GDP (Greece) to more than 5 percent (Denmark). This problem enables certain countries to maintain their education expenditure efficiency, i.e., while others fail to achieve equal achievements in terms of education performance and a limited amount of expenditure. The educational systems are intended to deliver good results with the available resources given the amount of money spent on education (and determined by politicians). This paper, therefore, aims at examining evidence from data to see if school funding has any impact on educational outcomes (access) in the Czech Republic.

In an attempt to effectively examine the impact of government funding on educational access, the paper will present the profile of the Czech Republic, the educational system, the source of funding for education, how much is spent on education, how the funding is spent (centralized or decentralized), and how much is spent on each level of education.

This paper is arranged as follows: the first section will present the profile of the Czech Republic; the educational system; the source of funding for education; how the funding is spent (centralize or decentralize); how much is spent on each level of education; and the gross enrolment ratios of the educational levels. The second section will analyze the results from data on education funding trends and their impact on gross enrolment ratios. Lastly, the paper concludes by offering a discussion and a befitting conclusion.

### *1.1. The Czech Republic's Profile*

It was founded in 1993, when it was divided into what is currently known as the Federal Republic of Slovakia. Ever since the end of the First World War, the former Czechoslovakia joined the two countries. The Czechs and the Slovaks, united after the war, hoped that the Soviet Union would give them the freedom to choose their government and that the country would serve as a bridge between the West and the East. The Soviet-led Communist Party seized control by purging reform-led groups and setting up hardliner Antonin Novotny as the party's leader. These hopes have been short-lived.

Slovak-born Alexander Dubcek succeeded Novotny in 1968 as leader of the party and began a short period of economic, social, and political change. He was recognized for "giving a human face" to socialism. In one year, the Soviets and Warsaw Pact, which were threatened by the popularity of their reforms, invaded and deposed Dubcek. Czechoslovakia's reforms languished during the next decade. Continued efforts to boost Europe's once-leading economy have not succeeded.

Political reform re-emerged by the late 1970s. The Charter 77 was founded in 1977, and a group of human rights defenders started to work in Czechoslovakia to improve conditions. Economic reform efforts began to bear fruit again during this time. Exports have increased, debts in hard currencies have fallen, and the economy has grown steadily. New investment in the electronic, chemicals, and pharmaceutical industries was made, which by the mid-1980s became leading industries in Eastern Europe. At the end of the decade, efforts to alter policies were at the forefront. Following the termination of a nonviolent student demonstration with brutality by the State Police, the Civic Forum was formed to unify activists around the country. As its leader, Vaclav Havel came up. The Community Party all but collapsed in 1990 in Czechoslovakia until the conclusion of this year and the first free elections since 1946.

Although the Civic Forum was successful in ousting the communist regime, it was ineffective as a ruling party. Rival factions quickly arose, and federalists like Havel were unable to stem the tide of nation-splitting. Three years after the elections, the Czech Republic was created. The Czech Republic is a parliamentary democracy in which the President is elected by the legislature. Vaclav Klaus is the Czech Republic's current president, and Andrej Babi, a member of the ANO party, is the country's new prime minister. The Assembly of Deputies and the Senate are the two chambers of the parliament. The Czech Republic is divided into municipalities and 14 newly constituted regions, each of which has elected governors. Both are in charge of education. The Czech population is estimated to be 10.65 million people. Among Poles and Romanians, they are the most numerous ethnic minorities (Eurostat, 2019).

### *1.2. The education system*

The Czech education system offers education from pre-primary through university levels, as well as additional services, extracurricular activities, and school meals. Czech children must start school at the age of six and complete a minimum of nine years of basic education. Almost 90% of children aged 3 to 6 attend nursery schools, which are usually free. The first five years of elementary school are referred to as primary school, while the next four years are referred to as lower secondary school. Although the majority of children attend neighbourhood schools, the choice of school is unrestricted. After finishing compulsory education, pupils can attend one of three types of higher secondary institutions: gymnasiums, technical/professional schools, or vocational schools. More than 90% of students continue on to upper secondary school. Students apply to these schools, which determine their admission requirements. About 15% of students go to high school (pre-university curriculum), some 25% go to technical/professional school, and some 60% attend vocational school. A gym for younger children, in 5th or 7th grade, is a recent addition. Approximately 10% of younger pupils (from the sixth grade) go to these institutions. After passing subject-based tests offered and assessed by each school, students graduating from gymnasiums, technical/professional schools, and the longer, more academically oriented programs at vocational schools got a "maturite" certificate. Two compulsory subjects (Czech and a foreign language) and two optional topics (as determined by the school) are required. A vocational certificate is awarded to students who complete shorter vocational programs. A lot more students are taking part in programs that lead to a "maturite" now than they were a decade ago. Students with a "maturite" can go on to university, a technical school with professional training, or a higher vocational program after finishing upper secondary school. In the 1990s, higher vocational programs were established. Initially, they resulted in a terminal vocational certificate, but subsequent reforms have permitted students to transfer to a university and earn credit toward a university degree. Higher vocational programs replaced the short programs that technical schools used to offer to high school graduates who wanted to be more marketable. Higher education has been the most significantly transformed sector, with the establishment of autonomous institutions and the establishment of a non-university sector for vocational training. Enrolment in higher education has more than doubled since the 1990s, albeit remaining low by EU standards. In the Czech Republic, there are currently 62 higher education institutions, 26 of which are public and 36 of which are private. Higher education is free for students, but higher education institutions can charge individuals and businesses for courses. Private higher education institutions develop study programs that must be recognized by an independent Accreditation Commission. They have the authority to levy fees and impose restrictions. Bachelor, master, and doctorate degrees are awarded by both public and private higher education institutions. Candidates for a degree must pass national exams. Gymnasiums account for approximately 48% of those admitted to higher education institutions, upper

secondary technical schools account for 47%, and vocational schools account for 5%. Despite the expansion of slots in higher education, the industry will only meet around 60% of the demand for slots.

Students receive extensive technical training at professional institutions. The curriculum is developed by the school and is approved by the Ministry. Each school establishes its own admissions criteria and administers its own entrance examination. These programs lead to a specialized diploma. Students receive their diploma after passing an exam that includes both a practical and theoretical component. These tests are created by schools and then approved by the Ministry. As previously stated, since 1998, these diplomas can be applied toward a bachelor's degree if a student wishes to transfer to or move onto a university.

### *1.3. Governance of the Educational System*

The Ministry of Education determines the educational content for the primary and high school systems (called framework education programs). Curricula that adhere to these frameworks are chosen by schools. During the 2006/07 school year, new frameworks are being developed and deployed. Until then, schools select curricula from a list approved by the Ministry and adhere to the 1995 education standards. Schools already have a lot of flexibility in how they structure their curriculum and educate students. The Ministry also includes the Czech School Inspectorate, which is in charge of inspecting schools and school infrastructure, educational accomplishments, and financial management. Municipalities are in charge of nursery schools and primary schools (grades 1–9), while regions are in charge of secondary and vocational education. Education commissions or school boards are formed by municipalities. School principals are appointed by regional authorities and local school boards. Since 2001, higher education institutions have been autonomous. An impartial Accreditation Commission accredits higher education programs. Schools have the authority to employ and fire teachers, to adopt curricula, and to manage their finances. Every school is expected to organize a school council to assist the principal in managing the school. Compulsory schools choose from a list of Ministry-approved curricula. They are allowed to utilize any school organization and teaching practices they like. Schools choose or construct curricula for the upper secondary level, which must be approved by the Ministry. For the first time, the changes enabled the establishment of private schools. While some have been established, they constitute only a small percentage of the schools.

### *1.4. Education Funding*

Education and funding in the Czech Republic are decentralized. Different degrees of education are overseen by two levels of local government. Municipalities (obec) control and fund elementary schools, whereas regions (kraj) govern and fund secondary schools. Local governments are divided into two levels. The Czech Republic is divided into 14 regions, including the capital city of Prague. The remaining areas have an average population of 714 thousand, ranging from 300 thousand in the Karlovy Vary region to 1.32 million in the Central Bohemian region (the region surrounding the capital city, with offices in Prague). Thus, regions have very large local governments, and their networks of secondary schools, both general academic and vocational, are correspondingly extensive. There is more than enough space for school profiles, improving coordination and enhancing school efficiency (such as maintaining large class sizes). Regions' education duties are complicated, requiring careful strategic planning and control of a wide range of institutions. Aside from sponsoring secondary schools, regions are also responsible for distributing education grants to all towns within their area. In comparison, there are 625 municipalities, one of which is Prague. The average size of a Czech municipality (excluding Prague) is 1484 inhabitants, with over 70% of municipalities having fewer than a thousand residents. As a result, many localities do not manage a single elementary school, and the majority have only one. As a result, in many circumstances, efficiency is less essential to the municipality than the school's survival, and attempts are made to keep it open despite small classrooms. Municipal education obligations are thus often reduced to overseeing and subsidizing a single school, with the primary goal of guaranteeing its continued functioning. Prague is, of course, an exception, as are capital cities throughout Central Europe. It manages and finances both elementary and secondary schools. Also, it is split up into many different municipal districts, each of which has its own set of educational responsibilities.

### *1.5. The main funding sources for Czech schools*

In the Czech Republic, education funding is decentralized. Education is funded by public sources like taxes, local charges, and equalization funds at both the central (state) and municipal levels. Taxation is the primary source of funding for education in the Czech Republic, and the form of tax used is Value Added Tax (VAT). This tax is typically levied at a rate of 21% on deliveries of goods and services within the Czech Republic. Certain supplies (for example, foodstuffs and building work related to social housing) are taxed at a rate of 15%, with a second reduced rate of 10% applied to certain kinds of commodities (some medicaments, books, newspapers, and also supplies of heat and cold). In terms of tax-to-GDP ratio, the Czech Republic ranked 17th out of 37 OECD countries in 2019. In 2019, the Czech Republic's tax-to-GDP ratio was 34.9 percent, compared to the OECD average of 33.8 percent. In terms of tax-to-GDP ratio, the Czech Republic was ranked 17th out of 37 OECD nations in 2018. (OECD Report, 2019). This suggests that the country's educational system is supported by taxation. At the primary, secondary, and post-secondary non-university levels, public funding accounts for approximately 91 percent of total spending, and 73 percent at the tertiary level. All recurring (non-investment) education expenditures of Czech schools and educational institutions are separated into two categories: "direct costs" (the central component) and "operational costs" (local component). Direct costs are provided by the central (state) budget, whereas operating costs are handled by local budgets. The direct costs that are regulated by the state are covered by a central grant. These largely comprise teacher and other staff salaries; textbooks; teaching aids; further professional development for teachers, and other labor-related expenses. The funds for the central component are divided into per-student normative amounts and distributed to regions via education grants. In this approach, the state assumes responsibility for the financing of those educational functions that are centralized, such as teaching and textbooks. Thus, if the state decides to boost teacher wages or expand the curriculum, it will raise the national normative amounts sufficiently to compensate local governments for the extra costs. The second, local component includes school operations costs. These are education expenses that cannot be regulated financially since they are determined by a variety of circumstances, including local input pricing. This component covers school maintenance, energy expenses (heating, electricity, gas), communal services (water provision, rubbish disposal), and minor repairs. Regional and municipal general funds, including shared taxes, local fees, and equalization grants, are used to fund school operational costs. These revenues are expected to climb in tandem with inflation, which is the primary factor driving the increase in operational costs.

## **2. Method**

The descriptive statistics approach was used to collect secondary data on the Czech government's annual education expenditure as a percentage of GDP, annual expenditure per student, and gross enrolment ratios at the primary, secondary, and university levels of education. The data on yearly government expenditure on education and the gross enrolment ratio for primary and secondary schools were obtained from the UNESCO Institute Statistics website, while the gross enrolment ratios for universities were obtained from the World Bank/ World Development Indicators website. Secondary data was taken from these websites and entered into an excel spread sheet. It was then sorted and categorized in tables under headings, and graphs were created to visually examine and evaluate patterns in these graphs.

## **3. Results**

### *3.1. Government Expenditure on Education as a percentage of GDP*

The total public expenditure on education relative to GDP for all the levels in the Czech Republic was in 1998 – 3.05% of GDP; in 1999 – 3.18% of GDP and in 2000 – 3.17% of GDP (UNESCO Statistic report). Public expenditure on education gradually rose but not on a large margin after 1998 to 2017. The government expenditure by each level of education can be seen in table 1. Expenditure on educational institutions in the Czech Republic is lower than on average across the Organization for Economic Co-operation and Development (OECD, 2019). Total (public and private) expenditure on primary to tertiary education as a percentage of gross domestic products (GDP) was 3.5% in 2016, well below the OECD average of 5.0%. The small marginal increase in educational funding seemed to be caused by factors similar to the exchange rate crisis in May 1997, the “government packages” in

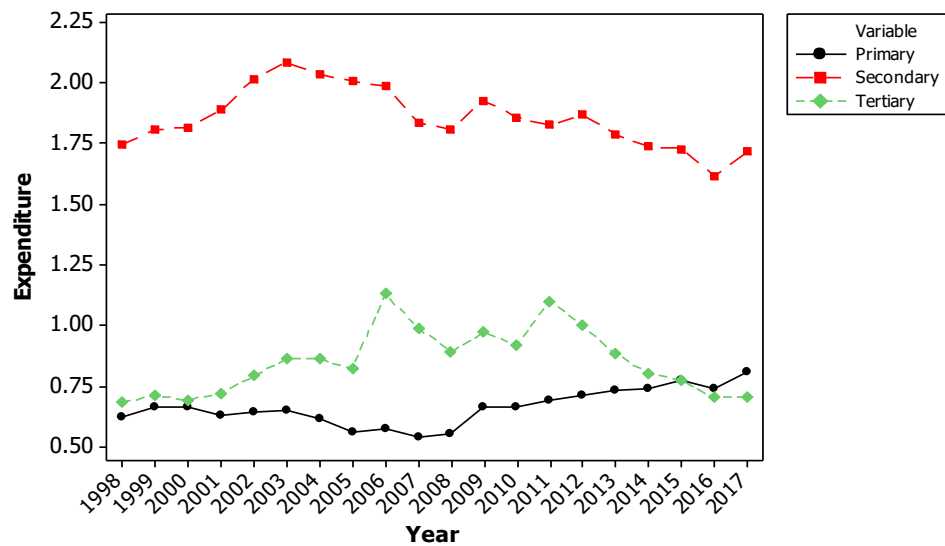
spring 1997, which were aimed at maintaining the balanced government budget and thus introducing radical budget cuts, had negative effects on the education budget as well. The table further shows that total spending across all levels of education has fluctuated significantly in the Czech Republic between 2005 and 2016. While total spending on primary, secondary educational institutions increased steadily during this period, total expenditure on tertiary institutions increased between 2005 and 2011 but then started falling. Expenditure between 2011 and 2016 decreased more quickly than student numbers resulting in a decrease in spending per student at the tertiary level during this period.

The Governmental long-term strategic document – White Book (2001) - sets the aim of raising public expenditure on education to 6% of GDP. Even though we could observe (see Table 1 and Figure 1) a positive trend of rising expenditure from 1998, the target of 6% of GDP is still beyond the present reach.

Table 1: Government expenditure on education as a percentage of GDP

	Primary	Secondary	Tertiary
Year			
1998	0.62	1.75	0.68
1999	0.66	1.81	0.71
2000	0.66	1.82	0.69
2001	0.63	1.89	0.72
2002	0.64	2.02	0.79
2003	0.65	2.09	0.86
2004	0.61	2.04	0.86
2005	0.56	2.01	0.82
2006	0.57	1.99	1.13
2007	0.54	1.84	0.99
2008	0.55	1.81	0.89
2009	0.66	1.93	0.97
2010	0.66	1.86	0.92
2011	0.69	1.83	1.1
2012	0.71	1.87	1
2013	0.73	1.79	0.88
2014	0.74	1.74	0.8
2015	0.77	1.73	0.77
2016	0.74	1.62	0.7
2017	0.81	1.72	0.7





**Government expenditure on education as a percentage of GDP**

Figure 1: The total public expenditure on education relative to GDP by levels (primary, secondary, and tertiary) in the Czech Republic from 1998 till 2017

Figure 1 shows that secondary education receives more funding than the primary and university levels. For instance, the expenditure relative to GDP at the secondary level in 1998 was 1.75%. The primary and tertiary were 0.62 and 0.68 respectively. The trend shows that from 1998 to 2017, funding for the secondary level exceeded all the levels, which is well shown in the figure above. The figure further demonstrates that from 1998 to 2015, the university level has been getting more funding than the primary level. It was only in 2016 and 2017 that funding for primary education was more than for university education. The revealed trends show that the Czech government attaches more importance to the secondary level of education than the primary level. This may be because secondary education serves as a transition into the higher level of education and the labor needs of the economy. The government, therefore, invests more money into secondary and university education to increase access and quality to produce graduates who will be better fitted into the various sectors of the economy. The low funding at the primary level could also be a result of lower revenues obtained at the municipal levels and the increase in the operational costs due to the rise in inflation. The two levels of local government are very different. Having seen the government expenditure on education from the gross domestic product, it will be beneficial to know how much is spent on each student at the various levels of education.

### 3.2. The educational expenditure per student by the level of education

The government expenditure per student by level in each year in the Czech Republic was below the OECD average in 2016 for all three levels of education. The largest gap was at the tertiary level, where spending per student was USD 7 6121 compared to USD 10 502 on average for OECD countries. Table 2 and Figure 2 present the educational expenditure per student by the level of education. In OECD countries, overall expenditure per student on educational institutions from primary to tertiary levels averages 26% of per capita GDP, broken down into 22% at the primary level, 25% at the lower secondary level, 26% at the upper secondary level, and 39% at the tertiary level. Evidence from data suggests that the expenditure per student in Czech over the years has been lower than OECD standards, with the expenditure per student for primary education being lower than both the secondary and tertiary levels. In 1998, the expenditure per student at the primary educational level was 9.66. It increased to 15.05 in 2009. However, the expenditure marginally declined to 14.87 in 2017. Secondary education spending increased steadily from 18.87 in 1998 to 23.49 in 2017. The expenditure per student at the tertiary level saw a decline from 32.57 in 1998 to 24.82 in 2006. The year 2007 recorded the highest expenditure per student at 34.1 for the tertiary level. This declined to 21.64 in 2017.

Table 2: Educational Expenditure per student by level of education

	Primary	Secondary	Tertiary
1998	9.66	18.87	32.57
1999	10.38	20.1	31.3
2000	10.56	19.45	28.01
2001	10.18	19.17	28.48
2002	10.79	20.6	28.12
2003	11.69	21.3	30.49
2004	11.63	21.13	27.61
2005	11.47	20.9	24.82
2006	12.38	21.1	34.1
2007	11.95	20.2	27.96
2008	12.43	20.8	23.49
2009	15.05	23.27	24.27
2010	14.86	23.27	21.94
2011	15.41	23.84	25.92
2012	15.7	24.15	24.25
2013	15.34	23.74	21.76
2014	15.11	23.54	20.5
2015	14.95	23.67	20.99
2016	13.87	22.3	20.34
2017	14.87	23.49	21.64

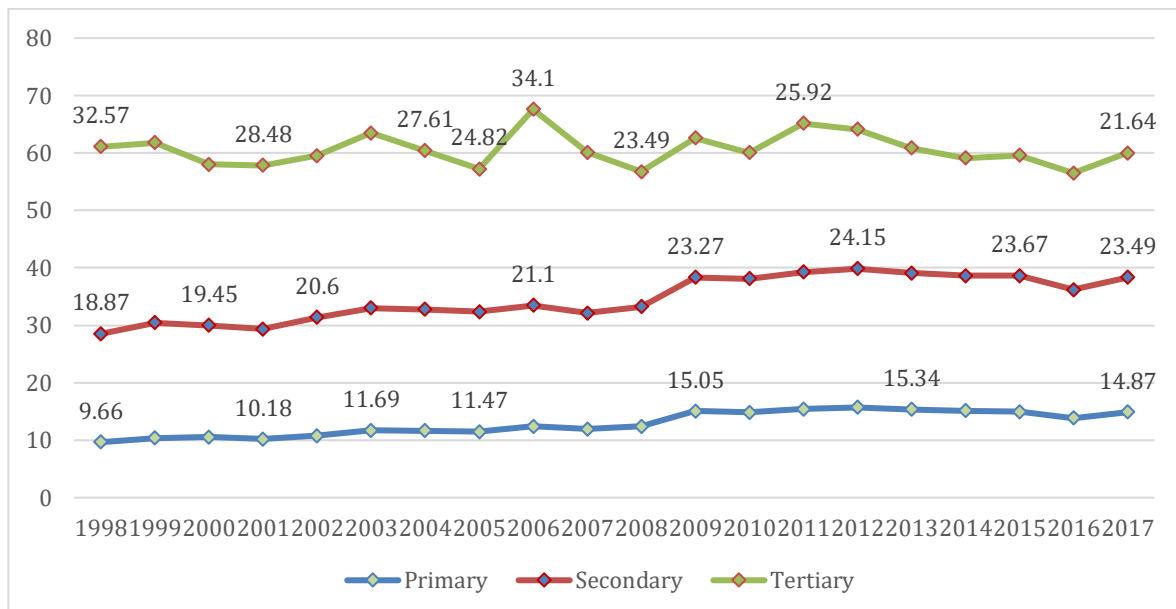


Figure 2: Educational expenditure per student by levels

Table 3: Gross Enrollment ratios by educational level

Year	Primary Enrollment	Secondary Enrollment	Tertiary
1998	103.09	82.16	23.7
1999	103.03	82.96	25.5
2000	103.34	88.32	28.3
2001	103.42	94.81	30
2002	101.55	95.5	34.4
2003	99.03	96.49	37
2004	98.6	95.44	43.7
2005	99.21	95.67	48.3
2006	100	96.04	50.1
2007	103.19	94.96	54.2
2008	105.73	94.15	58.1
2009	105.97	93.85	61.1
2010	103.8	94.66	63.9
2011	100.76	95.8	65.6
2012	99.37	96.79	65.7
2013	98.74	104	65.1
2014	98.67	104.7	65.6
2015	99.52	105.09	64.5
2016	100.21	104.63	63.7
2017	100.67	103.49	64.1
2018	100.51	102.3	63.8

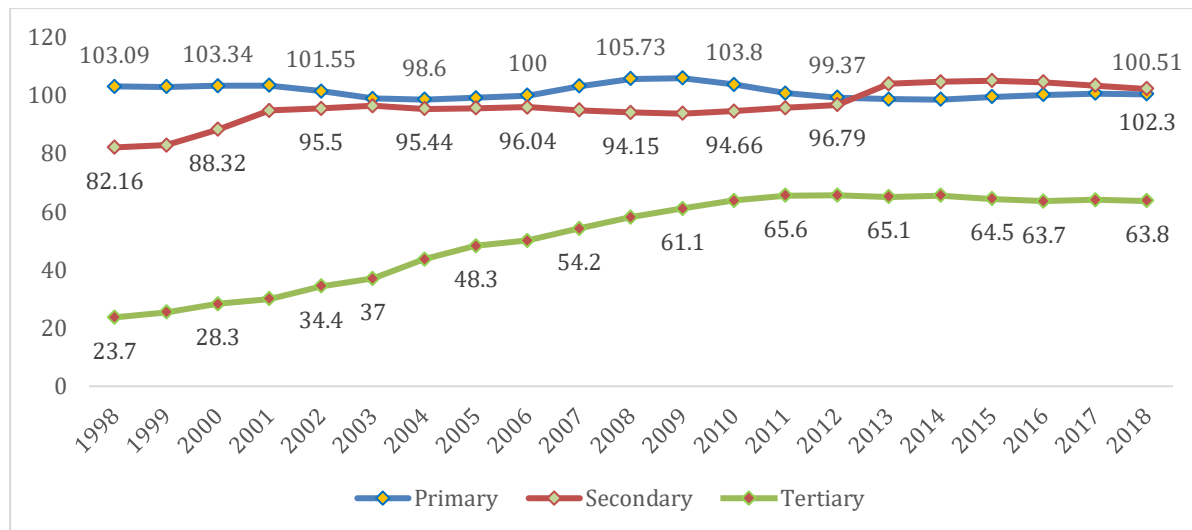


Figure 3: Gross Enrollment ratios by educational level

Figure 3 presents the gross enrolment ratios by levels of education. There has been a substantial increase in the gross enrolment ratios for the tertiary level from 23.7 in 1998 to 65.6 in 2011. Table 3 shows the gross enrolment ratios for each level. There has, however, been a slight decline in the tertiary level gross enrolment from 65.7 in 2012 to 63.8 in 2018. The annual gross enrolment ratio for secondary school has risen from 82.16 in 1998 to 95.5 in 2002. There has since been a gradual increase of 5.8% in the secondary level annual gross enrolment, from 96.04 in 2007 to 102.3 in 2018. For the primary level, no significant increases were observed over the years. The gross enrolment ratio was 103.09 in 1998, and it increased marginally to 105.73 in 2008. further reduced by 4.9% from 2008 to 2018.

#### 4. Discussion

Taking into consideration the clear evidence from the results indicated above, we can logically conclude that the government of the Czech decentralized funding system for education, even though its expenditure on education falls below an average of 5% of the OECD standard across all the years from 1998 to 2017, had a significant impact on enrolment of both boys and girls at the secondary and tertiary levels of education. This corresponds with the conclusion of earlier empirical research carried out by Dynarski & Scott-Clayton, 2013; Solis, 2017; Meneses & Blanco, 2010; Castleman & Long, 2016; Hossler, 2000 & Singell, 2004). The research paper, therefore, recommends that the Czech government should find other sources of revenue to increase the country's gross domestic product so that a larger percentage of the GDP could be used to fund all the levels of education to achieve a high gross enrolment ratio at the primary, secondary, and tertiary levels and achieve the country's aim of raising public expenditure on education to 6% of GDP.

With regards to the primary level, no significant increases were observed over the years. The gross enrolment ratio was 103.09 in 1998, which marginally increased to 105.73 in 2008. It was further reduced by 4.9% from 2008 to 2018. The decrease in enrolment ratios from 2008 to 2018 could be attributed to the evidence shown in the data that the primary level receives fewer funds over the year as compared to the secondary and the university level.

#### 5. Conclusion

The paper examines the trends in the Czech Republic's government expenditure on education from the years 1998 to 2017 and its impact on gross enrolment by educational level for the period under study. The paper reveals the decentralized system is used to fund education in the country where the central government takes the direct cost by giving grants and the regional government pays for the operational cost of education. The value-added tax policy is used to draw taxes from the public, which forms a percentage of the total expenditure on education for the operational cost. The findings further reveal that the Czech government's gross expenditure on education as a whole increased steadily over the years, even though it has been below the average standard of 5% of the OECD

for the period of study. There has been a decline in expenditure at some of the levels. For instance, there was a decline in the expenditure at the tertiary level from 32.57 in 1998 to 24.82 in 2006, which further declined from 2007 to 2017. Surprisingly, the decrease in tertiary expenditure had no significant impact on gross enrolment ratios during this time period. Funding at the secondary and tertiary levels has been higher from 1998 to 2017, which translated to a marginal increase in the expenditure per student at the secondary and tertiary levels, which further translated to an increase in the enrolment ratios at these levels. As a whole, the secondary level has received more funding over the years than the other levels of education in the Czech Republic.

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# The Impact of Online Learning Process During the Covid 19 Pandemic: Possibly Leading to Learning Loss?

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## Abstract

The COVID-19 pandemic has a risk of causing a learning loss in the education sector. If this condition continues, it may lead to the declining in the ability and the quality of students. This research aims to evaluate the risk of learning loss for Medical students in online learning process during the COVID-19 pandemic. This research is a quantitative-descriptive research with a total sampling of 172 students from Medical Program. The primary data is obtained by filling out a questionnaire through a validated Google form. The results of the research show that there is a decrease in the student's understanding during the problem based learning activities as much as 29.6%. The Clinical skill lab activities are decreased by 62.8%. The change from offline learning to online learning has caused the decrease in these activities that resulting in an ineffective learning, thus leading to the risk of learning loss. If the condition continues, learning loss may occur as a result of online learning during the Covid 19 pandemic.

**Keywords:** Learning Loss, Covid 19, Online Learning

## 1. Introduction

Medical learning consists of theoretical abilities and clinical skills, which the theoretical abilities are applied by using a problem-based learning (PBL) approach that stimulates interest and critical thinking (Sari et al., 2016). After PBL activity in small groups, the final activity is plenary discussion to evaluate the understanding of PBL process. The Clinical skill lab (CSL) is a learning concept through problems from various integrated disciplines concerning cases found in health services through simulation scenarios, which will eventually be tested as an Objective-structured Clinical Examination (OSCE) competency test (Anas & Utama, 2021). The required competencies that must be achieved by medical students become the biggest challenges during online learning, which it depends and is closely related to the instructor's experience in teaching, interaction, technical resources, and infrastructure. Hence, the barriers in technology, finance, institutions, educators, and students are very important in determining the success or the failure of the online learning implementation in medical education (Al-Balas et al., 2020).

The long-existing obstacles in learning process will lead to a state of learning loss (Kaffenberger, 2021). Learning loss can be defined as the ineffectiveness of learning process which resulting in the loss of specific and general knowledge as well as skills, a decline in academic achievement, and most often due to an extended gap or discontinuity in education (Li et al., 2020; The Glossary of Educational Reform, 2013). Several factors affecting learning loss are including cognitive development and abilities, which the beginners or the younger classes are more pronely affected due to the inability to learn independently, the personal profiles such as parents' education and occupation, the location of residence, and the school proportion of indigenous students (Donnelly & Patrinos, 2021).

Ineffectiveness in the learning process will result in the lack of knowledge and skills, thus if it lasts for a long time, it will bring an impact toward the competencies and the quality of the developing human resources during the COVID-19 pandemic (Andriani et al., 2021; Assiddiqi & Soeryanto, 2021; Engzell et al., 2021; Zakharova et al., 2021). Online learning requires a focus on developing, providing teaching materials, content, and the role of education as a mediator, facilitator, and motivator, thus learning activities can run optimally (Kurniawan & Budiyo, 2021). Based on the explanation above, the authors are interested in raising this issue as a research material, especially regarding the risk depiction of learning loss on students of PSKd FKK UMJ in online learning during the COVID-19 pandemic.

## **2. Method**

The type of this research is descriptive-quantitative. This research was conducted at the Faculty of Medicine, Universitas Muhammadiyah Jakarta, in June - December 2021. We compare students opinion about the process of problem based learning and Clinical Skills Lab activities before and during the Covid 19 pandemic. Before pandemic Covid 19, student learn PBL and CSL by face-to-face method (offline), but during the pandemic, the whole process swich to online. The instrument using a questionnaire on learning loss, which previously had been tested for its validity and reliability, as well as scoring by using a Likert scale 1-3. To evaluate the PBL process, we ask about student understanding of plenary discussion, student ability to analyze skills and the quality of discussion. To evaluate the skills lab process, we ask about the facilities, and student understanding about skills procedure. The respondents of this research are students of PSKd FKK UMJ class 2018 and 2019 with a total of 172 students. This research has obtained a research ethics approval with the number 216/PE/KE/FKK-UMJ/X/2021.

## **3. Results**

The questionnaire on the risk of learning loss, which is filled out by the research respondents, compares the offline and online learning conditions in lectures, problem based learning, and CSL activities.

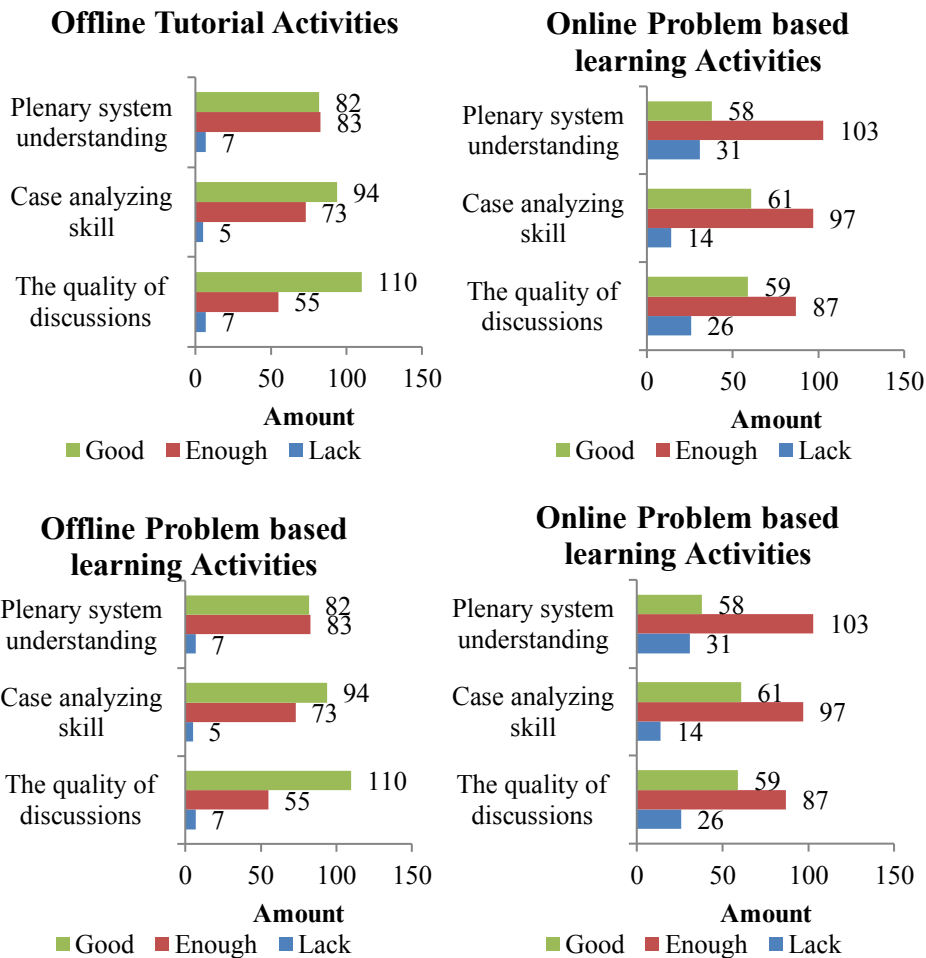
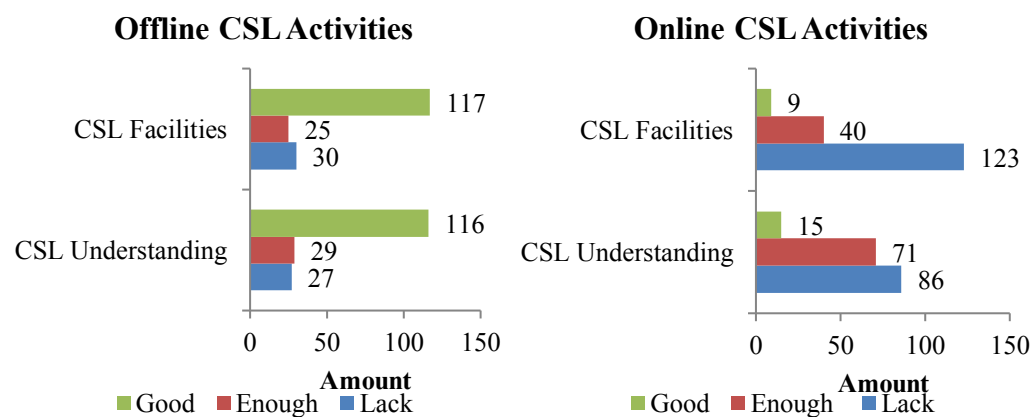


Figure 1: The risk of learning loss in Problem based learning Activities

Figure 1 shows that in offline learning, students are able to follow the problem based learning activities well, the quality of discussions is classified as good (64%), able to analyze cases well (54.7%), and able to understand the plenary well (47.7%). However during online learning, the discussion quality is decreased by 29.6%, the plenary understanding by 25.6%, and the ability to analyze cases by 19.2%.





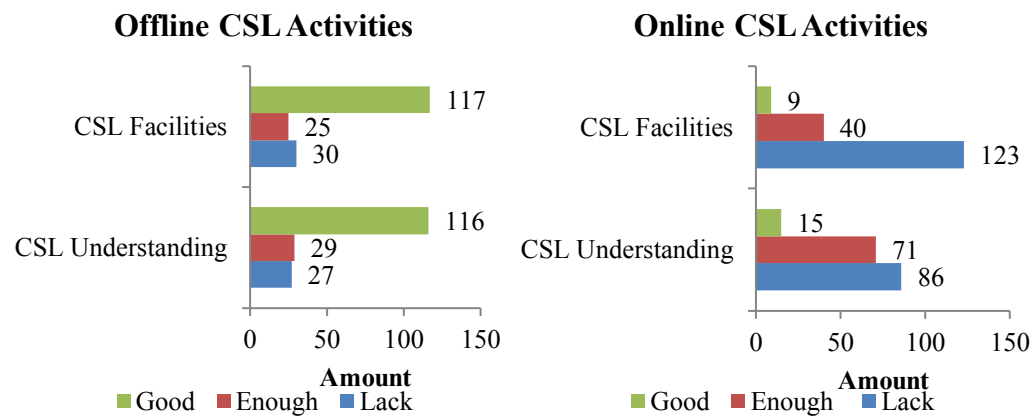


Figure 2: The risk of learning loss in Clinical Skill lab activities

Figure 2. shows that during offline learning, students are able to understand CSL well (67.4%), however as they conduct the online learning, there is a decrease in CSL understanding as much as 58.7%. Furthermore, the students feel that the CSL facilities in offline learning are good (68%), yet in online learning, it is decreased up to 62.8%.

#### 4. Discussion

Based on the results of this research, medical students of FKK UMJ feel that the problem based learning activities including the quality of discussions, the ability to analyze cases, and the understanding of plenary discussion, have been decreased. This can be seen from the change in scores between offline and online learnings, from the majority choosing 'good' to be 'lack'. The problem based learning discussions itself is usually conducted online of which students can turn off the camera or microphone and then leave it to do other activities until they go to sleep, or may open it if they want to participate more (Alawamleh & Al-twait, 2020; Rondonuwu et al., 2021).

The decrease in student responses regarding this problem based learning activity can be caused by internal factors from students themselves whom lack of curiosity, little prior knowledge, lack of critical thinking, bad mood, lack of confidence, and poor time management, as well as external factors such as confusing scenarios, predictable scenarios, undeveloped scenarios from prior knowledge, personality of tutors and group members, busy schedules, low motivation of group members, problem based learning assessments, and uninteresting case discussions (Zaluchu, 2017).

According to the research by Izza et al. (2019), problem based learning discussions are related to the student academic achievement, which means that the higher the problem based learning discussion activity, the higher the student's final grade achievement (Izza et al., 2019). Tutors who guide the discussion well will also produce a good quality of learning (Alawamleh & Al-twait, 2020).

Based on the student responses, offline learning is considered as more effective than online learning because in offline learning, there are more interactions and discussions between tutors and students, thus the communication runs smoothly and the learning atmosphere is conducive (Mitasari et al., 2021). However actually, the ability to discuss and analyze cases in problem based learnings during the COVID-19 pandemic can be maximized. According to Ali Ghufron in Haryati & Sukarno's research (2021), it can be accomplished by applying "4C", referring to the critical thinking by getting used to discussing and reading continuously, creativity by finding and developing new and existing ideas, communication to avoid misunderstandings, and collaboration by cooperating with groups, universities, lecturers, and students.

In the plenary discussion as the final problem based learning meeting activity in a large class that concludes the problem from the discussion of each problem based learning case, students also receive a lot of guidance from experts on the cases they discussed from the previous small group problem based learning. Problem based learning

activities that based on the problem-based learning are very important in Medical Education to train the critical thinking skills of the students (Sari et al., 2016).

The research conducted by Rayhana & Alwi (2021) on the students of FKK UMJ class 2018 discovers that the value of problem based learning activities in offline and online learnings shows differences, which the value of the Tropical Medicine System offline problem based learning is better than the Urogenital System online problem based learning. This finding supports the results of this research that online learning give an effect toward the problem based learning activities. Offline learning is superior as it increases curiosity, the sources of supporting reading materials are available in the library, the tutors directly supervise the implementation of problem based learnings, and the presentation materials are already provided directly through flip charts that make students more prepared, rather than through PowerPoint by reading notes during online learning (Rayhana & Alwi, 2021).

Hence, it can be concluded that the problem based learning activities during online learning including the quality of discussions, the ability to analyze cases, and the understanding of plenary system, experience a decline compared to the offline learning which is at risk of learning loss marked by the decrease in the value of the problem based learning.

Based on the data obtained from the questionnaire, it is found that the CSL activities of students from FKK UMJ, including the understanding of CSL materials and the CSL facilities, during online learning indicate a lack of value compared to offline learning. CSL training activities during the COVID-19 pandemic are carried out through video, yet this is less effective, thus students have no enough understanding since they only imagine or use available tools only compared to the direct interaction with friends or lecturers (Rodonuwu et al., 2021). Moreover, the instructor cannot directly assess or see the skill's lab taught to the students based on psychomotoric skills. Hence, if it is not practiced directly, these skills will not develop (Sukraandini & Candrawati, 2021).

The research conducted by Fithriyah et al. (2021) on medical students of UNISMA discovers that the level of student readiness for CSL activities is low. This is for the reason that CSL activities require facilities, special tools, as well as valid and reliable interactions, thus online learning makes it difficult for students to reach the unconscious competent phase (Anas & Utama, 2021).

Clinical skills that must be achieved by students require optimal training during education, both in terms of quantity and quality (Hardisman & Yulistini, 2013). However, due to the COVID-19 pandemic, all CSL activities are held online due to the policy in preventing the spread of COVID-19. This makes students have to optimize their abilities with the online learning implementation (Anas & Utama, 2021). Pre-recorded teaching videos can be an alternative to online learning since students can repeat the video if they do not understand the skills conveyed (Nastiti et al., 2020). In line with the research of Waluyo & Solikah (2021), the use of pre-recorded teaching videos in CSL during online learning is more effective than using modules only. This is because media in the form of video is more motivating than in the form of visuals only.

The use of teaching videos is one alternative that proven to be quite effective in online learning, however a combination with blended learning may be needed to produce a good performance (Anas & Utama, 2021). The risk of learning loss during the COVID-19 pandemic is the impact of long delays in the learning process (Pratiwi, 2021). Online learning that has been going on for a long time brings an impact toward the students, including their ability and productivity (Argahani, 2020).

As conclusion, there is a decrease in the student's understanding regarding the learning materials in the problem based learning activities and the clinical skill lab activities. If this occurs continuously, it may lead to the risk of learning loss. This study gives important information about the impact of Covid 19 pandemic on educational sectors.

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# Gender and Socio-Economic Background Aspect of Inclusion: A Perspective from Turkey

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## Abstract

This study aims to identify the opinions of teachers about the inclusive education policies and practices regarding the gender and socio-economic backgrounds of students. Phenomenology, as a qualitative research method was used in this study and eighteen teachers selected by criterion sampling technique constituted the sample of this study. The data of the study were collected with semi-structured interview forms and analyzed with content analysis method. As a result of the study, it was identified that although there have been tremendous improvements in ensuring the access of female students and students from disadvantaged socio-economic backgrounds in the education system, it is revealed that educational inequalities and injustices continue to exist and several female students and students from disadvantaged socio-economic backgrounds are excluded from education system due to several reasons in Turkey. In that regard, it is suggested that the policies and practices towards inclusive education should shift towards an improvement in education system with the aim of increasing inclusion, justice, equity and diversity in all spheres of educational life.

**Keywords:** Gender, Socio-Economic Background, Inclusion, Inclusive Education

## 1. Introduction

### 1.1 Introduce the Problem

It is already known that education has been one of the most important determinants of the social life and maintained its role to affect one's social position for a long time. Accordingly, demands for access to quality education, as a universal right, have been claimed by millions of people all around the world. It is fortunate that there has been a significant progress in that respect and the number of students who are excluded from the education system has decreased to some extent recently. With the initiatives of various international agencies such as the World Bank, the United Nations (UN) and the United Nations Educational, Scientific and Cultural Organization (UNESCO), the education was reaffirmed as a fundamental right and regarded as "one of the key

strategies to address issues of marginalization and exclusion” ( Peters 2003: 1) Nevertheless, the data of UIS (2019) indicate that there has been a deceleration in the inclusion of students recently and around 258 million students were excluded from the education system in 2018. While around 121 million of these students were at the primary and secondary school age; 138 million of them were at high school age. In that respect, it is important to note that the number of students who are excluded from the education system increases as they progress towards higher education levels and this constitutes one of the most important barrier to equality and justice in education. According to Ergün and Arık (2020:9), some social groups may experience various challenges in their access to education or in their full and effective participation in education processes. Of these groups, female students and students from low socio-economic backgrounds have been identified as two important vulnerable groups. In fact, it is revealed that two thirds of one billion people worldwide who have had no schooling or left school after less than four years are women and girls (Unterhalter, 2010: 2) Similarly, it is found that the students from higher socioeconomic status are more likely to attend and progress higher education compared to their peers from lower socio-economic status ( Bellibaş, 2015; Perry and McConney, 2010). Accordingly, the inclusion of female students and students from lower socio-economic status and inclusive education policies and practices towards these two groups have been a global concern all around the world.

Regarding the researches carried out in the literature regarding the inclusion of female students and students from disadvantaged socioeconomic condition in Turkey, it reveals that in parallel to the general tendency to associate inclusion with the concept of integration of students with disabilities into mainstream schooling, most of the researches on inclusion focused on the integration of students with certain disabilities (Acarlar, 2013; Erkılıç and Durak, 2013; Kutay, 2018). However, it must be noted that the number of studies related to inclusion of other disadvantaged groups (Demirel Kaya 2019; ERI 2017; Şimşek 2019) and examining the curriculum and textbooks within the perspective of inclusion (Çayır 2015; Ergün 2017; İnce 2012; Şimşek, Dağistan, Şahin, Koçyiğit, Dağistan Yalçinkaya, Kart and Dağdelen 2019; Koçyiğit and Şimşek 2019) has increased to some extent recently. Nevertheless, it is found that female students and students from low socio-economic backgrounds, as two vulnerable groups in education system, are mostly examined within the perspective of equality of opportunity and access to education (Çolak, 2020; Şahin, 2019; Yaşar, 2014;) and are not taken into consideration within the perspective of inclusion.

With all these in mind, I aimed to identify the opinions of teachers about the inclusive education policies and practices towards the female students and students from disadvantaged socio-economic backgrounds in this study. In that regard, I attempted to bring the issue of inclusion of these two vulnerable groups into question with a focus on the issues of social justice, equality and human rights as these are also the mission of Education for All (EFA) and of inclusive education (Polat, 2011). Accordingly, this research is expected to make a valuable contribution to the literature about both the theory and the practice of inclusive education in Turkey.

### *1.2 Inclusive Education*

Inclusive education is a global movement emerging as a response to the exclusion of students who are considered different due to their disabilities, colors, ethnic origins, genders, low socio-economic backgrounds by educational systems (Waitoller and Artiles 2013). Accordingly, what the inclusive education is and who it covers have been an important matter of debate from 1970s to onwards. The inclusion and the literature around inclusive education were initially associated with the concept of integration, desegregation of students with disabilities, their educational rights and aimed to integrate children with special education needs to mainstream schooling (Ainscow, Booth and Dyson 2006; Armstrong, Armstrong and Spandagou 2011; Avramidis, Bayliss and Burden 2000; Coombs-Richardson and Mead 2001; Erkılıç and Durak 2003; Vislie 2003; UNESCO 2009; Westwood 2013). Although there is still a large agreement upon inclusion’s being related to special educational needs, it must be noted that inclusion is not just limited with students with disabilities, it has a multidimensional structure and limiting the context of it poses a challenge for the development of inclusive practices in schools (Booth and Ainscow 2002). In this regard, the concept has started to be considered from a larger perspective and been linked to the concepts of social justice, cultural diversity, democracy, diversity, pluralism and power since 1990s (Arnesen and Lundahl 2006; Gudjonsdottir and Oskarsdottir 2016; Haug 2017;

Stubbs 2008; Taylor and Sidhu 2012; Waitoller and Artiles 2013). Thus it widened in a way to include all disadvantaged groups such as ethnic/religious minorities, refugees, females, low income families, the disabled, gifted children in society, etc. (Acedo, Ferrer and Pamies 2009; Çelik 2017; ERI 2016; Florian and Rouse 2009; Stubbs 2008; Taylor and Sidhu 2012). Nevertheless, the policies and practices regarding inclusive education and inclusion in education differ all around the world and in spite of all the improvements in the inclusion of all students regardless of their differences, there are still several students who experience enormous challenges regarding access to education, success and continuity in education. One of the determinants of the success of inclusive education policies and practices is the development level of the countries. In fact it is already revealed that while inclusive education policies adopt a broader perspective and target to include all disadvantaged groups such as ethnic/religious minorities, refugees, females, low-income families, the disabled, etc. in developed countries (Dudley-Marling & Burns, 2014), they adopt a narrow perspective and focus on students who have special educational needs and increasing the schooling rates of these students in developing countries (Westwood 2013). Thus it is an expected situation that a large proportion of the students living in developing countries may drop out of the school for various reasons such as gender, socio-economic status, ethnicity, refugee etc. For example, while countries in the North adopt the concept of inclusion within the perspective of social justice and democracy and develop policies and practices to provide 'optimal opportunities for all students (Arduin, 2015); the countries in Southeast Asia seem to still seem to have not come to terms on the exact scope of the concept and inclusion practices and experience challenges in that regard (Raguindin, Ping, Duereh and Lising, 2020).

### *1.3 Inclusive Education in Turkey*

Although there have been remarkable improvements regarding inclusive education in both theory and practice in Turkey as a developing country, it must be noted that the policies and reforms in that regard involve a limited form of inclusion. In fact it is already known that inclusive education policies and practices has tended to focus on the integration of students with disabilities for a long time and the concepts of special education and inclusive education are used interchangeably in the MoNE regulations (Erkılıç and Durak 2013; MoNE, 2008 ). Although the issues such as toleration towards the differences and inclusion of all students regardless of their differences have been referred in education reforms, these differences have not had a real inclusiveness and remained limited with mental and physical differences that can cause learning disabilities (Altan, 2021). In fact, Inclusive Education Projects focusing on the in-service trainings of teachers were organized between the years of 2016 and 2018; however, these trainings were mostly towards the adaptation and inclusion of students who have special educational needs and Syrian migrants who are exposed to immigration, violence and terrorism (MoNE 2018). Accordingly, it is difficult to argue that inclusive education policies and practices in Turkey are comprehensive enough in terms of gender, socio-economic background, ethnicity, religion, etc (Sarı, Nayir and Kahraman, 2020). In fact, female students and students from low socio-economic background are among the most disadvantaged groups in terms of inclusion in the education. In fact it is found that only 20 percent of low income countries have achieved gender parity at the secondary level and just 10 percent at the secondary level (McCleary-Sills, Hanmer, Parsons and Klugman, 2015). In a similar vein, students from lower socio-economic background experience more challenges in terms of academic competence, relationship with their peers and teachers and adapting to the school culture (Veland, Midthassel and Idsoe, 2009) . The situation is not different in Turkey either. Although the right to education is guaranteed by the Constitution and generality and equality of education for all students regardless of their genders and socioeconomic backgrounds is emphasized in the Basic Law of National Education numbered 1739, it is revealed that the reforms and arrangements with regard to the education of female students and students from low socio-economic backgrounds are not inclusive and comprehensive enough. In fact, it is already known that the number of female students in both special education schools/subclasses and non-dominant groups like refugees are fewer than their male peers (ERI 2019; Go Prince 2017; MoNE 2018) Although significant steps such as prohibition of discrimination based on gender in the Constitution, the compulsory education and many other regulations, have been taken regarding the ensuring the access of female students into education, it is a common knowledge that girls have more disadvantages in terms of accessing to schooling and this disadvantageous status increase as they get older. This situation is valid for the students with low socio-economic background as well. It was revealed that Turkey has the most socio-economically disadvantaged students with a rate of 64% among OECD countries (Yaşar and Amaç 2018). Also,

it was found in various researches that there are a large number of students who feel obliged to work to contribute to the family budget and do not complete their education due to financial difficulties in Turkey (Beltekin and Radmard 2015; Köseoğlu, Üçkardeşler and Dinçer 2014; Özbaş 2018; Yılmaz 2014).

## **2. Methodology**

Phenomenology, as a qualitative research method was used in this study. A phenomenological design can be described as an approach aiming to identify and illuminate the essence of a certain phenomenon through the experiences of participants (Teherani, Martimianakis, Stenfors-Hayes, Wadhwa, Varpio 2015). Phenomenology allows people to express their understanding, feelings, perspectives and perceptions about a particular phenomenon or concept and is used to describe how they experience that phenomenon (Rose, Beeby & Parker, 1995: 1124). Accordingly, the participants of a phenomenological research should have either lived experiences or observations about the experiences of these people (Corbin and Strauss, 2014). The most prominent criterion in a phenomenological research is the participant's experience with the phenomenon under study. Accordingly, the teachers' experiences, observations and ideas about the inclusion of female students and students from disadvantaged socio-economic background constitute the most prominent criterion of this research.

### *2.1 Participants*

According to Creswell (2007), the participants of a phenomenological study should be selected among the people who have the required experience about the phenomenon in question. Hence, a criteria-based strategy in which the researchers set some common criteria for all participants can be used to select the group of participants with shared experiences. Therefore criterion sampling which is "a kind of purposeful sampling of cases on preconceived criteria" (Sandelowski 2000: 248) was used in this research. Within this context, following criteria were decided to select the participants: (1) working at schools including only female students (2) working at schools which have students from low socio-economic backgrounds (3) working at these schools for more than 3 years (4) being volunteer to participate in the study. In that regard, two girls' vocational high schools which students from low socio-economic background attend and two industry vocational high schools including mostly male students from low socio-economic backgrounds, two secondary schools located in the suburbs of Turgutlu, a district of Manisa, and three primary schools located in suburbs and include mostly migrant and refugee student with low socio-economic backgrounds constituted the research context of the study. As for the personal characteristics of participants, it is revealed that while 6 of them are females, 12 of them are males. 8 of them work in primary schools, 5 of them work in secondary schools and 5 of them work in high schools. Lastly, while 8 of these teachers are class teachers; 10 of them teach such subjects as math's, English, Turkish literature, science, P.E, history and vocational subjects. The criterion sampling method used in this study and detailed descriptions about both the methodology and the participants are expected to contribute to increase the external validity and reliability of this study.

### *2.2 Data Collection Instrument*

In phenomenological studies, data collection is usually done using in-depth and multiple interviews as the primary source of data are the experiences of the participants (Creswell 2007). Accordingly, semi-structured interviews and semi-structured interview forms are frequently used in phenomenological studies. In that research, a semi-structured interview form developed by the researcher was used. While developing the form, the literature was reviewed in a detailed way using the key words such as "inclusion, exclusion, inclusive education, gender, socio-economic background" and an influential conceptual framework was organized. This detailed literature review is thought to promote the internal validity of the study. In addition, the advices and opinions of experts were sought. Finally pilot scheme was carried out with four teachers to identify the possible problems about the clarity of questions, time, etc. The practices of pilot scheme and the opinions of experts ensured the compatibility and clarity of the questions and that contributed to the validity of the research. The final draft of the interview form included a first part including questions about the characteristics of the participants and a second part consisting four questions. The questions were as follows: 1. What are your opinions regarding the inclusion of female and male students? 2. What are your opinions about the policies and



practices to include female and male students in the education system in Turkey? 3. What are your opinions about the inclusion of students from different socio-economic levels in the education system in Turkey? 4. What are your opinions about the policies and practices to include students from different socio-economic levels in the education system in Turkey?

### 2.3 Data collection process

It is determined that interviewing participants individually creates a more positive climate and enables the participants to feel more relaxed (Boyce and Neale 2006) contributing the researcher to reveal personal and social issues in a detailed way (Bloom and Crabtree 2006). Accordingly, the data of this study were collected through face-to-face individual interviews at the schools which the participants worked. Before starting data collection, required permission was obtained from both the school principals and the participants themselves and the volunteer teachers participated in the study. The participants were assured that their opinions will not be used for any other purposes apart from the research and their identities will not be revealed at any time. The interviews were recorded by a tape recorder and as written notes and they lasted about 20-25 minutes.

### 2.4 Data analysis

For the data analysis of the interviews, content analysis was used. In that respect, firstly written texts were transcribed and then the interview forms were examined in a detailed way in order to obtain general information about the content. Secondly, the data were classified considering the aim of the study and the research questions. While developing and organizing categories, firstly initial codes were determined and then the main themes were established and the data were organized under these codes and themes. Then, themes emerging as a result of the analysis were given in related tables and the expressions that could be used as direct citations were identified and conferred in associated parts in findings. While giving direct citations, each participant was coded like: T1, T2, etc. Lastly, the data were analyzed by two independent researchers and the interpretations were discussed in order to ensure the compromise and conformity.

## 3. Results

The results of this research are organized into two categories as inclusion of male and female students, inclusion of students from disadvantaged socio-economic backgrounds.

### 3.1 Inclusion of male and female students

Considering the participants' opinions on the inclusion of male and female students in the education system, it is revealed that majority of the participants (f:13) are of the opinion that male and female students are included in the education system equally. The participants' opinions on the inclusion of male and female students in the education system in Turkey are given in the following table:

Table 1: Inclusion of female and male students in the education system

<b>Policies and practices to include female and male students</b>	<b>f</b>
Compulsory education	7
Campaign and projects developed by non-governmental organizations	5
Legal sanction and penalty	4
Adult education courses	3
Bussed education	2
Open high school	2
Positive discrimination towards girls	2
Wage incentive provided by the state	1
<b>Challenges regarding the inclusion female and male students</b>	
Regional differences	12
Attitudes of families	5

Low socio-economic status	5
Early marriages of girls	4
Imam Hatip and open high schools	3

As seen in the table, the participants argued that such policies and practices as compulsory education, campaigns and projects developed by non-governmental organizations (Come on Girls to School, Kardelen), legal sanctions and penalty, adult education courses, bussed education, open high schools, positive discrimination towards girls and wage incentives provided by the state have been effective in the inclusion of all children, especially girls. Nevertheless, most of the participants drew attention to regional differences especially in the enrollment of girls and stated that there are differences between the east and the west of the country. Within this context, the participants made such statements as:

“As far as I have observed, it may be better than before, but it cannot be said that a complete success has been achieved. While I was working in Van (a city in the East of Turkey), the families were not in favor of the girls' schooling, they approached it negatively. For example, I had a student, she was very successful, but since that girl's family was not supportive of her schooling, that girl got married immediately after school and she is pregnant now. (T1)”

The participants referred to such challenges regarding the inclusion of students, especially female students: attitudes of parents, low socio-economic status of families, early marriages of girls, Imam Hatip and open high schools. The participants' opinions regarding these obstacles are as follows:

“It still continues in rural areas, in the villages. There is still a sense and fear that something bad will happen to girls. In other words, I was not sent to school because I was smart, I was sent to school because I was a man. My sister is one year younger than me, she was better than me, but our father said that our economic conditions do not allow this, we are a farmer family, we need workers, we need girls. One of you will go to school, the others will not” (T18).

“The girls do not go to open high schools either. Early marriages are very common especially in the eastern part of Turkey. Some of the girls find jobs outside, they quit school as they have financial problems and want to have a job as soon as possible.” (T6)

In parallel to the opinions of some participants, it was revealed that gender equality was achieved within the context of schooling and access to education especially in the last decade (MoNE, 2018; KOÇKAM, 2019). In this regard it is noteworthy to state such policy and practices as compulsory education, campaign and projects developed by non-governmental organizations, wage incentives provided by the state, bussed education contributed to the schooling of girls who are more disadvantageous in terms of schooling than boys, to a large extent (Eğitim-Sen 2018; ERI 2019; Gumus and Gumus, 2013; Polat 2008; Yılmaz and Altinkurt 2011). Nevertheless, as it is also stated by majority of researches, schooling rates of girls are lower than boys and the girls do not have equal opportunities to further their education due to various reasons such as regional differences, low socio-economic status of families, negative attitudes and anxieties of families towards schooling, early marriages of girls, etc (Adıgüzel 2013; Çal and Karaboğa 2017; ERG 2016; Gökşen, Cemalcılar and Gürlesel 2005; Siyez and Beycioglu, 2019; Yavuz, Özkara and Yıldız 2016; Yıldırım, Beltekin and Oral 2018).

### 3.2 Inclusion of students from disadvantaged socio-economic backgrounds

Considering the opinions of participants about the inclusion of students from disadvantaged socio-economic backgrounds, it was revealed that some participants (f:4) argued that all students are included in the education system and benefit from educational opportunities equally. The participants' detailed opinions regarding the inclusion of students from disadvantaged socio-economic backgrounds in the education system in Turkey are given in the following table:

Table 1: Inclusion of students from disadvantaged socio-economic backgrounds

Policies and practices to include students from disadvantaged socio-economic backgrounds	f
Financial aid collected by teachers and school management	13

Financial aid distributed by local government units	7
Clothing, stationery and cash aids from various organizations charity organizations	7
Supports provided by the ministry such as bussed education, free school meal, free book distribution, social aid, etc.	6
Support courses and social activities	4
Scholarships	3
Compulsory education	2
Various institutions and organizations, such as Darüşşafaka, science and arts centers, etc.	2
<b>Challenges regarding inclusion of students from disadvantaged socio-economic backgrounds</b>	
Inequality between public and private schools	6
Exclusion and discrimination	5
Lack of social activities	4
Families	3
Regional inequalities	1
Child labour	1
Inequality in income distribution, lack of job opportunities	1

As for the policies and practices to include students from disadvantaged socio-economic backgrounds, the participants remarked that the students from disadvantaged socio-economic backgrounds are attempted to be included in the education system through such policy and practices as: compulsory education; supports provided by the ministry such as bussed education, free school meal, free book distribution, social aid, etc.; scholarships; various institutions and organizations, such as Darüşşafaka, science and arts centers and apprenticeship training centers where students who are successful but have poor financial status can receive education; financial aid which are collected by teachers and school management, distributed by local government units; clothing, stationery and cash aids from various organizations and charity organizations; support courses and social activities organized within the schools. One participant's opinions in this context are as follows:

"We, as a school, support the disadvantaged students with the aids of the people around. As teachers, we apply to various institutions and attempt to cover up their needs" (T17)

Nevertheless, the majority of the participants (f: 14) emphasized that students who have disadvantageous socio-economic status were not included equally. Two participants asserted their opinions like this:

Socio-economically disadvantaged groups absolutely miss out some educational opportunities. As the family's financial situation is not in a good shape, they cannot give importance to their children's education and meet their needs adequately. Financial situation has a great importance in education (T12).

"Most of the students in this district work in barber, butcher, or greengrocer shops after school. Some of them take care animals. In other words, these students are economically disadvantaged. Some of them come to school with the same shoes in both summer and winter during the whole year. Their trousers are worn. The fathers of some students have two-wives and the whole family stays in just one room" (T15)

The participants explained the inability to include students from disadvantaged socio-economic status in the education system with such challenges as inequality between public and private schools, exclusion by other students, lack of social activities, families, regional inequalities and inequality in income distribution, lack of job opportunities. The participants' opinions in this context are as following:

"I do not think the students going to private school and those going to public school are equal. I think those who go to private schools are more advantageous in terms of private lessons and social activities. I ask my students what they do at the weekend. The greatest social activity they do is to have a picnic. The number of those who go to cinema or theatre is very few. They are not equal in terms of socialization. (T11)

"In terms of socio-economic status, serious differences can be observed in the same region, province even in the same district. All of these students can benefit from the education system within the scope of compulsory education but, school facilities, teacher qualities may change according to the regions where they live. For example, while the student studying in the city center benefits from all kinds of opportunities, the student who is in the village cannot benefit from many of these opportunities.(T3)"

Regarding the inclusion of students from disadvantaged socio-economic backgrounds, the participants argued that these students are attempted to be included in the education system through some policies and practices. In fact, it can be inferred that compulsory and free education and supports provided by the ministry such as bussed education, free school meal, free book distribution, conditional educational aid, support courses have contributed to the inclusion of these students in the education system to some extent (Bayrakdar and Karataş 2016; ERI 2016; Nartgün and Dilekçi 2016; Özcan, Balyer and Yıldız 2018 ). Nevertheless as it was emphasized by the most of the participants, the students from low socio-economic status were more disadvantageous in terms of inclusion in the education system than the others. In parallel to the findings, it was also revealed in various researches such challenges as public/private division, regional differences, differences in income distribution and unemployment, lack of social activities and discrimination towards these students cause inequalities in education system (Ataç 2017; Karaman and Özçalık 2007; Şahin, 2006; Yıldız and Karakaş 2019). In this sense, it can be deduced that socio-economic inequalities also manifest themselves as exclusion from education and being devoid of the opportunity to include in quality education and continue to it.

#### 4. Discussion

Although there have been tremendous improvements in ensuring the access of students into schooling, it is revealed that educational inequalities regarding to gender, socio-economic background, disability, refugee, religious and ethnic backgrounds, etc. continue to exist and several students are excluded from education system due to several reasons all around the world. As a developing country, Turkey has pursued a similar course and significant steps were taken regarding the increasing the attendance rates of students into schooling in the last decade through the policies and practices which were also stated by the participants of this research and these steps brought positive results especially in favor of female students. In fact, the statistics published by MoNE (2022) indicate that the schooling rates of female and male students are close to each other and gender disparities have been reduced to large extent. However, it is important to note that the schooling rates of student do not always reflect the truth exactly (Acedo, et all. 2009) and ensuring the access of female students into schooling alone does not mean inclusiveness. As it is already known, female students have experienced various challenges regarding inclusion in education for ages and have not been included in the educational processes equally compared to their male peers. This can be related to the fact that “the main concern of Turkey in relation to gender equality has been gender parity and to increase the number of girls at secondary and primary schools and to achieve numerical equality in education. In this sense, it can be thought that such issues as ‘educational quality, gendered structures, relations or pedagogies within the school, or of the social relations outside the school which prevent equal participation in social life, girls’ schooling experiences within and outside the schools, gender and social relations within and around the school, the quality of education girls receive” (Cin, 2017: 8-11) have hardly ever been taken into consideration in Turkey. Then it is possible to argue that what is intended with gender inclusion and equality in Turkey is far from the goals of gender inclusion which guarantees equality and justice in all processes of education between male and female students. In fact, the existence of such challenges stated by the participants as child marriage, regional inequalities, low socio-economic status, discriminatory gender norms which still remain valid continue being a drawback to the inclusion and representation of females in the education system may be a solid proof of that situation. Considering the challenges stated by the participants above, it worths noting that socio-economic status is a significant determinant of gender disparity and achievement gap between students of different socio-economic status in Turkey (Bellibaş, 2016) and in order to reduce gender gap, it is necessary to reduce social class gap. In fact it is already known that low socio-economic background and poverty leads to multiple disadvantages (ERI 2016; Mavi Kalem 2019) and children who are excluded from the process are mostly the ones with low socio-economic status. In this regard, it can be argued that individuals’ benefitting from education is based on their socio-economic status in Turkey and students from disadvantaged socio-economic background cannot properly take advantage of even the educational opportunities of compulsory education (Özbaş 2015; Sal 2015). Similarly, while this is the case in Turkey, similar problems are experienced in many developed countries of the world as well. According to the Organization for Economic Co-operation and Development (OECD, 2012), students from low socio-economic background are twice as likely to be low performers and 20% of young adults on average drop out before finalizing upper secondary education. In addition to the impact of socioeconomic

status on the aspect of achievement, the socio—economic condition of the family has a significant effect on social inclusion of the students as well. In that respect, Veland, Midthassel and Idsoe (2009) argue that students from low socio-economic status may have difficulties in establishing relationships with their friends and teachers as a result of such challenges as limited type and amount of social activities they can participate, lack of material resources like books, educational toys and linguistic background, discrimination against students from lower social classes and having less motivation for school. In fact the findings of this research regarding such challenges the students from disadvantaged socio-economic backgrounds as inequality between public and private school and regions, exclusion and discrimination towards these students, lack of social activities for socio-economically disadvantaged students indicate this situation clearly.

Considering current policies and practices regarding the inclusion of both female students and students from disadvantaged socio-economic backgrounds, it reveals that the participants mostly refer to such short term recipes as fundraising among teachers, charity organizations, local government units, campaign and projects developed by non-governmental organizations, supports provided by the ministry such as bussed education, free school meal, free book distribution, social aid, support courses, wage incentives, etc. Although these policies may have a role in enabling female students and students from disadvantaged socio-economic backgrounds to include in the system, unfortunately they are far from providing sustainable solutions and focusing on the issues of human rights, social justice and educational equity which are sine qua non of inclusive education. Accordingly, the policies and practices towards inclusive education should prioritize social justice, equity, diversity and address the issue from a macro and holistic perspective rather than a micro perspective reducing inclusion to just achieving parity with quantitative indicators. Education policies should shift towards a qualitative improvement in education system with the aim of increasing inclusion, justice, equity and diversity in all spheres of both educational life and later lives of students and this is only possible with adopting an equity and justice based approach towards education.

The greatest limitation of this study is its limited sample. Thus, it is suggested that the same research is carried out with a larger sample and different research methods in different regions. Also, in order to reflect the status of inclusion in education in Turkey, more comprehensive studies including other disadvantageous groups such as students with different sexual orientations, refugee students, students from different religious and ethnic backgrounds, street children, disabled children, gifted children, etc. may be carried out.

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# Entrepreneurship in Preschool Education: Turkish Preservice Teachers' Entrepreneurship Features, Comparison with their Lecturers' Views and Suggestions for Development

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## Abstract

Learning skills and developing competencies at early ages augment its benefits later in life, and therefore, can be effective in the long run. Starting from this point, the paper argues the need for and importance of enterprise education in preschool education. The paper aims to explore preservice preschool teachers' entrepreneurship features and make suggestions for implementing enterprise education in teacher education programmes. "The Entrepreneurship for Teacher Candidates Scale" was employed with 184 preservice preschool teachers, followed by interviews with four of their lecturers. Descriptive statistics and two-way ANOVA was used to analyse the quantitative data, and thematic analysis was used for the qualitative data. Overall, the results showed that preservice preschool teachers' perception of their level of entrepreneurship features was high, which was not agreed by lecturers except for self-confidence. The results of two-way ANOVA did not indicate any significant difference ( $p > .05$ ) for any of the factors investigated (i.e., gender, year of study, taking entrepreneurship courses previously, and/or having an entrepreneur in the family). This means that participants had similar scores and have similar levels of entrepreneurship features. Having no impact of the year of study and entrepreneurship courses attended previously on participants' entrepreneurial features may suggest the revision of preschool teacher education programmes and the content development targeting such features. Finally, practice-based, active, and collaborative teaching is suggested rather than theory-based teaching for enterprise education in preschool teacher education programmes. Teacher-academics meetings, seminars and workshops about enterprise education are suggested for professional development of preschool teachers.

**Keywords:** Enterprise Education, Entrepreneurship Feature, Preschool, Preservice Teacher Education, Professional Development

## 1. Introduction

Education is an evergreen process helping to develop people's knowledge, skills and attitudes. To bring up individuals strongly equipped with different competencies required in the 21st century, it is important to start

education early since basic characteristics are shaped back at early ages. One of the future's required competencies is viewed as entrepreneurship.

Recently, the focus at schools is moving from entrepreneurship to enterprising or entrepreneurial learning (Axelsson, Hagglund, & Sandberg, 2015; Korhonen, Komulainen, & Raty, 2012; Leffler, 2014). This may be because people used to view an entrepreneur as a greedy person driven by monetary ambition but recently, the need for enterprising people started to be acknowledged everywhere (Berglund, Johannisson, & Schwartz, 2012). Teachers' perception of an entrepreneur was also changed to a person providing different opportunities for world improvement, personal fulfilment, and collective actions. In recent years, entrepreneurship has been argued in educational settings in two ways: 1. entrepreneurship discourse concerning business and enterprise and 2. enterprising discourse aiming at personal development and entrepreneurial skills enhancement, such as children's ability to initiate, look for opportunities, as well as being responsible, participative, self-confident, and creative (Leffler, 2014). That is, it can be said that while entrepreneurship knowledge is viewed as one of the priorities in entrepreneurship education, developing entrepreneurial skills, environment, and pedagogies is prioritised in enterprise education rather than teaching entrepreneurship knowledge. Between these two different educations, teachers are ambiguous about teaching entrepreneurship with a business focus and prefer using enterprise education approach (Axelsson, Hagglund, & Sandberg, 2015). In this paper, enterprise education approach in adopted.

Various studies are conducted in secondary or third level education and showed the benefits of entrepreneurship at different ages (Deveci & Seikkula-Leino, 2018; Eltanahy, Forawi, & Mansour, 2020). For example, Deveci and Seikkula-Leino (2018) conducted a literature review on entrepreneurship in teacher education between 2000 and 2016. The total of 76 relevant studies that they found highlighted the importance of entrepreneurship in teacher development and recommended the inclusion of entrepreneurship in initial teacher education. At secondary level, Eltanahy, Forawi, and Mansour (2020) incorporated entrepreneurial practices into high school STEM education through an interdisciplinary E-STEM model. The researchers highlighted the importance of developing projects for STEM high school students to create value in society as well as the need for developing a pedagogical framework, where they proposed the E-STEM framework. A very limited number of studies are found at younger educational levels, such as preschool and primary education. Insulander, Ehrlin, and Sandberg (2015) highlighted the importance of enterprise education and entrepreneurial learning. Children's skills are developed, and awareness of the social environment is raised at early ages. Therefore, children's social awareness, sensitivity to environmental issues, creativity to come up with solutions to the problems, and expression of their opinion on different topics can be developed through social entrepreneurship in preschool education (Sarıkaya and Coskun, 2015). Similarly, Axelsson, Hagglund and Sandberg (2015) and Lindstrom (2013) argued that early age is the ideal phase to influence students' attitudes by implementing an entrepreneurial approach because entrepreneurial self starts to evolve at this period of life. Seikkula-Leino (2011) also supported that enterprise education is specifically more effective for younger children. Yan (2018) addressed the need for entrepreneurship in preschool education and the existing problems for this integration. Similarly, Garcia-Rodriguez, Gutierrez-Tano, and Ruiz-Rosa's (2018) study on entrepreneurship programmes with primary school students pointed to the need for initiating enterprise education at earlier ages for such implementations to be more effective. Although these studies highlight the need for and importance of enterprise education in preschool education, there is a limited number of studies conducted in preschool education context. Many researchers believe that education kills creativity, which is one of the entrepreneurial skills. Studies show that while all students in Turkish primary schools could come up with innovative ideas, 7% of high school students and 12% of university students could not come up with any new ideas (Elçi, 2011). This means that the current education system may hinder the development of entrepreneurial skills unless it is implemented effectively and starting from early childhood, particularly preschool. To develop students' entrepreneurial skills effectively at early ages, the primary focus of entrepreneurship in education should be shifted from content to pedagogy (Eltanahy, Forawi, & Mansour, 2020). However, there is still very little known about how this approach can be implemented in preschools and integrated into the pedagogy (Insulander, Ehrlin, & Sandberg, 2015). As teachers are the first implementers of different approaches, preservice preschool teachers' entrepreneurship features are of importance.

This paper explores preservice preschool teachers' entrepreneurship features and aims to propose suggestions for developing more effective entrepreneurship courses in teacher education programmes. The paper first argues the importance and benefits of integrating entrepreneurship into preschool education, followed by the review of the literature on entrepreneurship in preschool education worldwide and in Turkey. Secondly, the participants, the data collection tools, and data collection and analysis processes are introduced. In the results section, preservice preschool teachers' perspectives on their entrepreneurship features are presented and compared their lecturers' views. This is followed by the factors affecting teachers' entrepreneurship features and lecturers' suggestions for developing a more effective teacher education programme. The discussions are conducted based on research questions and the common themes mentioned in the results, namely the professional development and preschool teacher education programmes. Finally, the study is concluded, and suggestions are made.

## 2. The Perceived Need for Entrepreneurship in Preschool Education

Over the last few decades, entrepreneurship has been discussed in different contexts at different levels of education. While various researchers viewed entrepreneurship as starting a business and discussed it from a financial perspective (Blundel, Lockett, & Wang, 2017), some viewed it as a driver of social change rather than monetary expectations (Barbera-Tomas, Castello, De Bakker, & Zietsma, 2019) and discussed it from a social perspective, and some others viewed it as an opportunity to improve people's life quality (Hoz Rosales, Camacho Ballesta, & Tamayo Torres, 2019) and discussed it from an innovative perspective. Between the studies, there were also parts in common about entrepreneurship. The studies showed that enterprise education helps improve different features in life, such as contributing to advance the economy and society (Atkinson, & Mayo, 2010; Department of Education and Skills - DES, 2015; Goodwyn, 2017; Kaya, Erduran, Birdthistle, & McCormack, 2018) and develop people's competencies and their understanding of the world (Kaya-Capocci, McCormack, Erduran, & Birdthistle, 2021). An entrepreneurial individual can be created through enterprise education. According to OECD/CERI (1989, p.36):

An entrepreneurial individual has a positive, flexible and adaptive disposition to change, seeing it as normal and as an opportunity rather than a problem. To see change in this way, an entrepreneurial individual has a security born of self-confidence, and is at ease when dealing with insecurity, risks and the unknown. An entrepreneurial individual has the capacity to initiate creative ideas and develop them into action in a determined manner. An entrepreneurial individual is able, even anxious to take responsibility, is an effective communicator, negotiator, influencer, planner and organiser.

The literature shows that enterprise education is highly important at second and third level education to create entrepreneurial individuals equipped with many qualities. If we want to create future entrepreneurial citizens, enterprise education should start at early ages.

Cognitive and non-cognitive skills are developed during different stages in life, where the skills learned during one period in life (e.g., at primary school) augment the benefits of investments in these skills in subsequent periods (e.g., at high school or university). Early investments in skills may thus be particularly effective in the long run (Huber, Sloof, & VanPraag, 2014, p.90).

Many benefits of enterprise education have also been highlighted in the literature. Integration of entrepreneurship in preschool education may help achieve sustainable development of preschool education, provide them further success as college students, and promote employment in the future (Yan, 2018). Research shows that a meaningful enterprise education can support children to understand, realise and reflect the positive character (Putri & Djoehaeni, 2018). Not only this but also it may help raise a generation who values others' emotions and opinions as well as respects others and the environment, builds a strong community, and reaches social welfare and sustainable development (Sarikaya & Coskun, 2015). Because childhood is considered as the take-off for developing the entrepreneurial self, preschool may be considered as a better age group to gain positive attitudes towards entrepreneurship and adopt an entrepreneurial approach (Lindstrom, 2013). Seikkula-Leino (2011) also supported the implementation of enterprise education at early ages and believed that it is more effective for younger children. Sarikaya and Coskun (2015, p.892) highlighted the need for implementation of social

entrepreneurship in preschool education since “social values, creativity, ethics, and many social behaviours are taught to children for the first time” in preschool.

Although its importance and the perceived need for the integration of entrepreneurship into preschool education, Vican and Vuletic (2013) found a very limited number of research on entrepreneurship in childhood education published in different conferences and almost no research in peer-reviewed journals. After many years, the current non-systematic literature review in the following section also indicated the same results.

### *2.1 Literature on Entrepreneurship in Preschool Education*

The non-systematic literature review showed a scarcity of research worldwide and in Turkey. Conference papers and the papers focusing on more than one subject are excluded in this paper. This section introduces the international research on entrepreneurship in preschool education, followed by the national research in Turkey to point to the need for the current research paper.

Five international papers and two national papers were found within the criteria. The papers published worldwide were commonly about teachers and preschool teachers, a couple of papers targeted both students and teachers, and one paper analysed the literature. Between these papers, Lindstrom (2013) explored the preschool teachers' perception about their students' potential of developing civic competences, sense of initiative, and entrepreneurship in order to achieve active citizenship. The study was conducted through questionnaires from 529 professionals and other personnel working with children enrolled at the preschools in Sweden. Most participants partly or strongly agreed that preschool students (young children) could develop their leadership and creativity through different plays and activities and adopt an entrepreneurial approach. The results also showed that the self-emotion skills, such as self-efficacy, self-image, self-esteem, and self-confidence are important for entrepreneurship and active citizenship, and preschool students have potential to develop their citizenship and entrepreneurship through such skills. Looking at the skills that can be developed at preschool, the study also indicated that young people's personal development could be supported through active citizenship and entrepreneurship.

In another seminal study, Axelsson, Hagglund and Sandberg (2015) conducted research on entrepreneurial learning with five preschool teachers in Sweden. The results of questionnaires and interviews showed that entrepreneurial learning improved teachers' discursive teaching and students' entrepreneurial skills. The results also showed that ongoing reflection, active participation, a meaningful learning situation, and a tolerant atmosphere have an impact on entrepreneurial learning. The participating teachers referred to taking initiatives, problem-solving, decision-making as well as being active, creative, curious, communicative, and enterprising when talking about a positive entrepreneurial learning incident the children are practising. The participating teachers believed that the children were becoming motivated and self-confident during the research and thus, suggested to start using enterprise education at early ages.

Yin, Yang and Liu (2020) explored the psychological problems of 205 preservice preschool teachers and their entrepreneurial intentions in the industry in China. The paper argued that a positive emotional experience could promote entrepreneurial behaviour, and therefore, positive entrepreneurial environments should be promoted at universities. The results showed that students believe that they develop inadequate knowledge and skills at college, which the researchers believe could be the main reasons for students' negative attitudes toward entrepreneurship. The findings also indicated that the most significant entrepreneurial psychological issue is having low entrepreneurial ability, which is the same with the entrepreneurship qualities that participants believe they need to improve.

Kondracka-Szala and Malinowska (2019) conducted a semantic field analysis of the literature and made suggestions on what should be considered when preparing an early childhood education teacher for teaching at enterprise education classes. The objectives of enterprise education are explained in the paper as follows:

The primary objective is to steer the thinking and actions of students towards enhancing entrepreneurial activity in the local community, to undertake ventures preceded by thoughtful analysis of the contexts of action and to improve practice/organisation by introducing innovations. It is to encourage teachers to break the monotony of routine instructional methods, and to sensitise them to the need to respond to changes occurring inside and outside the organisation. (p.163)

To achieve these objectives and foster the entrepreneurial spirit, the researchers believe that (a) future teachers should be equipped to be promoters and initiators of change as well as local community leaders, (b) equipping teachers with such features requires a new approach and new model of cooperation between education participants, and (c) this cooperation can be achieved through teaching internships and study visits.

Insulander, Ehrlin, and Sandberg (2015) investigated the ways preschool students can receive support and recognition for active participation in entrepreneurial environments. The paper aimed to increase preschool teachers' awareness of the benefits of enriching everyday practice with entrepreneurial activities on supporting early childhood education. The study was conducted in three preschools with nine preschool teachers and their students. The paper compared three activities in different schools in terms of learning design and settings. The results indicated that preschool students' creativity was sometimes hindered by teachers when teachers' focus shifted from encouraging entrepreneurial skills, such as creativity and curiosity, to the implementation of the activity. To promote enterprise education, various researchers support creating an environment allowing disagreements. For example, Kondracka-Szala and Malinowska (2019) believe that enterprise education should support discovering the relationship between education and provocation in an environment embracing disagreement, flourishing different ways of thinking and understanding, and encouraging invention.

Looking at the national literature, only two papers were found within the previously mentioned criteria. Both papers focused on preschool teachers. Yavuz Konokman and Yanpar Yelken (2014) addressed an inadequate number of studies focusing on teachers' attitude towards entrepreneurship and their perception of self-efficacy. They conducted research with 170 preservice preschool teachers and found that they had a positive attitude towards entrepreneurship with high entrepreneurship level. No significant result was found on the impact of gender difference, but the results showed that the participants' attitudes significantly differ between the years of education. In another study, Kaya-Capocci and Karaoglu (2022) investigated the pre-service preschool teachers' stereotypical perceptions about entrepreneurs. The study was conducted with 47 fourth grade pre-service preschool teachers in Turkey. The participants drew an entrepreneur on the Draw an Entrepreneur Scale and explained their drawings. The results showed that participants had stereotypical thoughts and a low-level understanding of entrepreneurship. The participants viewed an entrepreneurial person commonly from a financial entrepreneurship perspective, with a limited perception of social and innovative entrepreneurship perspectives. Another stereotypical thought was about the gender of an entrepreneur. Participants commonly drew an entrepreneur as a male. The researchers recommended developing an entrepreneurial mindset in undergraduate level courses.

Overall, there was a lack of studies focusing on entrepreneurship in preschool education. As opposed to what some researchers believe, the non-systematic literature review showed that entrepreneurship in education can improve teachers' discursive teaching and students' self-emotional skills and entrepreneurial skills, such as creativity, leadership, taking initiatives, and problem-solving, as well as students' curiosity, active participation, and motivation. To equip young students with entrepreneurial skills, teachers need to have entrepreneurial features and should be able to implement new approaches and methods in classrooms. Entrepreneurial preschool teachers should be someone who can see through the whole process through a different prism and encourage the learning process "by doing, exchanging, experiencing, and experimenting, and through risk taking, problem solving, dramatisation, and interaction with the environment" (Senkane, 2014, p. 193, cited in Insulander, Ehrlin, & Sandberg, 2015). Such teachers can support the next generation in new possibilities both today and tomorrow, constitute values, and take responsibility for future challenges to shape someone's identity and bring up a creative person (Insulander, Ehrlin, & Sandberg, 2015). To create entrepreneurial teachers, teacher education programmes play a critical role. Tican (2019) recommended to investigate entrepreneurship and creative thinking skills of the pre-service teachers studying in the new teacher training programme. In order to implement entrepreneurship into

undergraduate teacher education programmes, we first need to investigate preservice teachers' entrepreneurial features.

### 3. Methodology

Mixed method is a commonly used method in education due to having the advantages of both qualitative and quantitative methods. While the quantitative method is presenting whether there is a significant phenomenon emerging, qualitative data shows the reason for the emergence of the phenomena. This method provides a complete understanding of the phenomena that the researcher is investigating by providing different perspectives on the situation (Johnson & Onwuegbuzie, 2004). The mixed method also provides rich data and prevents losing the data that can potentially be useful (Bryman, 2012; Cohen, Manion & Morrison, 2011).

The paper explores preservice preschool teachers' entrepreneurship features and their lecturers' (academics) views on whether or not they have it. This paper also aims to explore the factors affecting teachers' entrepreneurship features and propose suggestions for developing more effective entrepreneurship courses in teacher education programmes. To do so, the following research questions (RQs) are investigated:

RQ-1: How are the entrepreneurship features of preservice preschool teachers in comparison with their lecturers' views on preservice preschool teachers being equipped with these features?

RQ-2: Do the entrepreneurship features differ according to gender, year of study, taking entrepreneurship courses previously, and/or having an entrepreneur in the family?

RQ-3: What are the suggestions of preschool education lecturers on developing the entrepreneurship features of pre-service preschool teachers?

In this mixed method research, an entrepreneurship level scale was employed with 184 preservice preschool teachers, and interviews were conducted with four lecturers. The results are analysed with the Statistical Package for the Social Sciences (SPSS) and thematic analysis.

#### 3.1 Participants and Data Collection Tools

184 preservice teachers who are studying in a preschool education programme (year 1 to 4) at a public university in Turkey participated in this research. This university is in a socio-economically underdeveloped location in the east of Turkey. Furthermore, students studying in this area are commonly coming from economically disadvantaged families. After collecting the quantitative data, four lecturers teaching in the same programme volunteered to participate in the interviews. To protect their anonymity, the lecturers were named LA, LB, LC, and LD.

The quantitative data were collected via "The Entrepreneurship for Teacher Candidates Scale" developed by Deveci and Cepni (2015). A section was added to the scale about the background information to determine the factors affecting the entrepreneurship features, such as gender and the existence of an entrepreneur in the family. After adding this section, the scale included two sections: 1. Background information and 2. Entrepreneurship features. Background information about the participants is presented in Table 1.

Table 1: Background information about the participants

Characteristics		f	%
Gender	<i>Female</i>	141	76.6
	<i>Male</i>	43	23.4
Year of study	<i>1</i>	39	21.2
	<i>2</i>	39	21.2
	<i>3</i>	42	22.8
	<i>4</i>	64	34.8
Involvement in any entrepreneurship education (courses, seminars, etc.)	<i>Yes</i>	66	35.9
	<i>No</i>	118	64.1

Involvement of a family member in an entrepreneurial activity	<i>Yes</i>	57	31
	<i>No</i>	81	44
	<i>I am not aware</i>	46	25

The second section (Entrepreneurship features) was a 5-point Likert scale (Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree) consisting of 38 statements. This section focused on five features and each feature involved seven to nine statements (Risk Taking - 7 statements, Seeing Opportunities - 9 statements, Confidence - 7 statements, Emotional Intelligence - 8 statements, and Being Innovative - 7 statements). The Cronbach alpha of each factor on the scale is over .77. According to Ozdamar (2011) if the Cronbach alpha is between .7 and .9 ( $.70 \leq \alpha < .90$ ), the reliability of the scale is accepted high.

The qualitative data were collected via semi-structured interviews. The interview questions were generated based on “The Entrepreneurship for Teacher Candidates Scale” and included eight questions with some sub-questions. The questions targeted the lecturers’ opinion of entrepreneurship features and their importance in preschool education, the participants’ entrepreneurship features, their agreement with the findings about participants’ features, and their suggestions on what can be done to improve such features.

### 3.2 Data Collection and Analysis

All ethical procedures were followed throughout the study. The study also had an approval from the research ethics committee of the university where the study was conducted. After collecting the consent forms, participants filled in “The Entrepreneurship for Teacher Candidates Scale” taking approximately 15 minutes. Following the quantitative data collection, the lecturers who were teaching in the preschool education programme (year 1 to 4) were requested to volunteer for the research. After collecting the consent forms, the interviews were conducted with four volunteer lecturers. Each interview took approximately 25-30 minutes.

Both qualitative and quantitative analysis were used to respond to the RQs. Quantitative data collected from participants (pre-service preschool teachers) were analysed through SPSS, and the qualitative data collected from lectures were analysed through thematic analysis. To answer the RQ-1, the descriptive statistics were used to identify the mean of participants’ overall and specific entrepreneurship feature scores in the scale. Both participant and lecturer results were coded as low, medium and high for each feature, and the results were compared. To answer the RQ-2, two-way ANOVA was employed due to the normal distribution of the quantitative data ( $P=0.2$ ). To ensure that nothing is missed out in the analysis, pairwise comparison of background information was also conducted. To answer the RQ-3, the qualitative data were analysed via thematic analysis. To do so, the lecturers’ responses were transcribed, read, re-read, and coded into different themes. The themes were revised a few times and then, finalised.

## 4. Results

The results are presented and discussed under three main headings based on the RQs. Aligned with the RQ-1, the findings of participants’ views are presented on the entrepreneurship features that they are equipped with and their lecturers’ views on whether the students show these features, and the results of participants and their lecturers’ views are compared. Regarding the RQ-2, the results of whether participants’ entrepreneurship features differ according to gender, year of study, taking entrepreneurship courses previously, and/or having an entrepreneur in the family and the binary combinations of these factors are introduced. As part of RQ-3, preschool education lecturers’ suggestions on and the implementation of how pre-service preschool teachers’ entrepreneurship features can be developed are presented.

### 4.1 How are the entrepreneurship features of preservice preschool teachers in comparison with their lecturers’ views on preservice preschool teachers being equipped with these features?



To analyse the entrepreneurship features of the participants, the overall participant scores were analysed (see the results in Table 2). The highest score that the participants could get was 5 and the lowest is 1.

Table 2: Descriptive statistics of participants' scores

	N	Minimum	Maximum	Mean	Std. Deviation
Mean	184	2,29	5,00	3,9501	,43565

The scores are divided into three categories: low, medium, and high. The interval numbers of categories are as follows:

- Low level of entrepreneurship features:  $1 \leq \text{mean} < 2.3$
- Medium level of entrepreneurship features:  $2.3 \leq \text{mean} \leq 3.6$
- High level of entrepreneurship features:  $3.6 < \text{mean} \leq 5$

Based on this categorisation, Table 2 shows a high level of entrepreneurship features. Even though the overall level of entrepreneurship features is found high, the results may differ from feature to feature. Therefore, the level of each entrepreneurship feature is explored separately and illustrated in Table 3.

Table 3: Descriptive statistics of participants' scores for each entrepreneurship feature

Entrepreneurship features	N	Minimum	Maximum	Mean	Std. Deviation
<i>Risk taking</i>	184	2	5	3,89	,542
<i>Realising opportunities</i>	184	2	5	4,11	,507
<i>Self-confidence</i>	184	2	5	3,98	,554
<i>Emotional intelligence</i>	184	2	5	4,06	,534
<i>Being innovative</i>	184	2	5	3,72	,596

According to Table 3, participants agreed or strongly agreed that they have each of five entrepreneurship features. The results showed that the highest level of entrepreneurship feature was "realising opportunities" and the lowest level of entrepreneurship was "being innovative". That is, most participants were of the opinion that they could usually realise the opportunities awaiting them. However, even though participants believe that they are innovative individuals, they showed more hesitation compared to other entrepreneurship features.

It is important to highlight that this scale is designed to measure the perception of the participants on whether they have the entrepreneurship features. Therefore, participants considering themselves having these features may not necessarily mean that they are equipped with them. That is, this might only be their perception. To make the result more reliable, participants' results are compared with their lecturers' views coming from their non-structured observations in their teaching hours. Within this purpose, the lecturers were asked about their opinion on whether the pre-service preschool teachers taking their classess show entrepreneurial features, such as risk taking and being innovative. The results are presented in Table 4.

Table 4: Lecturers' opinions on the level of participants' entrepreneurship features

Entrepreneurship features	Participants' opinions	LA	LB	LC	LD
<i>Risk taking</i>	High	Medium	Low	Low	Medium
<i>Realising opportunities</i>	High	Medium	Medium	Medium to Low	Medium
<i>Self-confidence</i>	High	High	High	High	High
<i>Emotional intelligence</i>	High	High	High	Low	High
<i>Being innovative</i>	High	High	Low	High	High

Table 4 shows that although participants were of the opinion that they are equipped with all five entrepreneurship features, lecturers usually disagreed with participants, except for self-confidence. Lecturers believed that participants show low or medium level features of risk taking and realising opportunities. LC and LD explained this with the social-economic status of the families whose children are studying at the university where the study was conducted. LC explained this by stating that "when students grow up with money concerns, they have a tendency to go for a safer-option rather than taking risks". Furthermore, the lecturers believe that to expect students

to realise opportunities, firstly, there should be existing opportunities. The university where the study was conducted is in an underdeveloped area. The area has many challenges, such as hard winter conditions, poverty, and lack of infrastructure. Considering such conditions, it is hard to compare students' persuasion of opportunities in socio-economically developed cities with underdeveloped cities. It would not be surprising if students have a low level of realising opportunities. However, surprisingly, participants believe that they have a high level of risk taking and realising opportunity features. In Table 4, both participants and lecturers had the same opinion about participants' self-confidence. LB was of the opinion that "this is not only about our students, it is more about the new generation. Interestingly, all the new generation has high self-confidence". Concerning emotional intelligence, all the lecturers except LC agreed that participants show a high level of this feature due to working with kids. However, LC addressed that:

My expertise is in the area of emotional intelligence, and I am also teaching this in the class. There are different aspects of emotional intelligence. When I look at the students, they have, for example, social skills but they lack self-regulation. They cannot regulate their emotions and actions.

All lecturers except LB believed that participants were innovative individuals. When LB was asked about the reason for her opinion, she said that "When I give projects or homework, students do not come up with anything new or innovative". Contrarily, LA stated that:

I run creative drama courses. In this course, we conduct different activities and students come up with very interesting ideas. For example, once students brought some rubbish to the class. They acted as a family going for a picnic and leaving their rubbish behind. They gave the rubbish to the others and discussed what could be done with it.

There may be different reasons for giving different answers to these questions, some of which may be the lecturers' experience in the relevant topic and the scope of the classes that they are teaching.

#### *4.2 Do the entrepreneurship features differ according to gender, year of study, taking entrepreneurship courses previously, and/or having an entrepreneur in the family?*

Two-way ANOVA is run through SPSS to identify the relationship between the participants' entrepreneurship features and the factors affecting them, such as gender and year of the study. The results did not indicate a significant difference ( $p > .05$ ) for any of the factors. This means that participants had similar scores and have similar levels of entrepreneurship features. The analysis did not show a significant difference ( $p > .05$ ) according to the gender of the participants. That is, the results indicate that the scores of entrepreneurship features of female participants were similar to male participants. This may point to that when female participants are provided with equal opportunities to male participants, they both can become entrepreneurs in the feature. There was no statistically significant result ( $p > .05$ ) on the relationship between the study of the year and participants' entrepreneurship features. This means that the scores obtained from the scale shows similar values according to the level of study. No significant difference was found ( $p > .05$ ) between participants' entrepreneurship features and their previous involvement in entrepreneurship courses. It may be said that the score of the entrepreneurship features of the participants who took an entrepreneurship course was not very different than the participants who did not. Here, the effectiveness of the entrepreneurship courses available can be questioned. Finally, the results did not indicate a statistically significant difference ( $p > .05$ ) between the participants' entrepreneurship features and having an entrepreneur in the family. That is, participants who have an entrepreneurial family member and who do not, have similar entrepreneurship features.

To ensure the results, pairwise comparison of four participant profile aspects were analysed separately. The results did not show a significant difference ( $p > .05$ ) for any aspect.

#### *4.3 What are the suggestions of preschool education lecturers on developing the entrepreneurship features of pre-service preschool teachers?*

Four lecturers were interviewed about what can be done and what methods, strategies, or activities can be used to improve entrepreneurial features. In this section, lecturers' suggestions for improving entrepreneurship features and the potential activities are examined respectively.

#### 4.3.1 Suggestions for improving entrepreneurship features

When the lecturers were asked about how students can improve entrepreneurial features, four themes came up: individual, family, academics, and faculty/university. The first theme was about what students can do personally. The lecturers believed that entrepreneurship features could be improved through personal and professional development. Within this context, it was suggested to join university clubs and ask academics for support. For example, LD mentioned that "students can try to play an instrument or learn different teaching methods, such as finger games. When they have personal and professional development, entrepreneurship features will follow". In the second theme, a few lecturers mentioned what families could do to reach this goal. Lecturers addressed that families could support students' curiosity, creativity, self-confidence, self-respect, and the sense of achievement by letting them do things their own way, not stopping them when they make mistakes, and encouraging them to learn from their mistakes. Additionally, families are suggested to be in touch with educators to learn about how they can play with kids. Within this context, while LC was recommending families to play emotional learning activities at home, LD addressed that:

It is important to develop self-confidence, self-respect, and personality from childhood in order to achieve self-actualisation. When the needs in Maslow's hierarchy of needs are met and self-actualisation is achieved, entrepreneurship features can be developed. Families play a role to help children actualise themselves.

The third theme was about what the lecturers can do. Lecturers mentioned that they could develop classroom activities, use different teaching methods and strategies, and develop relevant content. Two of the lecturers also mentioned the importance of giving voice to students in the classroom. LB mentioned that lecturers' motivation and students' attitude drive each other. Therefore, lecturers should, first, develop a positive entrepreneurship perspective and become motivated, and then, help students improve their features. LB stated that "changing our own perspective will affect our students. Our motivation has an impact on students, and their attitude changes our motivation. It is a vicious cycle".

As part of the fourth theme, lecturers addressed that the faculty could provide professional development by organising workshops, conferences, seminars, and fairs for academics and students. LA stated that "for example, the career centre can get in touch with me and say that they want me to organise a workshop for the lecturers or students to improve their creativity, and I can help with that". LA and LD mentioned supporting the collaboration between local government, entrepreneurs, companies, and students. For this purpose, LD, for example, suggested initiating a practice school as part of the university, and training students there and giving them an opportunity to practice their learning.

#### 4.3.2. Activities for improving entrepreneurship features

Lecturers were asked about the ways that entrepreneurship features can be integrated into different courses and what should be considered for this implementation. Many methods and strategies were mentioned by lecturers, for example, station technique, vision boards, enacting, creative drama, story completion, teamwork, project development, argumentation, student and entrepreneur meetings, field trips to observe social, scientific, and financial enterprises about preschool education, and reading books about entrepreneurs and discussing them. Lecturers also made suggestions about what should be considered when developing and implementing these activities:

- Creating environments where students can come up with ideas and test them
- Moving from theory to practice
- Inclusion of 21st century skills

- Adopting learning by doing
- Encouraging to learn from mistakes
- Using collaborative learning
- Relating to everyday life
- Utilising active learning

Some example activities were also provided, which are presented in the following.

**Project development:** Students can be asked to identify a few everyday issues and come up with potential solutions to them. The teachers encourage students to take an entrepreneurial perspective and take action to apply their solutions. Students may fail to solve the issue or implement their ideas. The teacher guides students about how they can learn from mistakes and start again to take actions. This activity can help develop students' resilience, perseverance, creativity, problem-solving, risk-taking, and realising opportunities.

**Story completion:** Students are presented with an unfinished object, such as half a bottle of water or a package of biscuits, an incomplete crocheting, or a used pair of shoes. Students can be asked different questions about the objects, such as who they belong to and what was experienced to leave these objects unfinished. This activity can help students develop emotional intelligence and creative thinking.

**Enacting:** Students select an author and research his/her publications. Then, students choose a few of the books and divide them into different pieces like a puzzle. These pieces are distributed to students without following an order. Students come together and complete each work by bringing the puzzle pieces. Then, students write a serenade about the work and enact it. In this activity, students develop creativity, problem solving, self-confidence, and emotional intelligence.

**Creative drama:** A teacher gives a task to the class on behalf of the World Health Organisation (WHO). The students are informed that an epidemic is transmitting across the world from the country of slobs, and WHO selected the students to educate the public in this country. Students go to the country and introduce the cleaning products. For example, a group of students go to the country and introduce the nail clips. They first ask how they cut their fingernails and get different answers such as using sharp stones to file them. In the end, students discuss how effective their method was. This activity supports students' entrepreneurship features such as innovation, creativity, self-confidence, and emotional intelligence.

## **5. Discussion**

The findings are discussed in three sections: 1. Outcomes of the research questions, 2. Preschool teacher education programmes, and 3. Professional development.

### *5.1 Outcomes of the Research Questions*

The results of the RQ-1 showed that although participants believed that they were equipped with high levels of entrepreneurship features, the only agreement the lecturers had with participants was on the self-confidence feature. There are various studies conducted at different education levels showing the importance of developing such features (Axelsson, Hagglund & Sandberg, 2015; Insulander, Ehrlin, & Sandberg, 2015; Kondracka-Szala & Malinowska, 2019; Yavuz Konokman & Yanpar Yelken, 2014). Priscilla Oguejiofor (2017) believed that the inclusion of entrepreneurship in preschool may support students' achievement in classes, decrease different issues such as social-emotional and mental health problems, foster self-sufficiency, and increase the potential for employability. Concerning the development of entrepreneurship features, the current scales only show the perception of students or teachers on whether they think they have the features. Furthermore, there is a difference between participants' views of what entrepreneurial features they have and their lecturers' views of what entrepreneurial features the participants (preservice preschool teachers) are equipped with. Therefore, this study

recommends creating rubrics to observe student behaviour and determine if they are really equipped with these features.

Findings of RQ-2 indicated that the four factors regarding background information did not have a significant impact on participants' entrepreneurship features. For instance, concerning gender, both female and male participants had a similar level of entrepreneurship features. This result was also found by other researchers, such as Yavuz Konokman and Yanpar Yelken (2014) and Yilmaz and Sunbul (2009). Yavuz Konokman and Yanpar Yelken (2014) concluded that gender is not a variable that has an impact on being entrepreneurial; however, in our society, a female might be perceived less entrepreneurial due to her role in the society viewed as a person who should be happy with what she already has. Yilmaz and Sunbul (2009) believed that male and female preservice teachers perceive themselves with similar entrepreneurial features and addressed the potential reason for this result as nowadays, male and female having equal conditions. Therefore, in order to increase the number of female entrepreneurs, it can be suggested to create entrepreneurial learning environments with equal conditions and opportunities for both female and male. The second factor, year of the study, did not have a significant relationship with participants' entrepreneurship features. This result means that the first-year students' perception of their entrepreneurial features was similar to fourth year students. That is, the features that we develop in one-year equals to the features that we develop in four years. Considering the education that a fourth-year student has been exposed, an increase in the features could be expected here. For example, Yavuz Konokman and Yanpar Yelken (2014) found a statistically significant difference between preservice teachers' perception and the year of the study. There may be various reasons for this outcome, for instance, the content of and targeted learning intentions in the programme, lecturers' focus on the activity rather than the development of the features (Garcia-Rodriguez, Gutierrez-Tano, & Ruiz-Rosa, 2018), or the scope of the activities (not embracing the development of such features). Considering the third factor, the results showed no significant difference between participants who have and have not been exposed to enterprise education. Following up with the previous result, this outcome might be an indicator of ineffective implementation of learning methods and strategies or lecturers' perception of the importance of entrepreneurship features. Therefore, based on the second and third factors, it can be suggested to include entrepreneurship features in preschool education and preschool teacher education programmes, revise the content of and targeted learning intentions in the programme accordingly, develop practices (activities) targeting these features, and increasing preservice teachers' awareness of the importance of the features. The results of the fourth factor indicated that the existence of an entrepreneur in the family does not have a statistically significant impact on developing entrepreneurship features. Commonly, it may be believed that having an entrepreneur in the family should have an impact on individuals as education starts in the family and they have a key influence on our lives (Garcia-Rodriguez, Gutierrez-Tano, & Ruiz-Rosa, 2018). Lindquist, Sol and Van Praag (2012) found that having an entrepreneur in the family increases 60% the possibility of a student starting a business in the future. It should be remembered that this study was on students' and teachers' perception of to what extent they think students are equipped with the entrepreneurship features. Having an entrepreneur family member might influence students' intention of starting a business but may not have a crucial impact on their features. However, the socio-economic situation of a family or the city lived in might have a relationship with developing entrepreneurship features and requires further research.

RQ-3 targeted the lecturers' suggestions for the potential activities that can be developed to improve entrepreneurship features, and what should be considered when developing and implementing these activities. Lecturers made suggestions on what should be considered when implementing the activities, such as moving from theory to practice and using collaborative, active, and project-based learning. Similarly, while Pepin and St-Jean (2019) was recommending using entrepreneurial projects to foster leadership, creativity, and achievement, Priscilla Oguejiofor (2017) recommended teamwork, and active and participative learning for enterprise education. However, Pepin and St-Jean (2019) found that entrepreneurial initiatives are usually integrated into pedagogical practices poorly, and students' participation in only one entrepreneurial project does not significantly impact their entrepreneurial attitudes. Within this context, it can be said that such entrepreneurship features can be developed through different activities in teacher education programmes, but more than one activity should be implemented to develop one feature effectively.

### 5.2 *Preschool Teacher Education Programmes*

Early ages are important for children to become entrepreneurial and capable learners, but current policies do not fully cover the development of these features (O'Connell, Fox, Hinz & Cole, 2016). Similarly, entrepreneurship is currently not involved in preschool education in Turkey. This may not be surprising considering that preschool education is fairly new in the Turkish education system. However, as discussed previously, there is a need for implementing enterprise education in preschool teacher education programmes. While integrating enterprise education, Kaya-Capocci (2022) suggests clarifying characteristics and the aims of enterprise education in preschool education and then, creating a policy and a curriculum for schools and higher education.

Many researchers supported the inclusion of entrepreneurship in early education programmes. For example, Garcia-Rodriguez, Gutierrez-Tano, and Ruiz-Rosa (2018) found that attendance in an entrepreneurship programme increased achievement, personal control, attitude, and the intention and feasibility to start a business. Huber, Sloof & VanPraag (2014) implemented BizWorld programme targeting nine non-cognitive skills, and seven of these skills (Risk taking propensity, Creativity, Need for Achievement, Self-Efficacy, Pro-activity, Persistence, and Analysing) increased significantly. Putri and Djoehaeni (2018) reported that unresolved character values installation issues at early ages result in negative behaviours, such as selfishness and consumptiveness and can be overcome through a meaningful entrepreneur programme applied at early ages. Despite its benefits, there are challenges for this implementation, such as affordable access and funding for preschools, availability of special programmes, and family and community knowledge on children's early learning (O'Connell et al., 2016). Furthermore, "it puts a lot of responsibility on the preschool teachers both in matters of knowledge, methods and attitudes. Are they equipped for it?" (Axelsson, Hagglund, & Sandberg, 2015). For them to be equipped, (1) enterprise education should be in teacher education curriculum and (2) experimental and conceptual works should be developed and incorporated within this context (Deveci & Seikkula-Leino, 2017).

A recent document about the national education council suggested restructuring the preschool teacher education programmes according to the recent needs (The Ministry of Education, 2022). Yet, entrepreneurship was neglected in the document as one of the needs. The issues hindering this integration may include lack of professional entrepreneurship practice for preservice preschool teachers, practical guidance of entrepreneurship in preschool education curriculum, and entrepreneurship competencies that are required for implementation (Yan, 2018). Teacher education programmes should inspire pre-service teachers to work with various pedagogical methods and strategies (Tican, 2019), where self-emotion skills, such as self-efficacy, self-image, and self-confidence are developed (Lindstrom, 2013). In this study, lecturers suggest using methods and strategies, such as, station technique, vision boards, enacting, creative drama, story completion, teamwork, project development, and student and entrepreneur meetings. Garcia-Rodriguez, Gutierrez-Tano, and Ruiz-Rosa (2018) used an activity where students created and managed a cooperative to design and make products which they later sold at a fair. Suzanti and Maesaroh (2017) used an activity where students were requested to sing when they were going to cross a wooden bridge. The activity aimed to encourage students to be brave and take risks for the purpose to be achieved. To achieve an effective programme, the activities that will be implemented are of importance.

### 5.3 *Professional Development*

A few lecturers mentioned the importance of professional development to enhance students' entrepreneurial features. If we were to integrate enterprise education into preschool education policies, programmes, and school curriculums, teachers are the first agents who start the implementation. European Commission (2015) views teachers as key factors who inspire students as behaviour models and mentors. Particularly, young students' relationship with their teachers highly influences their entrepreneurial spirit (Kristová & Malach, 2017). To implement enterprise education, teachers should at least have basic knowledge of entrepreneurship and entrepreneurial competences (ibid). Therefore, if teachers have a lack of knowledge, skills, or attitude, this could decrease the effectiveness of the implementation and negatively influence students' entrepreneurial spirit. Therefore, professional development of teachers and teacher candidates is highly important.

Professional development can be provided through different ways, such as seminars, workshops, and courses. In Sweden, “several pre-schools have started to work consciously with entrepreneurial learning as a way of setting up a policy profile, and preschool teachers may attend university courses in entrepreneurial learning as a part of their developmental work” (Insulander, Ehrlin, & Sandberg, 2015). Likewise, internships and study visits may help foster the entrepreneurial spirit. The seminars, workshops, or courses can focus on developing teachers’ own entrepreneurship features or teaching them how to improve their students’ features. While various researchers suggest preservice teachers using the Finnish model of entrepreneurship education to develop their own features, some others recommend them to adopt The Entrepreneurship Competence Framework to develop their students’ entrepreneurship features (Stamatovic & Zlatic, 2021).

## 6. Conclusion

This paper aimed to explore preservice preschool teachers’ entrepreneurship features and make suggestions for implementing enterprise education in teacher education programmes. Overall, the results showed that preservice preschool teachers’ perception of their level of entrepreneurship features was high, which was not agreed by lecturers except for self-confidence. As the current scales only show the perception of students or teachers on whether they think they have the features, this study recommends creating rubrics to observe and score the entrepreneurship features during an activity targeting the development of a specific feature. The results of two-way ANOVA did not indicate any significant difference ( $p > .05$ ) for any of the factors investigated (i.e., gender, year of study, taking entrepreneurship courses previously, and/or having an entrepreneur in the family). This means that participants had similar scores and have similar levels of entrepreneurship features. Not having any impact of year of study and entrepreneurship courses attended previously may suggest the revision of preschool teacher education programmes and the content development targeting entrepreneurship features. Finally, practice-based, active, and collaborative teaching is suggested rather than theory-based teaching for enterprise education in preschool teacher education programmes. Teacher-academics meetings, seminars and workshops about enterprise education are suggested for professional development of preschool teachers. It should not be forgotten that “an entrepreneurial society can only be created with teachers having high entrepreneurial spirit” (Onel, 2018), which should start at the preschool level to make an investment for future life (Sarikaya & Coskun, 2015).

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# Personalized Cognitive Counseling Process to Promote Digital Health

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## Abstract

The objective of this research was as follows: 1) to synthesise the Personalized Cognitive Counseling Process to Promote Digital Health. 2) to develop the Personalized Cognitive Counseling Process to Promote Digital Health. 3) to evaluate the Personalized Cognitive Counseling Process to Promote Digital Health. The documentary research method was used in this study. 4) to adapt the Personalized Cognitive Counseling model for Digital Health. The results showed a model of Personalized Cognitive Counseling Process to Promote Digital Health which consisted of four steps: Step 1: Synthesis of the Personalized Cognitive Counseling Process to Promote Digital Health. This includes the following three components: Personalized Learning, Cognitive Learning and Counseling. Step 2: The development of the Personalized Cognitive Counseling Process to Promote Digital Health. The researchers found that a model of Personalized Cognitive Counseling Process to Promote Digital Health consists of five processes: 1) Understanding 2) Design 3) Development 4) Choosing and Using Tools 5) Evaluation. Step 3: The evaluation of the Personalized Cognitive Counseling Process to Promote Digital Health. The results of the evaluation in terms of suitability revealed that the design process was deemed to be at the highest level. Step 4: Adapting Result of the Personalized Cognitive Counseling model for Digital Health

**Keywords:** Personalized Learning, Cognitive Learning, Counseling

## 1. Introduction

Nowadays, technology development is changing rapidly. It is also complicated. Access to health services is becoming increasingly complicated, causing people to immediately adapt to those changes. (Li et al., 2020) As can be seen from the situation during the COVID-19 outbreak, technology development directly and indirectly affects the lives and well-being of Thai people in many dimensions. both health behaviors Study life - work travel and family relationship. These aspects all affect our quality of life in both the short and long term. (Dunn et al., 2019) People have a low level of self-health management and have insufficient knowledge of health care. This results in people being unable to manage themselves. and can change the behavior of health to be healthy. People want and expect to know if they are sick or have any health problems. What needs to be done to heal the individual

is important with regard to that individual's state of health. People have the right to have access to health and wellness information, including the right to receive accurate and adequate health information in order to provide accurate, safe, and diverse health care options.

In addition, in a hyper-connected society full of sophisticated communication processes, educational operations must adapt to the current era and the conditions we live in. That is counseling that has some form of mentoring must be introduced for best results. Personalized Learning can provide and customize learning approaches to meet learners' needs. (de Campos & Cazella, 2019) This is based on a knowledge base, but is not attached and confined to the framework. There are levels of difficulty that learners can aspire to according to their interest level. Students can learn in a way that is suitable for each of them individually. (Bishop et al., 2020) The Cognitive Counseling Process provides guidelines for patient counseling and treatment (Widya Kirana et al., 2022) which can produce positive outcomes. It can guide students to become lifelong learners in the digital world, who are capable of self-controlled learning (Yang et al., 2017).

## 2. Objectives

- 1) To synthesize the Personalized Cognitive Counseling process to Promote Digital Health
- 2) To develop the Personalized Cognitive Counseling process to Promote Digital Health
- 3) To evaluate the Personalized Cognitive Counseling process to Promote Digital Health
- 4) To adapt the Personalized Cognitive Counseling model for Digital Health

## 3. Literature Review

### 3.1 Personalized Learning

Personalized learning is a learning strategy and teaching approach that has been adapted to suit the needs of the learner (Chen., 2021) learner by being customized to the strengths and needs of each student. Each student unit and flexibility in teaching. (Shemshack et al., 2020) Strategies can be integrated with a personal learning. Each learner is different, and experiences their own experience, knowledge, and understanding (Tang et al., 2020), allowing more flexibility for both learners and teachers. (Roberts-Mahoney et al., 2016) Learning methods and speeds may vary from student to student. However, the final goals and educational standards do not differ. Each student must reach a topic proficiency level by the end of the unit or academic year. (Bishop et al., 2020) Learning objectives, teaching approaches, and teaching content and grading may vary according to the needs of the learner. (Walkington & Bernacki, 2020) The aim is to facilitate the academic success of each student. This is done by first determining the needs, interests and learning aspirations of each student teaching content and grading may vary according to the needs of the learner. A more or less tailored learning experience is then provided for each student (Raj et al., 2021), responding to their particular abilities, interests and needs. This is a practice that adjusts the pace and focus of teaching to meet the needs and goals of each learner. It allows students to speed up or spend additional time according to their level of expertise. Learners work with teachers to set both short- and long-term goals. (Shemshack & Spector, 2021) This process allows learners to take ownership of their own learning. (Bernacki et al., 2021) Learner's work with teachers to set both short- and long-term goals. This process allows learners to take ownership of their own learning. (McCarthy et al., 2020) Teachers should strive to provide a learning environment such that students are able to learn on their own and have diverse learning opportunities. Creating personalized learning involves using of advance innovation such as AI recommendations, machine learning, learning paths, and natural language processing. (Tang et al., 2020)

### 3.2 Cognitive Learning

Cognitive learning theory deals with the processes involved in learning. (Obergriesser & Stoeger, (2020) It relates to the skills, knowledge, memories, and relevant information that students have obtained in the past. (Palee et al., (2020) It is an proactive learning model that aim at helping learners learn how to maximize their learning ability. It makes it easy to connect with modern information to existing ideas. (Tang et al., 2020) It focuses on using one's brain more efficiently, and to understand the process of cognitive learning. (Thuneberg et al., 2018) Learners have

the ability to absorb and store information through experiences, thoughts and feelings. (Park, & Yun, 2017) Individual learning is influenced by internal and external factors. Learners have the ability to create new understandings based on the information they will receive. (Chen et al., 2018) When learning new things, learners are active participants in the process, with the use of skills, knowledge, experience, and relevant old information of learner. Personalized process and build their self-understanding about various topic based on the experiences and knowledge that the learners have experienced. (Palee et al., 2020) Cognitive learning theory combines learning and cognition to effectively describe the processes involved in learning. (Thuneberg et al., 2018) instructors apply cognitive learning theory by supporting self-review and explaining their reasons. Applying cognitive learning theory to work should take a similar approach, but is implemented differently. (Karapakdee & Piriyastrawong, 2022) Cognitive learning theory can be influenced by both external and internal factors. If the cognitive process works normally, it will be easier to learn. However, if something happens through cognitive processes, difficulties can arise. (Choi et al., 2021)

### *3.3 Counseling*

Counseling means building a good relationship between the adviser and the counselor. Counselors use a range of skills to facilitate positive change in their counselors. (Stonerock & Blumenthal, 2017) They do this through the use of deliberate counseling techniques and an understanding of human nature. (Whicker, J. J., 2020) To aim of counselling is to identify the source of problems and resolve them by making decisions in terms of planning and taking action in order to improve and enhance their status. (Carpenter et al., 2016) as well as being able to find solutions to those problems on their own with a degree of flexibility. (Lancaster & Stead, 2017) Counseling involves helping people make necessary changes in their thinking, feelings, and behavior. It is a goal-driven collaborative process that involves a nonjudgmental, supportive mentor who works with the mentee to allow the mentee to tell their story. It involves setting a possible goal with the aim of achieving it. (Pisano & Miller, (2018) However, consulting does not come in a ready-made form. Typically, each session is tailored to individual problems. (Lambie et al., 2018) This involves helping the counselor see things more clearly, which may result from a consideration of different perspectives. (Hategan, V. P., 2021)

### *3.4 Personalized Cognitive Counseling*

Personalized Cognitive Counseling involves building a good relationship between the counselor (Stonerock & Blumenthal, 2017) and the client using a learning model that focuses on using the brain effectively It can maximize one's brain's potential to facilitate positive change. (Tang et al., 2020) The process focuses on how the brain processes information and how learning takes place. (Mierdel & Bogner, 2021) his is done through a survey to understand the cause of the problem and the needs of the client. (Stonerock & Blumenthal, 2017) In addition, it encourages the client to be able to find solutions to those problems on their own in a flexible manner, by determining their needs, interests, and inspirations with regard to learning, with an emphasis on flexible individual educational experiences (Lancaster & Stead, 2017) to meet the needs and goals of each client. (Raj et al., 2021) Personalized Cognitive Counseling consists of 5 steps as follows: 1) Understand how learners learn best, 2) Designing a personal learning environment 3) Develop lessons 4) Choose and use tools, resources, and strategies 5) Evaluate learning

## **4. Research Method**

### *4.1 Scope of the Research*

This research consisted of the use of 21 experts in 3 areas: educational technology experts, information and communication technology experts, and health care experts, to assess and express opinions on the learning model. The research used in-depth interviews with experts incorporating detailed questions with regard to each issue, based on undergraduate students from Bansomdejchaopraya Rajabhat University, obtained by simple random sampling.

### *4.2 Research Process*

Step 1: Synthesis of the Personalized Cognitive Counseling Process to Promote Digital Health.

This involved studies of personalized learning, cognitive learning and counseling from documents, academic journals, concepts, textbooks, and theories of relevant research papers, including analysis and synthesis of the data.

Step 2: Development of the Personalized Cognitive Counseling Process to Promote Digital Health.

From the synthesis step we has developed the Personalized Cognitive Counseling model from analysis and synthesis of relevant data, documents, and research.

Step 3: Evaluation of the Personalized Cognitive Counseling Process to Promote Digital Health.

Assessment as to the suitability of the Personalized Cognitive Counseling Process to Promote Digital Health was based on an in-depth interview with the 21 experts, divided into 3 groups - educational technology experts, information and communication technology experts, and health care experts. This research aimed to determine the validity of the process by analyzing the Index of Item Objective Congruence (IOC) to complete the content of the Personalized Cognitive Counseling Process to Promote Digital Health.

Step 4: Adapting the Personalized Cognitive Counseling model for Digital Health

The researchers studied the effect of using the Personalized Cognitive Counseling model by experimental group-control group research design, with the sample evaluation stage before using and evaluation stage after using. The research tool was the Digital Health Assessment. Thereafter, the researchers compared digital health before and after use using an independent T-test, with statistical significance set at the .01 level.

## 5. Results

### 5.1 Conceptual Framework

The synthesis of personalized learning from 14 relevant document, theories, and research is as detailed in Figure 1.

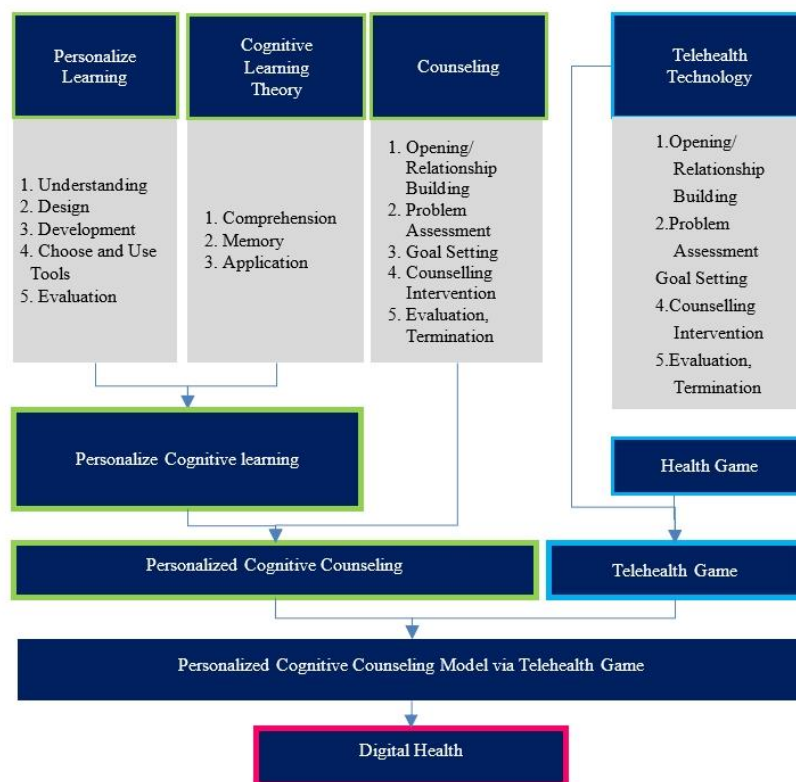


Figure 1: Conceptual Framework

As can be seen from Figure 1, the Personalized Cognitive Counseling Process to Promote Digital Health consists of 3 input elements from Personalized Cognitive Counseling in the form of personalized learning, cognitive learning theory and counseling. The tool that the researchers have chosen for this research is Telehealth Game consists of Telehealth Technology and Game for Health to promote Digital Health.

### 5.2.1 Synthesis of Personalized Learning.

The synthesis of personalized learning from 14 relevant document, theories, and research is as detailed in Table 1.

Table 1: Synthesis of Personalized Learning

Personalized Learning	Researcher													
	(Roberts-Mahoney et al., 2016)	(Zhang et al., 2020)	(Shemshack et al., 2020)	(Bernacki et al., 2021)	(Shemshack & Spector, 2021)	(McCarthy et al., 2020)	(Tang et al., 2020)	(Bishop et al., 2020)	(Chen, 2021)	(Raj et al., 2021)	(Walkington & Bernacki, 2020)	(Pardo et al., 2018)	(Xie et al., 2019)	(Pane et al., 2017)
Understand how Learners Learn Best	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Design	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Development	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Facilitate Driving and Supporting Questions						√					√		√	
Choose and Use Tools, Resources, and Strategies	√		√	√	√	√	√	√	√	√		√	√	√
Evaluation	√	√	√	√	√	√	√	√	√	√	√		√	√

According to Table 1, this consists of 5 elements: 1) Understanding how learners learn best, 2) Design, 3) Development, 4) Choosing and using tools, resources, and strategies, 5) Evaluation.

### 5.2.2 Synthesis of Cognitive Learning.

The synthesis of cognitive learning from 10 relevant document, theories, and research is as detailed in Table 2.

Table 2: Synthesis of Cognitive Learning

Cognitive Learning	Researcher									
	(Wu et al., 2021)	(Karapakdee & Piriyaawong, 2022)	(Palee et al., (2020)	(Chen et al., 2018)	(Mi et al., 2020)	(Shi et al., 2019)	((Mierdel & Bogner, 2021)	(Thuneberg et al., 2018)	(Park, & Yun, 2017)	(Obergruesser & Stoeger, (2020)
Comprehension	√	√	√	√	√	√	√	√	√	√
Memory		√	√	√	√	√	√	√	√	√
Positive and Negative Reinforcement	√						√			
Application	√	√	√	√	√	√	√	√	√	√
Evaluate			√	√		√				
Create			√	√						

According to Table 2, this consists of 3 elements: 1) Comprehension, 2) Memory, 3) Application.

### 5.2.3 Synthesis of Counseling.

The synthesis of counseling from 9 relevant document, theories, and research is as detailed in Table 3.

Table 3: Synthesis of Counseling

Counseling	Researcher									
	(Stonerock & Blumenthal, 2017)	(Lambie et al., 2018)	(Hategan, V. P., 2021)	(Whicker, J. J., 2020)	(Terrell & Osborne, 2020)	(Carpenter et al., 2016)	(Pisano & Miller, (2018)	(Lancaster & Stead, 2017)	(Dehlendorf et al., 2017)	
Opening/ Relationship Building	√	√	√	√	√	√	√	√	√	
Problem Assessment	√	√	√	√	√	√	√	√	√	
Goal Setting			√		√	√	√	√	√	
Counselling Intervention	√	√	√	√	√	√	√	√	√	
Termination and follow-up	√				√	√				
Empowering Ability				√						
Evaluation/ Termination			√		√	√	√	√	√	

According to Table 3, this consists of 5 elements: 1) Opening/ relationship building, 2) Problem Assessment, 3) Goal setting, 4) Counselling Intervention 5) Evaluation/ Termination.

### 5.2 The development of the Personalized Cognitive Counseling process to Promote Digital Health

The Personalized Cognitive Counseling Process to Promote Digital Health consists of 5 steps.

1) Understanding

Understanding relates to the understanding of the learner. Measuring each learner's grades is done by building relationships with individual students to build trust. This allows them to disclose preliminary information. They can then explore and understand problems, their causes, and their needs in such a way as to engage learners in exploring the problems that affect them. All learners participate in an appropriate learning experience. This could include whole class or small group activities led by the teacher. The latter can involve working individually with learners or in groups, and engaging students in digital learning activities

2) Design

Designing a Personal Learning Environment involves determining the situation of the person, the environment, and the behavior of the learners. Such a process involves positive and negative reinforcement. It involves assessing the problems students are facing by putting them at the center of the learning process. Determine the student's grades type of learning experience. It is necessary to determine the types of information that can be collected. For example, finding out when students participate in small group activities. Instructors may also ask objective, open-ended questions that will help refine the upcoming elements of the lesson as the technology can continuously measure performance in real time.

3) Development

It is necessary to develop lessons as designed. This will include lesson planning, and teaching and learning in the classroom as it has been planned. This includes the use of teaching materials and various materials and equipment in accordance with the learners' progress. It can relate to concepts, statements of knowledge, attitudes, and process skills in lesson development which are general processes that can be used for a variety of purposes. It will be necessary to adjust the procedures of the operation to suit each learner's context by maintaining the core principles of the process. It will involve determining the issues of lesson development arising from the problematic state of thinking or learning of the learners in terms of actual teaching in the classroom. The teacher sets goals or issues for developing lessons. This is done by considering the student's problem situation based on the information available and aiming at the goal of developing lessons that improve the learners' learning.

4) Choosing and Using Tools

Selecting and using tools, resources, and strategies for teaching and learning consists of selecting a method and integrating tools, applications, and resources to design instruction and universal learning strategies that support learners in achieving their learning goals. This is done by considering the congruence with the personalized learning experience of each individual learner. The learning experience can be personalized by the instructor or with the use of a personal learning system involving digital technology. Alternatively, it can consist of a combination of both approaches, with learners adjusting the approach themselves.

5) Evaluation

Learning is key for learners who are responsible for their learning. Instructors will design an assessment strategy which will include suggestions. This gives students the opportunity to reflect on what they are learning and how it applies to other formats. This in turn will help them develop the problem-solving skills they need. It will create new connections between what the students are learning in evaluating individual learners. When it is a unique learning Teachers use digital technology to assess learners including a unique consulting channel to improve the learner experience, as well as improved technology-based systems designed to support personalized learning.



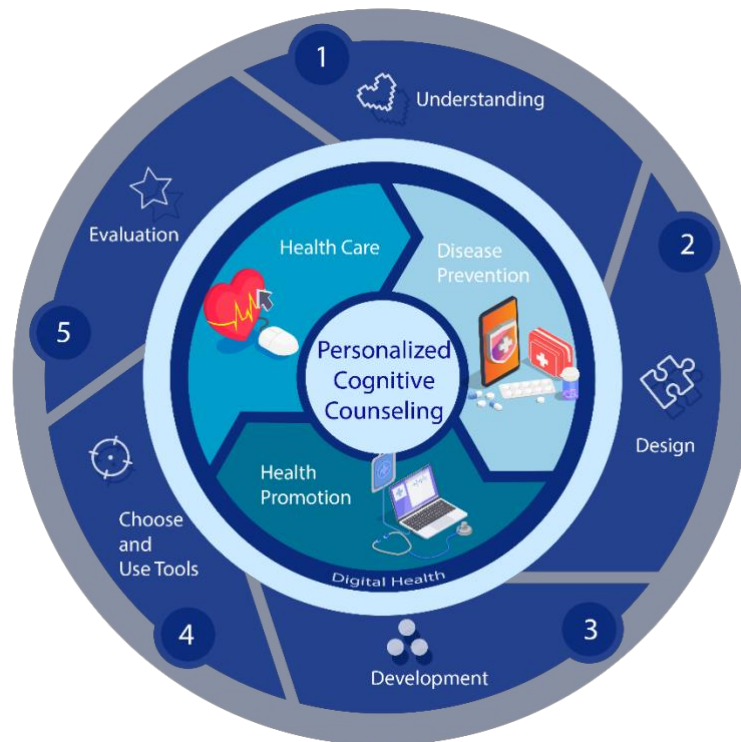


Figure 2: A model of Personalized Cognitive Counseling process to Promote Digital Health

### 5.3 The Evaluation Results.

According to the literature review related to personalized learning, cognitive learning theory and counseling, the results of the Personalized Cognitive Counseling Process to Promote Digital Health are as shown in Table 4.

Table 4: The result of the suitability of the Personalized Cognitive Counseling process to Promote Digital Health

Details	$\bar{x}$	S.D.	Suitability
1. Understanding	4.60	0.63	Highest
2. Design	4.87	0.35	Highest
3. Development	4.80	0.41	Highest
4. Choose and Use Tools	4.60	0.83	Highest
5. Evaluation	4.73	0.46	Highest
Average	4.72	0.56	Highest

The results with regard to the suitability of the Personalized Cognitive Counseling Process to Promote Digital Health indicated that overall, the experts were of the opinion that the process was appropriate at the highest level ( $\bar{x} = 4.72$ , S.D. = 0.56). When considering each step, it was found that the highest satisfaction was with the design process (4.87) with a standard deviation of 0.35. This was followed by the development process (4.80) with a standard deviation of 0.41. The satisfaction with the evaluation process achieved 4.73 with a standard deviation of 0.46. The satisfaction with the understanding process achieved 4.60 with a standard deviation of 0.63 while the Choose and Use Tools process attained 4.60 with a standard deviation of 0.83.

### 5.4 Adapting Result of the Personalized Cognitive Counseling model for Digital Health

The researcher studied two issues: 1) Digital health measurement results before and after using the Personalized Cognitive Counseling model 2) Comparison of digital health before and after using the Personalized Cognitive Counseling model

5.4.1 Comparison of digital health measurement before and after using the Personalized Cognitive Counseling model consist of two groups, control group of 30 people and an experimental group of 30 people, as shown in the Table 5.

Table 5: Comparison of digital health measurement before and after using the Personalized Cognitive Counseling model

Groups	n	Total Score	Pretest		Posttest		t-test	p
			$\bar{x}$	S.D.	$\bar{x}$	S.D.		
Control Group	30	24	12.63	1.61	16.53	1.48	15.28	.000**
Experimental Group	30	24	15.53	1.48	22.23	1.45	27.86	.000**

\*\* $p < .01$

From Table 5, the research findings showed that the results of digital health after learning increased in both groups as follows: 1) Control Group, a group who learns with normal teaching methods After learning, the mean was 16.53, the standard deviation was 1.48, before the study was 12.63, and the standard deviation was 1.61. The difference was statistically significant at the .01 level. 2) The experimental group, the group who studied in the Personalized Cognitive Counseling model after learning had a mean value of 22.23, a standard deviation of 1.45, a mean of 15.53, a standard deviation of 1.48, indicating that knowledge before using and after using the Personalized Cognitive Counseling model was significantly different at the .01 level.

5.4.2 Comparison of digital health before and after using the Personalized Cognitive Counseling model between the control group and the experimental group

Table 6: Comparison of digital health before and after using the Personalized Cognitive Counseling model

Groups	n	$\bar{x}$	S.D.	t	sig
Control Group	30	16.53	1.48	15.06	.01
Experimental Group	30	22.23	1.45		

\*\*Statistically significant is at 0.01

The control group had a mean of 16.53, a standard deviation of 1.48, while the experimental group had a mean of 22.23, a standard deviation of 1.45 when testing the difference between the means. It was found that the mean of the experimental group was significantly higher than the control group at the .01 level.

## 6. Conclusion

Nowadays, Digital Health is important as technology inevitably plays a role in our daily lives. especially in terms of health. The researcher has developed the Personalized Cognitive Counseling model enhance knowledge about Digital Health to be used in educating people about Digital Health. The learning style has been assessed and certified by experts as being at the optimal level. Including the results of the Digital Health assessment, showing a significant improvement in digital health. Because of the assessment results after learning management of the students using the higher form before learning. It is therefore a process that can be used to improve the digital Health of today's learners.

## 7. Discussion

The researchers synthesized literature with regard to the Personalized Cognitive Counseling Process to Promote Digital Health, and found that the synthesis concludes that Personalized Cognitive Counseling Process to Promote Digital Health consists of five processes: 1) Understanding 2) Design 3) Development 4) Choosing and Using Tools, and 5) Evaluation. From in-depth interviews with 21 experts in three different areas, the evaluation of the suitability of the process revealed that each step is performed using the telehealth technology. In terms of the

process of understanding it was found that it is consistent with the recommendations of those (Tang et al., 2020) who discussed individual learning approaches in that each learner is different and has his or her own experiences, knowledge, and perceptions. This has a great influence on how to interpret and use new information to create a personalized learning experience based on the individual's personalised knowledge. It encourages students to finding new solutions, derive the best results and develop efficiency. The whole process will encourage learners in terms of digital health. Learning digital health is a challenge in the 21st century. Integrating digital health in personalized cognitive counseling can involve combining digital technology in health, coupled with relying on and developing digital health in daily activities. This is especially important in an era in which technology is rapidly evolving.

From Digital Health Results of Learners that uses the Personalized Cognitive Counseling model. Based on the findings of research in the field of digital health. Learners who learn with the Personalized Cognitive Counseling model compared to traditional learning management can be summarized as follows. the Personalized Cognitive Counseling model can improve digital health literacy for learners. Learners who study with the normal pattern Compared with the learners who studied using the Personalized Cognitive Counseling model found that There was a statistically significant difference in digital health literacy at .05 level. Learners who study with normal learning management methods. From the results of using the Personalized Cognitive Counseling model, it can be concluded that the Personalized Cognitive Counseling model can improve digital health. Different learning styles affected the digital health of the control group and the experimental group. clearly the group of learners who studied the Personalized Cognitive Counseling model had higher digital health than those who studied the normal learning model.

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# An Examination of Obesogenic Nutritional Habits in Sedentary Students

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## Abstract

Recently, widespread sedentary lifestyles and changing eating habits have increased various health problems among students. The current study examined sedentary students' obesogenic eating habits by their socio-demographic characteristics. The research study group comprised 184 students, of whom 73 were females and 111 males, specified by a simple random sampling method. A Three-Factor Nutrition questionnaire served in the study to measure sedentary students' obesogenic eating habits. While a significant difference existed between sedentary students by gender and age variables, no difference existed in terms of the "presence of obese individuals in the family" and "family income levels." Consequently, the current study suggests the existence of positive relationships between Emotional Eating, Cognitive Restraint, and Sensitivity to Starvation in sedentary individuals.

**Keywords:** Sedentary, Obesity, Nutritional Habits

## 1. Introduction

The world has been undergoing a tremendous technological change that has alienated people from active lifestyles (Pate, Mitchell, Byun, & Dowda, 2011). Previous research reported that sedentary life is associated with several health risks (U.S. Department of Health and Human Services, 1996; Pate, O'Neill, & Lobelo, 2008). While scientists associated a sedentary life with reduced longevity and poor health, most also announced that exercise and an active life cure many physical and mental illnesses.

Sedentary behavior refers to activities with a minimal, almost resting level of energy consumption and covers behaviors such as sleeping, sitting, lying, and using a computer, and passive entertainment styles such as watching television (Zhang, Pi-Sunyer & Boozer, 2004). Social changes caused by sedentary life severely affect children and young people as well as adults. These changes boosted the prevalence of overweight among youth in developed countries, and the same trend now appears in some developing countries (Ogden et al., 2010; De Onis, Blössner, & Borghi, 2010; Prentice, 2006). Changes in dietary behavior also contribute to these trends. Decreased physical activity and increased time spent in sedentary behavior are dominant factors underlying the worldwide epidemic of childhood and youth obesity (Pate, Mitchell, Byun, & Dowda, 2011).

A relatively new area of obesity research is the study of sedentary behaviors. Some researchers suggest that sedentary behaviors should be examined differently from physical activity (Spanier, Marshall & Faulkner, 2006). Kautiainen et al. argued that the increasing use of information and communication technologies, especially watching television, playing digital games, and using computers, are critical sedentary factors affecting the boost in obesity (Kautiainen et al., 2005). Such intensive use of communication and information technology causes nutritional disorders and obesity. Nutrition primarily aims to supply individuals with enough energy and protein and prevent complications and physiological stress associated with overnutrition (Choban & Dickerson, 2005). On the other hand, adequate and balanced nutrition is the intake of all nutrients—required for the body's growth, regeneration, and functioning—in sufficient quantities, in required proportion, and benefiting from them for the body. Nutrition is essential for body growth, life maintenance, and health protection (Demirezen & Coşansu, 2005).

In line with these objectives, the current study examined the obesity-related eating habits of sedentary individuals across various variables. Further, despite studies on obesity and nutrition in the relevant literature, few studies appear on obesogenic eating habits in sedentary individuals. This finding reveals the potential importance of the research.

## **2. Method**

### *2.1. Participants*

The study group of the research consisted of 184 sedentary students (age 18 to 24), of whom 73 were females and 111 were males, studying at Osmaniye Korkut Ata University in the 2021-2022 academic year, stating in the questionnaire that they do not do sports.

### *2.2. Measurement Tools*

#### *Three-Factor Eating Questionnaire*

The current study utilized the 18-item Three-Factor Eating Questionnaire adapted to Turkish by Kırac et al. (2015). The scale had a 4-point Likert-type rating. The reliability of the items in the Three Factor Nutrition Questionnaire, which did not contain any reversed items, was determined by calculating the internal consistency coefficient (Cronbach's Alpha). The general reliability of the scale was 0.72 in this study, higher than  $\alpha=0.65$ .

### *2.3. Data Collection*

During the data collection phase, the students selected by simple random sampling method were reached and asked to answer the questions regarding the personal information form and the Three-Factor Eating Questionnaire. Before responding to the questionnaires, all the students filled out an informed consent form. Although 420 students participated in the surveys, the study evaluated the data of 184 students who gave a negative answer to the question, *Do you do sports?*

### *2.4. Analysis of Data*

The sample size of this study, examining the obesogenic eating habits of sedentary individuals, was calculated by taking Power at least 80% and a Type-1 error of 5% for each variable. Kolmogorov-Smirnov ( $n>50$ ) and Skewness-Kurtosis tests checked the normal distribution of continuous measurements in the study, and because the measurements showed a normal distribution, parametric tests were applied. Descriptive statistics for the variables in the study were expressed as mean, standard deviation, minimum, maximum, number ( $n$ ), and percent (%). Cronbach's Alpha coefficients were calculated for the reliability analysis of the scale questions. Average scores of the scale answers were used in the statistical calculations. Independent T-test and One-Way Analysis of Variance (ANOVA) compared scale scores by the categorical groups, and the Tukey test identified different groups following the analysis of variance. Pearson correlation coefficients were calculated to determine the

relationship between the scales. Statistical significance level ( $\alpha$ ) was 5% in the calculations. SPSS (IBM SPSS for Windows, ver.26) statistical package program was utilized for analysis.

### 3. Results

Table 1: Correlation analysis results between scale scores

		Uncontrolled Eating	Emotional Eating	Cognitive Restraint
Emotional Eating	r	,459		
	p.	,001		
Cognitive Restraint	r	,203	,173	
	p.	,006	,019	
Sensitivity to Starvation	r	,659	,614	,131
	p.	,001	,001	,075

r: Pearson correlation coefficients

Table 1 shows the results of the correlation analysis between scale scores. There was a statistically significant positive correlation between the participants' Uncontrolled Eating sub-dimension and Emotional Eating sub-dimension scores (45.9%) ( $p=0.001$ ). In this context, as their Uncontrolled Eating sub-dimension score increased, their Emotional Eating sub-dimension score also increased.

In addition, there were statistically significant and positive correlations both between the participants' Uncontrolled Eating and Cognitive Restraint sub-dimension scores (20.3%) ( $p=0.006$ ) and between their Uncontrolled Eating and Sensitivity to Starvation sub-dimension scores (65.9%) ( $p=0.001$ ).

Similarly, there were statistically significant and positive correlations both between the participants' Emotional Eating and Cognitive Restraint sub-dimension scores (17.3%) ( $p=0.019$ ) and between their Emotional Eating and Sensitivity to Starvation sub-dimension scores (61.4%) ( $p=0.001$ ).

On the other hand, no statistically significant correlation existed between the participants' Cognitive Restraint and Sensitivity to Starvation sub-dimension scores ( $p>0.05$ ).

Table 2: Comparison of Scale Results by Gender Groups

	Gender				t	*p.
	Female		Male			
	Mean	Std. Dev.	Mean	Std. Dev.		
Uncontrolled Eating	2,59	,64	2,65	,64	-,559	,577
Emotional Eating	2,81	,86	3,21	,65	-3,576	,001
Cognitive Restraint	2,88	,50	2,93	,52	-,554	,580
Sensitivity to Starvation	2,70	,70	2,90	,74	-1,843	,067

\*Significance levels according to Independent T-test results

Table 2 shows the comparison of scale scores by the Gender variable. In the Emotional Eating sub-dimension of the participants, there was a statistically significant difference according to Gender ( $p=0.001$ ). Put another way, the Emotional Eating sub-dimension score changed according to Gender and was higher in Men. On the other hand, no statistically significant difference existed in the participants' Uncontrolled Eating, Cognitive Restraint, and Sensitivity to Starvation dimensions according to Gender ( $p>0.05$ ).



Table 3: Comparison of Scale Results by Age Groups

	18-20		Age 21-23		24+		F	*p.
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Uncontrolled Eating	2,62	,57	2,70	,70	2,48	,67	1,411	,246
Emotional Eating	2,98	,84	3,20	,69	2,92	,67	2,203	,113
Cognitive Restraint	2,81 b	,51	3,00 a	,49	2,97 a	,55	3,107	,047
Sensitivity to Starvation	2,74 b	,71	3,02 a	,75	2,57 b	,62	5,237	,006

\*Significance levels according to one-way ANOVA test results; a, b, and c show the difference between groups (Tukey posthoc test)

Table 3 shows the comparisons of the scale scores by different age groups. There was a statistically significant difference in the Cognitive Restraint sub-dimension of the participants according to the Age Groups ( $p=0.047$ ). In this context, the Age Groups that display differences were marked by lowercase letters. The 18-20-year-old participants had lower Cognitive Restraint subscale scores and differed from the other two age groups.

Similarly, there was a statistically significant difference according to age groups in the Sensitivity to Starvation sub-dimension ( $p=0.006$ ). In this context, 21-23-year-old participants' Sensitivity to Starvation scores was higher and differed from the other two age groups.

On the other hand, there was no statistically significant difference in participants' Uncontrolled Eating and Emotional Eating sub-dimensions according to the Age Groups ( $p<0.05$ ).

Table 4: Comparisons of the Scales by Obesity History in the Family

	Obese Person in the Family				t	*p.
	Yes		No			
	Mean	Std. Dev.	Mean	Std. Dev.		
Uncontrolled Eating	2,47	,70	2,67	,62	-1,860	,065
Emotional Eating	3,06	,73	3,05	,78	,064	,949
Cognitive Restraint	2,85	,45	2,93	,53	-,923	,357
Sensitivity to Starvation	2,76	,69	2,83	,74	-,612	,541

\*Significance levels according to Independent T-test results

Table 4 shows the scale comparisons according to the Obesity History in the Family. No statistically significant difference existed in all sub-dimensions of the scale according to the Obesity History in the Family ( $p>0.05$ ).

Table 5: Comparisons of the scales according to Income Levels

	Income Level						F	*p.
	Low		Medium		High			
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Uncontrolled Eating	2,63	,53	2,62	,68	2,68	,74	,081	,922
Emotional Eating	3,12	,72	3,03	,76	2,96	,93	,404	,668
Cognitive Restraint	2,87	,52	2,92	,51	2,96	,53	,311	,733
Sensitivity to Starvation	2,92	,69	2,79	,74	2,66	,77	,991	,373

\*Significance levels according to one-way ANOVA test results; a, b, and c show the difference between groups (Tukey posthoc test).

Table 5 shows the scale score comparisons by Income Level. There was no statistically significant difference in all sub-dimensions of the scale according to the participants' Income Levels ( $p>0.05$ ).

#### 4. Discussion

Generally, all societies recognize balanced nutrition and mobility as critical components of healthiness. The current study examined the phenomenon of obesogenic nutrition in sedentary individuals.

The research found differences in the sub-dimensions of the scale according to the gender variable in sedentary individuals. Vançelik et al. (2007) determined that the males' mean nutritional habit score was significantly higher. Their study determined that 73% of the females had poor eating habits, while this rate was 27% in males, and a significant difference existed between the level of eating habits by gender. Ayhan et al. (2012) found in their study on university students that 8.6% were underweight, 20% were overweight or obese according to their BMI values, and females were thinner than males according to the gender variable. In various studies, Aktaş et al. (2015) discovered that, among males, overweight (11-37,5%) and obesity (5-12,5%) prevalence were higher than females (9-13.6% and 4-9%, respectively) due to the effect of social and environmental factors such as alcohol use, sedentary lifestyle, and irregular eating habits (5,13,20,29).

In the current study, the comparison of the scale sub-dimensions (Uncontrolled eating, Emotional eating, Cognitive Restraint, and Sensitivity to Starvation revealed differences in sedentary individuals. Similarly, Güleç et al. (2008) found that skipping meals was a prevalent habit among university students and that students staying in dormitories generally skipped meals. Onurlubaş et al. (2015) also determined that most of their students skipped meals. Aksoydan et al. (2011) reported that adolescents mostly skipped breakfast, and the habits of skipping meals were higher in secondary school students and females. In their study, Vançelik et al. (2007) stated that while breakfast was the most ignored, dinner was the most favorite meal. Ayhan et al. (2012) stated that 25.6% of the students said, "I never skip meals," and that this rate was only 0.6% in the irregularly fed group.

In separate studies, Karasalihoğlu (2005) and Altın (2015) documented that today's excessive fat and carbohydrate consumption and children's tendency toward television and computer games instead of physical activities were prominent grounds for the rapidly increasing obesity rate in children and adolescents globally. They stated that 1/3 of obese children and 80% of obese adolescents remained obese when they reached adulthood. The current study had similar results to these studies.

Aksoydan and Çakır (2011) stated that sitting in front of a television and computer for a long time develop a sedentary lifestyle and the risk of obesity and chronic diseases. In addition, Zileli et al. (2016) concluded that, besides poor eating habits, students use alcohol and cigarettes and do no regular sport during or outside school hours. Again, Kazma (2013), in their research, emphasized that university students, generally far from their families and led their lives by their own means, were an ideal group to examine eating habits and obesity prevalence in young people.

#### 5. Conclusions

Scientific evidence reveals that individuals spend most of their days with sedentary behaviors, and this situation gets more severe as people get older. The current study examined the obesogenic eating habits of sedentary individuals in terms of various variables and found differences between them according to Gender and Age. However, there was no difference according to the variables of income level and obese family members. Within the framework of these results, the research authors recommend people pay maximum attention to adequate and balanced nutrition, regular physical activity, and a healthy body mass index to lead an active and long life.

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# A Theoretical Evaluation on Traditional Leadership Approaches

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## Abstract

The purpose of the present study was to examine the theoretical foundations of traditional leadership approaches, managerial leadership, bureaucratic leadership, authentic leadership, and team leadership, and to uncover the importance of these approaches for leadership literature and organizations. For this purpose, the study was conducted with the document analysis method, which is among the qualitative research methods. Domestic and foreign sources on these approaches, which constitute the starting point of traditional leadership approaches, were reviewed and the basic characteristics of these leadership approaches were explained. In this context, managerial leadership is a leadership approach aiming to preserve and maintain the present structure. Bureaucratic leadership, on the other hand, is a type of leadership that is performed in line with written rules such as laws, regulations, and directives. Authentic leadership includes characteristics such as establishing positive relationships with people based on trust, sincerity, transparency, and honesty. Team leadership, which is the last traditional leadership approach examined in the study, is a leadership approach aiming to manage a team and achieve its targets. In the conclusion part, as a result of the analysis of the data that were obtained by the document analysis method, the importance of the traditional leadership approaches, which are the subject of the study, in the management of management science, institutions and organizations is explained.

**Keywords:** Traditional Leadership, Managerial Leadership, Bureaucratic Leadership, Authentic Leadership, Team Leadership

## 1. Introduction

Leadership is among the most discussed topics in management. Many studies were conducted on this subject and theories were developed. The history of leadership is as old as human history. People have needed to manage and be managed in every period, in every society, and every business line and field from prehistoric hunter-gatherer societies to the stage of the information society. Economic, social, and cultural developments have necessitated the formation of the management system and the ruling class. The rapid scientific and technological change experienced with globalization also affected the science of management as well as many other disciplines; and,

starting from the classical management theories, the science of management continued its development based on efficiency and effectiveness, and then with a process that constantly completed its deficiencies.

In this process, leadership has become among the characteristic subjects studied by management science in subgroups such as organizational citizenship, motivation, and organizational culture. Over time, the “manager-leader” distinction emerged, and the difference between these concepts was explained by managerial behaviors in times of crisis. Among the classic debates on leadership, there is the discussion that leadership is an innate or acquired trait. Theorists on this subject put forward different opinions. In this respect, task-oriented or contemporary leadership theories based on human relations were also developed under the leadership of some universities, especially in the USA, such as Ohio and Michigan. The traditional leadership approaches, which are the subject of this study, still maintain their importance in the situational conditions faced by businesses.

## **2. Method**

The present study was conducted with the document analysis method, which is among the qualitative research methods based on the analysis of written documents and resources related to research topics. Document review can be used together with other methods in qualitative studies or as a stand-alone method (Yildirim & Simsek, 2018). Written and digital documents on traditional leadership approaches, which are the subject of the present study, were examined in this respect. For this reason, the study had a qualitative study design based on theoretical knowledge about traditional leadership approaches.

## **3. Managerial Leadership**

As a leadership approach applied by many managers, managerial leadership can be defined as making an effort to maintain the current order of an organization or community. Managerial leaders target to achieve their goals by focusing on short-term targets. Managerial leadership is very common in public institutions because of the need for strong financial systems (Rowe, 2001).

In managerial leadership, the leader and followers aim to preserve the current structure. For this reason, radical changes which might change the system are not desired. This is the basic characteristic of managerial leadership. In this sense, managerial leadership is a narrow-minded leadership style with a closed systemic structure, in which both the leader and his/her environment stand against changes favoring the continuation of the existing structure (Ilhan, 2017).

The perception of managerial leadership refers to adherence to traditions and rituals. In this regard, managerial leadership has three basic roles, which are personal, informational, and decision-related roles. For this reason, managerial leadership can be described as a system encouraging the leader to protect his/her organization with its current characteristics (Akyuz, 2002). Managerial leadership is a conservative and traditional leadership approach with these aspects.

## **4. Bureaucratic Leadership**

The word bureaucracy consists of the words “bureau” and “cratie”, meaning “the system in which offices use their authority”. The word bureaucracy is used in three different senses. In the first, it refers to the entire state organization and its personnel, in the second, a certain form of administration, and thirdly, it refers to stationery (Tortop, Isbir & Aykac, 1993).

Bureaucracy is an important organizational structure considered as the management system implementing the decisions made by elected managers (Demir, 2011). There are two opposing views towards bureaucracy, positive and negative. According to the positive view, it is an organizational model that clearly states the job description to eliminate role ambiguity, providing guidance-personal development, and satisfaction. According to the negative view, it refers to bureaucracy, discipline, autocratic management, and monotonous business life (Adler & Borys, 1996; Hoy & Sweetland, 2001).

The history of bureaucracy goes back to ancient times. It is known that bureaucratic organizations were highly developed in the Roman Empire, and ancient Egyptian and Chinese civilizations compared to the conditions of that time (Gerth & Mills, 1958). In this context, bureaucratic organizations have two basic characteristics, which are formality and centralization (Buluc, 2009).

**Formality:** The organization has written rules and regulations. Formality is described in two ways as effective and compelling (Adler & Borys, 1996). Effective formality is assisting employees in solving work-related problems, which is ensured by effective rules and procedures. Compelling formality is based on authoritarian and one-way communication as an approach that expects unquestioned obedience, punishes mistakes, and creates distrust in employees with these aspects (Hoy & Sweetland, 2001).

**Centralization:** Another important characteristic of bureaucratic organizations is centralization, or hierarchy, which can be extreme or low. In extreme centralization, decisions are concentrated among a few people, and decision powers are distributed in low centralization (Hoy & Sweetland, 2001).

Bureaucratic leadership, which is the subject of the present study, is a leadership approach in which power and authority are distributed according to position, in which jobs are managed from “offices”. In such an organization, jobs are distributed among employees in the form of official duties. It is a leadership style in which higher units are effective in decision-making processes (Clawson, 2014).

## 5. Authentic Leadership

The word “authentic” means “original, not imitated” (Kesken & Ayyildiz, 2008) and is based on the ancient Greek expression “Know thyself!” and “Be honest to yourself!” (Harter, 2002). The authenticity concept is expressed by virtue and ethics based on a philosophical point of view, and by individual characteristics based on a psychological point of view (Novicevic et al., 2006). According to another definition, authenticity is knowing and expressing oneself well and correctly (Avolio et al., 2004).

Authentic leaders, on the other hand, are honest and respected people who know themselves, know what they believe, have consistent and transparent attitudes, and focus on developing a positive mood based on trust in themselves and their colleagues (Avolio & Gardner, 2005). As seen, authentic leadership and the concept of authenticity on which it is based is a unique leadership type with aspects such as self-knowledge, knowing what one wants, establishing positive relationships with people based on trust, sincerity, and honesty, and for this reason, gaining the respect of other people.

Authentic leaders use their natural talents to influence audiences and are aware of their shortcomings and work hard to complete these. They lead with purpose, meaning, and values and form lasting relationships with people. They are consistent and self-disciplined and do not compromise their principles. They also improve themselves constantly because they know that being a leader requires lifelong personal development (George, 2003).

The need for authentic leaders has increased in recent years. Among the most important reasons for this is that the leadership approaches developed since the Industrial Revolution are insufficient in our present day’s conditions. Leadership approaches are focused on increasing efficiency and speed in industrial organizations based on mass production in large factories. Employees are considered machines by ignoring their individual characteristics. For this reason, authentic leadership comes to the forefront as a different alternative leadership approach among leadership approaches, with the idea of developing others in its nature, motivating employees, and human values that it focuses on (Hollis, 2018).

## 6. Team Leadership

Teamwork is a reflection of collaborative management practice. Many organizational activities are performed by teams in our present day. Teamwork started with the birth of the concept of organization. Teams are created to

achieve certain targets. Teamwork can be defined as the whole of cooperation and contributions made by employees to achieve organizational targets by creating a team (Elma, 2004).

In institutions, teamwork is a result of the increased desire of employees for autonomy. The lack of employee autonomy reduces the efficiency of organizational activities preventing the emergence of original ideas (Guzelcik, 1999). Teamwork must be expanded and used for organizational effectiveness at all levels. In this sense, teams can also be useful in the realization of some special projects (Ensari, 1999).

Group and team are different concepts. Not every group of people can be qualified as a team. For a group to become a team, they must come together in line with a common purpose and vision and work in this direction (Brestrich, 2000).

Team building occurs in four stages. The characteristics of these stages can be summarized as follows (Penner, 2002):

**Forming:** It is the starting stage of the team. Team members have positive expectations. However, there is a high level of task anxiety that stems from meeting the members for the first time and not knowing each other well.

**Storming:** The structure and targets of the team are clarified. The success of the mission increases and team skills improve. At this stage, failure to meet the expectations of the members can lead to frustration and a resulting loss of motivation.

**Norming:** Productivity increases steadily at this stage and the structure of the team is reinforced. Cooperation develops. Expectations are balanced with reality.

**Performing:** The team is at the highest level in terms of efficiency and relationship. The leader has no special status. Members can work autonomously.

The team leader is the person who undertakes to manage the team and reach its targets (Hardingham, 1997). In summary, the main responsibilities of a team leader are establishing the team, determining the targets, ensuring its continuity, developing the team members, and reaching targets (Adair, 2003).

## 7. Conclusion

Leadership is an important operational characteristic in the formation of organizational success and failure with varying leadership styles among cultures. A leadership approach that is implemented in a country or an institution and gives successful results might not give the same results in another country or institution (Luthans & Doh, 2011). In this context, leadership is a complex performance area requiring the ability to solve organizational and individual problems (Mumford et al., 2000). The traditional leadership approaches, which were the subject of the present study, can be defined as leadership styles that are generally assumed to have a hierarchical structure and the leader is the person who knows the job best. Participation in management is limited and the influence of employees on managerial decisions is not high in this respect (Inan & Serinkan, 2020).

Managerial leadership, which is among the traditional leadership approaches, is defined as a system encouraging a leader to protect his/her organization with its current characteristics (Rowe, 2001). The focus of administrative leadership on preserving the current order, while ignoring the change elements around it, can be perceived as a repulsive and negative characteristic. In our present day, rapidly developing technology and environmental conditions have revealed change as an inevitable phenomenon. However, it must not be forgotten that no matter how desirable it is to monitor and keep up with change, in extraordinary conditions such as wars, and economic and social crises, maintaining order and a stable structure can be a desired situation for an institution or society in which successful and talented managerial leaders are needed.

Bureaucracy is “the management by the officials working in the offices or the authority and sovereignty of the offices based on non-arbitrary rules” (Sat, 2009). Bureaucratic leadership, on the other hand, can be defined as the leadership style performed in line with written rules such as laws, regulations, and directives. Bureaucracy and bureaucratic organizations have continued their existence effectively since the early ages. The theorizing of the concept was made by Max Weber, who was a German sociologist, in the twentieth century.

Many criticisms were directed at bureaucratic leadership, which can be listed as strict rules and negative consequences caused by the characteristics of bureaucracy just like the side effects of a drug (a division of labor and specialization cause boredom, objective orientation leads to low morale, etc.) (Aydin, 2007). Weber defined bureaucracy as “the most effective organizational model” (Aydin, 2007). Bureaucracy is a management theory that continues to be effective in our present day, although it has many shortcomings as a management system when faced with scientific and technological developments. It must be noted that the word “bureaucrat” still refers to a positive and desirable situation for many people in our society. The public personnel regime has a large bureaucratic structure in our country and administration is centralized. State institutions perform all their work in line with laws, statutes, and regulations called legislation. Bureaucracy is still an effective form of organization not only in our country but also in many countries of the world. Scientific and technological developments have both weakened and strengthened the bureaucracy.

Among the criticisms regarding bureaucratic organizations is that bureaucracy causes various communication bottlenecks (Aydin, 2007). However, in our present day, many bureaucratic organizations, including official institutions, use automated correspondence and communication systems. A letter sent from a district can be received in a provincial organization and then can be sent to the central organization or the Ministry in a few minutes. These developments showed that bureaucracy and bureaucratic leadership should not be ignored as a management style and leadership approach.

Authentic leadership includes characteristics such as self-knowledge, knowing what one wants, establishing positive relationships with people based on trust, sincerity, and honesty, and for this reason, gaining the respect of people. For this reason, it is an extraordinary leadership approach that also has an idealistic aspect. The increase in the need for authentic leadership is a natural outcome of authentic leadership prioritizing communication with employees by highlighting employee characteristics, which are not given sufficient importance in other leadership approaches (Hollis, 2018). Authentic leadership has a special place in all traditional-contemporary leadership approaches with these aspects.

Team leadership is the final of the traditional leadership approaches studied as a type of leadership that potentially and strongly influences group think (Leithwood, Steinbach & Ryan, 1997). In our present day, organizations perform a lot of work through the teams they create. Although team leadership was examined among traditional leadership approaches in this study, it can also be evaluated within modern leadership approaches since it adopts collaborative management techniques.

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# The Effect of POE Method with PhET Simulation on Primary School Student's Science Attitudes and Success: Greenhouse Effect

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## Abstract

In this research, Purpose is to eliminate primary school student's delusions about concept of greenhouse effect and to study its effect on student's attitudes towards science. In the research, quasi-experimental study with pre-post control group has been used. The research was performed with 34 primary school students in the state located in southwest part of Turkey. The experimental group consists of 18 students and the control group consists of 16 students. While POE method supported with PhET simulations is used in the experimental group, traditional teaching method is implemented in control group. In the research, greenhouse gas concept and science attitude scale as data collection tool have been used. Data obtained from the research has been analyzed with SPSS program. According to the findings from the research, Students have had much more information about greenhouse gas thanks to POE method supported by PhET. Moreover, POE method supported by PhET has positive effect on students' attitudes towards science.

**Keywords:** Greenhouse Effects, PhET, POE, Primary School Students

## 1. Introduction

Science is a kind of science that researches the situations happening in the nature, explains it reasons and has prediction for future (Kaptan, 1998). It can be defined as the purpose to enable students to be aware of their environment, to try explaining, to observe nature and understand the unobserved cases. (Çepni,2014.) Science lesson includes so many abstract concept and it is considered as complicated lesson for students unless there are no practical applications. Concordantly, with the development of computer Technologies, Applications that are developed in computer environment can be more frequently seen. It can be said that simulations are one of them. Experiments that can't be performed in the class and simulations that teach dangerous are one of the minor examples of realistic models. Simulations contributes so much things to both students and teachers in case of lack of well-qualified laboratory, lack of enough time and lack of teachers' inadequate information and abilities about the subject. Because of that fact that simulations allow users to interact with each other, students can take part actively in the process and correct their mistakes thanks to the feedbacks. Simulations includes not steady

situations but variable ones and offer different outputs in terms of users' behaviours. With the help of simulations, students save on time and moreover these programs serve students with different learning abilities as productive tools (Hegarthy, 2004.) Simulations prepare easy learning environment for students by simplifying complicated situations. Well prepared simulations simplify complicated situations and findings, making them more understandable for students without explanations (Minashi, 2009.) Simulation thanks to its fidelity feature, offers opportunity for realistic experiencing for students. (Maran, & Glavin, 2003.) When experiments in science lesson considered, simulations provide important advantages. Thanks to simulations, safe processing of lessons can be expressed as watching slowly the event instantly happening, providing opportunity of observing, simplifying complicated situations. Physics Education Technology is a Project that consists of initials (PhET) and developed by Colorado Boulder University in 2002 (PhET, 2016.) PhET is an application that offers simulations in the fields such as Math, Physic, Chemistry, Biology and Geography. PheT is a education source that can be reached by anybody. PheT was founded with the aim of changing and improving learning habits in the world. Thanks to PhET, students can practice what they learn. It enables students to involve in scientific discovery, design experiment, use evidence and to develop conceptional understanding, make connection with daily life and see science as accesible and enjoyable tool. It has been observed that Students who use PhET can learn concepts easier and have higher motivation than the ones who don't PhET. In our rapidly developing and changing world, Education systems also need to constantly improve themselves in parallel with these developments. In this direction, curricula in many countries undergo changes in line with the needs of the day. (İyibil & Sağlam-Arslan, 2010). Global warming and climate change caused by this situation are the leading environmental problems that have been increasing in recent years. As a result of the changes, we see that these topics, which are of interest to everyone, are included in Science Curriculum in Turkey in 2018. When the specific objectives of the program are examined, "Greenhouse effect is explained" within the framework of "Discuss the causes and possible consequences of global climate changes" at the 8th grade level, Subjects and concepts are included within the framework of the achievements of "The impact of environmental problems on the future of the world and human life in the context of global climate change is questioned". (Ministry of National Education [MoNE], 2018). When the achievements of the science course are examined, it is seen that it is tried to gain basic knowledge about the environment, to understand the environment-human relationship, to create awareness and awareness against natural and economic resources and environmental problems. Student-centered methods should be preferred in teaching subjects such as global warming, greenhouse gases, measurement of carbon footprints, which are not possible for students to observe directly. In this study, POE method based on the constructivist approach which is one of the student-centered methods, was used. POE method includes the steps of making predictions, supporting predictions, comparing and explaining predictions and observations, taking into account the students' prior knowledge. POE method was introduced by White and Gunstone (1992). In the POE method, students are compared with experimental situations, they are asked to make predictions about the experiment, then they are expected to make observations and then to explain by comparing their predictions with their observations. While it is effective only in its own field at first, it becomes a global problem over time. The most important of these global problems is the greenhouse effect. Reducing the negative effects of global warming, combating global warming and putting forward solutions is possible by taking measures at international and national level, especially by raising awareness of people on this issue. Education is the most basic way of raising people's awareness on this issue. When it is considered as a global problem, it should be noted that it is important to introduce subjects such as global warming, greenhouse gas, and carbon footprint to individuals at a younger age. This subject should be conveyed to students, especially in science courses at different levels of education. In this study, it is aimed to investigate the effect of PhET simulated POE method on the detection and elimination of the misconceptions of 8th grade secondary school students about the greenhouse effect. The second aim of the study is to examine the effect of PhET simulated POE method on students' attitudes towards science.

### *1.1 Research Questions*

What are the misconceptions of 8th grade students about the greenhouse effect?

What is the effect of PhET simulated POE method on eliminating 8th grade students' misconceptions about the greenhouse effect?

What is the effect of PhET simulated POE method on 8th grade students' attitudes towards science?

## 2. Method

This study was conducted using a quasi-experimental research model. The difference that distinguishes this method from the full experimental method is that the sample cannot be created by random assignment. The quasi-experimental methods, which are widely used in educational research after full experimental studies, can be used despite some control difficulties, but with the caution of consideration of their limitations. (Cohen, & Mannion, 1998). While the PhET simulation POE method was applied to the experimental group, courses in accordance with the science curriculum were taught to the control group. The appearance of the quasi-experimental design in the study is presented in Table 1.

Table 1: The Appearance of the semi-experimental model in the research

Groups	Pre-test	Application	Post-test
Experiment	Success Test	PhET simulated	Success Test
	Attitude Scale	POE	Attitude Scale
Control	Success Test	Traditional Teaching	Success Test
	Attitude Scale	Method	Attitude Scale

### 2.1 Working group

The study was carried out with the participation of 8th grade students studying in a public secondary school in the southeast of Turkey in the 2021-2022 academic year. The groups participating in the study consist of pre-formed classes in the form of random distribution by the school administration. Total of 34 students, 18 in the experimental group and 16 in the control group, participated in the study.

### 2.2 Data collection tool

The Greenhouse Effect Concept Test developed by Bakırcı, &Yıldırım (2017) and the attitude scale towards science belonging to Geban, Ertepinar, Yılmaz, Altın, & Şahpaz (1994) were used as data collection tools in the research. The greenhouse effect concept test consists of 5 two-stage questions. The validity of the test was established with the opinions of two science educators and two science teachers.

Sample items from the test are presented below:

1- Which of the following occurs as a result of the greenhouse effect? Please explain.

A- People are poisoned by food

B- No more desert areas are formed.

C- As a result of the greenhouse effect, the temperatures on the earth's surface increase.

D- There will be more earthquakes in the world.

Explain:.....

3- Which of the following reduces the greenhouse effect? Please explain.

A- If power plants using nuclear energy are installed instead of coal-using power plants, the greenhouse effect will decrease.

B- Reducing the number of nuclear bombs reduces the greenhouse effect.

C- Reducing the use of spray gases (Chlorofluorocarbon cfc) and sprays reduces the greenhouse effect.

D- Using unleaded gasoline will reduce the greenhouse effect.

Explain: .....

The highest score that can be obtained from the concept test is twenty and the lowest score is zero. In the study, data on students' attitudes towards the Science course was obtained with "Science Course Attitude Scale" developed by Geban et al. (1994). The Cronbach's Alpha reliability coefficient of the scale is 0.83.

### 2.3 Data analysis

In order to determine the normality of the data obtained from the concept test and attitude test, the kurtosis-skewness coefficients were examined. When Pallant (2001), the Skewness and Kurtosis values are between +2 and -2, the scores show a normal distribution. Accordingly, it was accepted that the concept achievement test showed a normal distribution and the groups were compared with the t-test without parametric tests. When the data of the attitude scale towards science were examined, it was determined that it did not show a normal distribution. (Table 3.) Therefore, it was decided to apply Wilcoxon Signed Ranks test, which is one of the nonparametric tests, for the pre- and post-test scores of the experimental and control groups. In the study, the frequency and percentages of the responses of the study group to the achievement test were also examined.

Table 2: Greenhouse effect concept test evaluation and scoring criteria

Evaluation Level	Score
Correct Answer – Correct Reason(CA-CR)	4
Correct Answer –Partly Correct Answer (CA-PCA)	3
Wrong Answer –Correct Reason (WA- CR)	2
Correct Answer –Wrong Reason (CA - WR)	1
Wrong Answer –Wrong Reason (WA-WR)	0

#### 2.4 Implementation

While the activities prepared according to the POE method using PhET simulations were applied to the experimental group, the course was taught to the control group in line with the achievements in the MoNE curriculum. The application was carried out with the Experimental Group in 2 class hours for 6 weeks. Before starting the application, pre-tests were applied to the experimental and control groups. Afterwards, the students were given the necessary information about the Prediction-Observe-Explain (POE) method. Sample applications were carried out so that students could better understand the POE method. PhET simulations were introduced to the students and they were asked to practice on any subject they wanted to get to know PhET simulations better. Theoretical information about the gases that cause the greenhouse effect and the environmental problems experienced as a result of the greenhouse effect is given. In practice, students are divided into groups of 3-4 people. In the experimental group in which the POE strategy was applied, the estimation phase, the observation phase and the explanation phase were followed in order. The question “How does greenhouse gas affect our world?” was directed to the students. Students were asked to write their answers to this question in the estimation section of the POE worksheet. At this stage, students' prior knowledge and misconceptions were revealed. In the second stage, the students followed the PhET simulation and wrote their observations in the observation section. PhET simulations were followed to show how the Earth's temperature increased over the years during the observation phase. In the simulation, the density of greenhouse gases was changed in line with the wishes of the students and the change in the temperature value of the world was observed. Students are asked to make predictions about the causes or consequences of this situation, together with the reasons, and to take notes of their predictions. In addition, pre-industrial and post-industrial greenhouse gas density and, accordingly, the temperature of the world were also observed in the simulation. In addition, it has been shown to students in the simulation that the temperature of the world will be very low when the density of greenhouse gases is reset (Physics Education Technology Project, 2021). Hereby, it is aimed to make students realize that greenhouse gases are an event that provides the temperature balance in the atmosphere and to make them think about what can happen if the density of these gases increases or decreases with the effect of human activities. In the last stage, the explanation stage, the students analyzed their predictions and observations and discussed whether their predictions were correct or not, and if not, why they made a wrong prediction. At this stage, the students were asked to compare the predictions and observations and write them with the reasons of whether they were correct or not. The link and photo of the greenhouse effect simulation on my PhET platform are given below.

<https://phet.colorado.edu/tr/>

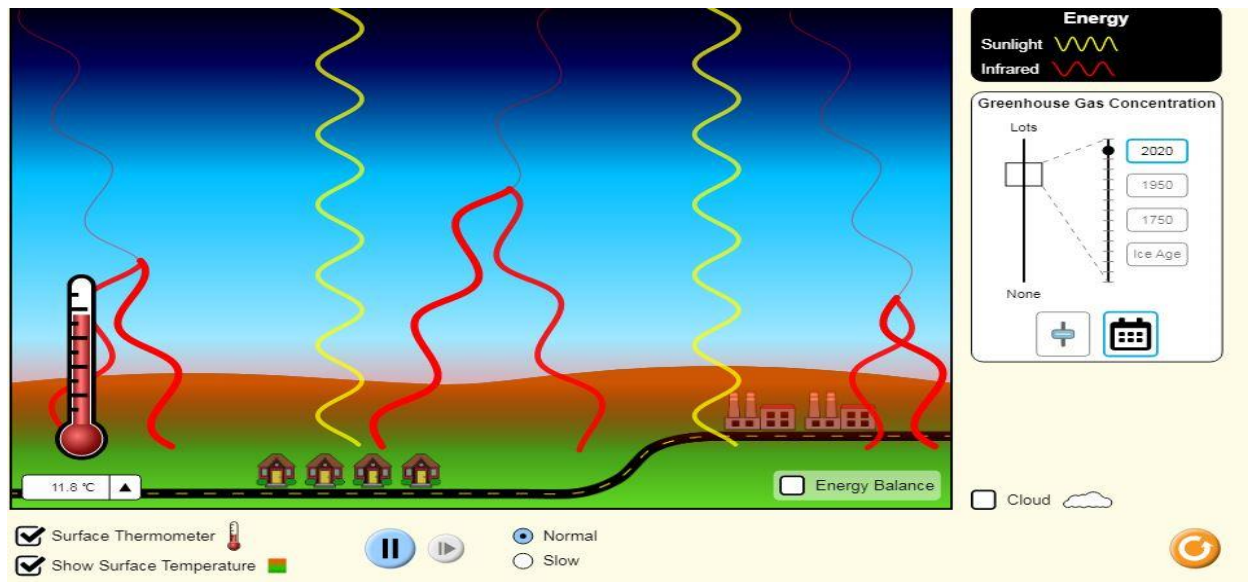


Figure 1: PhET greenhouse effect simulation

In the control group, the lessons were taught with the activities specified in the textbook according to the program prepared by the Ministry of National Education.

### 3. Findings

In the study, descriptive statistical findings related to the experimental and control groups were examined (Table 3).

Table 3: Descriptive statistics of achievement and attitude scales

		Achievement		Attitudes	
		Pretest	Posttest	Pretest	Posttest
Experimental	M	8.63	19.31	40.9	51.7
	Median	8.00	19.0	43.5	54.00
	Variance	7.29	7.94	75.89	31.82
	Min.	5.00	14.0	26.0	34.0
	Max.	14.00	24.0	54.0	58.0
	Skewness	.761	-.386	-.395	-1.94
	Kurtosis	-.267	-.693	-1.030	3.780
Control	M	8.45	14.81	30.7	34.50
	Median	8.50	16.00	31.0	35.50
	Variance	8.26	37.75	64.66	82.73
	Min.	4.00	4.00	16.00	14.0
	Max.	16.00	23.00	48.00	52.0
	Skewness	.422	-.504	.336	-.413
	Kurtosis	.822	-1.141	.189	.027

Looking at the descriptive statistics of academic achievement and attitude scale in Table 3, the experimental group pre-test skewness (.761) and kurtosis (-.267), post-test skewness (-.386) and kurtosis (-.693) in the achievement test; control group pretest skewness (.422) and kurtosis (.822), posttest skewness (-.504) and kurtosis (-1.141); In the attitude scale, the experimental group pre-test skewness (-.395) and kurtosis (-1.030), the post-test skewness(-1.94 and kurtosis (3.780) and the control group pre-test skewness (.336) and kurtosis (.189) in the attitude scale, The final test skewness (-.413) and kurtosis (.027) values were calculated.

After it was determined that the academic achievement scores of the study showed a normal distribution, the pre-test achievement scores of the experimental and control groups were examined with the independent samples t-test.

Table 4: Independent t-test results of academic achievement pretest scores' for comparison and experimental groups

	Group	n	M	SD	t	p
Academic achievement	Experimental	18	8.63	2.70	.216	.830
	Control	16	8.45	2.87		

According to the results of the independent sample t-test, there was no significant difference between the academic achievement experimental group (M=8.63, SD=2.7) and the control group (M=8.45, sd=2.87) pretests ( $t(32)=.216$ ,  $p=.830$ ). Accordingly, it can be deduced that there is no difference between the groups' prior knowledge before starting the application. Since there is no statistically significant difference between the pre-test scores, it can be said that the greenhouse gas conceptual understandings of the experimental and control groups were similar before the research.

An independent t-test was conducted to examine the effect of PhET-simulated POE method on 8th grade students' misconceptions about the greenhouse effect. The independent t-test results related to the difference between the achievement test post-test scores of the experimental and control group students are presented in Table 5.

Table 5: Independent samples t-test of academic achievement post-test for comparison and experimental groups

	Group	n	M	SD	t	p
Academic achievement	Experimental	18	19.31	2.81	3.122	.003
	Control	16	14.81	6.14		

Considering the obtained values, the average of the experimental group's post-test achievement score was 19.31 (sd=2.81), and the control group's post-test achievement average was 14.81 (sd=6.14). A statistically significant difference at the level of 0.05 was found between the mean success of the experimental and control groups ( $t(32)=3.122$ ,  $p<0.05$ ).

The frequencies and percentages of the answers given by the students participating in the study to the concept test pre-test and post-test were calculated (Table 6).

Table 6: Frequency and percentage of concept test answers of the study group

Questions	Evaluation	Pre- test		Post- test		The examples of students explanations
		f	%	f	%	
1	CA-CR	1	2.94	9	26.47	When there is a greenhouse effect, not all of the rays from the sun are reflected and the world gets warmer.
	CA-PCR	8	23.52	3	8.82	With the greenhouse effect, the temperature increases between the layers and the world warms up.
	WA-CR	-	-	-	-	-
	CA-WR	16	47.05	22	64.7	A greenhouse is formed because the earth's rays stay on the surface.
	WA-WR	9	26.47	-	-	Because the causes of earthquakes, our world begins to disappear gradually.
2	CA-CR	5	14.7	1	2.94	Spray gases keep gases in the air. As a result,

					the greenhouse effect increases even more.	
	CA-PCR	2	5.88	11	32.35	Sprays gas the world, causing it to become more greenhouses.
	WA-CR	1	2.94	1	2.94	Unleaded gasoline is a substance that harms the world.
	CA-WR	15	44.11	16	47.05	Our use of harmful gases causes depletion of the ozone layer.
	WA-WR	11	32.35	5	14.7	All the gases we use are harmful.
3	CA-CR	1	2.94	6	17.64	Carbon dioxide gas is one of the greenhouse gases. Therefore, it increases the greenhouse effect.
	CA-PCR	16	47.05	9	26.47	The amount of carbon dioxide in the air should be reduced.
	WA-CR	1	2.94	-	-	As the greenhouse effect increases, the world gets warmer.
	CA-WR	18	52.94	14	41.17	As the amount of carbon dioxide in the ozone layer reflects the sun's rays, the greenhouse effect also increases.
	WA-WR	8	23.5	5	14.7	The greenhouse effect does not cause the melting of glaciers.
4	CA-CR	-	-	11	32.35	Methane gas from swamps and rice fields is a greenhouse gas that causes the greenhouse effect.
	CA-PCR	-	-	4	11.76	The methane gas produced in the garbage causes the greenhouse effect.
	WA-CR	1	2.94	1	2.94	As methane gas accumulates in the ozone layer, this also increases the greenhouse effect.
	CA-WR	-	-	7	20.58	The increase in harmful gases in the air increases the greenhouse effect.
	WA-WR	33	97.05	11	32.35	The release of harmful gases is the cause of ozone depletion.
5	CA-CR	5	14.7	6	17.64	It causes greenhouse effect as methane gas comes out from garbage and rotten waste.
	CA-PCR	4	11.76	6	17.64	Carbon dioxide gas causes the world's temperature to increase and the greenhouse effect.
	WA-CR	-	-	-	-	-
	CA-WR	20	58.8	15	44.11	The amount of garbage produced by humans is the result of the greenhouse effect.
	WA-WR	5	14.7	7	20.58	Unleaded gasoline affects less greenhouse effect.

When Table 6 is examined, it is seen that 2.94% of the answers given by the students to the first question of the Greenhouse Effect Stall Test in the pre-test and 26.4% in the post-test were at the CA-CR level, while the rates for the CA-PCR level were 23.5% and 8.8%, respectively. While the rates of answers placed at the CA-WR level were determined as 47% in the pre-test and 64.7% in the post-test, these rates were found to be 26.4%, respectively, for the WA-WR category. From the answers given by the students to the second question, it is seen that the level of CA-CR in the pre-test is 14.7%, in the post-test it is 2.9%. The rates for CA-PCR level were determined as 5.8% and 32.3%, respectively. While the rates of student answers at the CA-WR level were 44.1% in the pre-test and 47% in the post-test, these rates were 32.3% and 14%, respectively, at the WA-WR level. When the answers given by the students to the third question of the Greenhouse Effect Stall Test were examined; While 2.94% in the pre-test and 17.6% in the post-test were at the CA-CR level, these rates were 47% and



26.4%, respectively, for the CA-PCRlevel. The ratios of student answers at the CA-WRlevel; While it was determined as 52.94% in the pre-test and 41.1% in the post-test, these rates were found to be 23.5% and 14.7%, respectively, for the WA-WRlevel. While the answers given by the students to the fourth question were found to be at CA-CR level of 32.3% in the post-test, there was no student answer in the pre-test for the CA-PCRlevel, it was found to be 11.7% in the post-test. While 2.94% of the students' answers in the pre-test and 2.94% in the post-test were at the WA-WRlevel, while there was no student response in the pre-test for the CA-WRlevel, this rate was 20.58% in the post-test. It is seen that these rates are 97% and 32.3%, respectively, for the WA-WRlevel. While the percentages of the students' answers to the fifth question of the stall test were at CA-CR level, 14.7% in the pre-test and 17.6% in the post-test, these rates were found to be 11.7% and 17.6%, respectively, for the CA-PCRlevel. It is seen that the rates of student answers for the CA-WRlevel of the students are 5.8% and 44.1%, respectively. The rates of student answers at the WA-WRlevel were determined as 14.7% in the pre-test and 20.58% in the post-test.

The findings related to the problem “What is the effect of the PhET supported POE method of the research on the attitudes of 8th grade students towards science?” are shown in Table 7 and Table 8.

Table 7: Descriptive statistics analysis attitude tests' results

		Group	n	M	ss	Min.	Max.
Attitude	Pretest	Experimental	18	40.9	8.7	26	54
		Control	16	30.7	8.0	16	48
	Post test	Experimental	18	51.7	5.6	34	58
		Control	16	34.5	9.0	14	52

When the results of the descriptive statistical analysis of the data obtained from the research are examined the control group pre-test score was 30.7 and posttest score 34.5; the experimental group's pretest score was 40.9 and post-test score 51.7 (Table 7).

In the study, the pre-test and post-test attitude scores of the experimental and control groups were analyzed with the Wilcoxon Signed Ranks test (Table 8).

Table 8: Findings regarding the differences between the pretest-posttest scores of the attitude test

Group	Posttest-pretest	N	Mean rank	Sum of Ranks	z	p
Experimental	Negative order	4	7.13	28.5	-3.183	.001
	Positive order	14	12.47	224.5		
	Equal	0				
Control	Negative order	6	9.06	81.5	-1.463	.144
	Positive order	10	13.19	171.5		
	Equal	0				

According to the results of Wilcoxon Signed Ranks test, a significant difference was found between the experimental groups' pre- and post-tests ( $z=-3.183$ ,  $p<0.05$ ). When the mean rank and rank totals of the experimental group are examined in Table 8, it is seen that this difference is in favor of the positive ranks, that is, the post-test score. According to these results, it can be said that the PhET simulated POE method increased in favor of the post-test in the students' attitudes towards science during the application process in the experimental group. In the control group, there was no significant difference between the pre-test and post-test averages ( $z=-1.463$ ;  $p>0.05$ ).

#### 4.Results and Discussion

The aim of this study is to investigate the effect of PhET simulated POE method on students' understanding of the greenhouse effect and their attitudes towards science. As a result of the analysis, a significant difference was

found between the experimental and control groups in favor of the experimental group, in which the PhET simulated POE method was applied to the students' understanding of the greenhouse effect and their attitudes towards science.

As a result of the research, it was determined that the PhET simulated POE method was effective in eliminating students' misconceptions about the greenhouse effect. In previous studies (Minaslı, 2009; Bülbül, 2009; Teke, 2010; Güvercin, 2010; Koyunlu Ünlü, 2011) it was revealed that simulations have a positive effect on student achievement. Faour and Ayoubi (2018) stated that simulation-based courses are important for students to easily understand science subjects and improve their conceptual knowledge.

When the answers given to the first question of the greenhouse effect concept pre-test are examined, the students think that earthquakes occur as a result of the greenhouse effect. For example, the students who participated in the study showed that they have the misconceptions available in the literature by stating that "Our world is starting to disappear due to earthquake causes". In the literature, there are studies (Artun & Okur, 2015) in which secondary school students do not have enough knowledge about the concepts of climate change, global warming and greenhouse effect.

When the greenhouse effect concept test pre- and post-test results are examined in terms of the first two categories of the evaluation scale (AC-CR and PCA); It is seen that there is a significant increase in students' understanding of the greenhouse effect after the application. This can be interpreted as the POE method, in which PhET simulations are used, is effective in making students comprehend the concept of greenhouse effect. However, it was determined that the students gave wrong reasons in the explanation part of the correct answers. It can be said that students have difficulties in justifying the correct answer.

The results of previous studies are similar to the results of the research. In their study, Erdoğan and Özsevgeç (2012) concluded that the students gave similar answers and that many of the students had deficiencies in the effects of their daily activities on global warming. As a result of the application of POE method and its support with various animations and simulations, it was observed that the students' knowledge deficiencies and erroneous information were eliminated. Similarly, Atabey and Çiftçi (2019) found that the POE method is effective in eliminating the erroneous information in students and facilitating their learning.

According to the results obtained from this study, it is thought that it is an effective method in detecting and eliminating misconceptions, since students have the opportunity to test their current knowledge in the courses taught according to the PhET simulated POE method. In the study, it was observed that as a result of supporting the POE method with PhET simulations, the lack of knowledge and erroneous information in the students were eliminated. In addition, it can be said that during the application, it increases the interest in the science lesson and provides a better understanding of the subject.

Within the scope of the study, students' attitudes towards science of the PhET simulated POE method were examined. As a result of the findings, there was no significant difference between the pre-test and post-tests of the students in the control group, while a significant difference was found between the pre-test and post-tests of the students in the experimental group. In the literature, there are studies (Akgün, 2005; Daşdemir & Doymuş, 2012) that conclude that the use of simulation in science education affects science attitude positively.

Learning environments have positive effects on students' attitudes towards science (Cayvaz, Akcay, & Kapıcı, 2020). The use of simulation in science education improves students' learning and inquiry skills. The results obtained in this study are that the PhET simulated POE method increases student achievement in science teaching and develops a positive attitude towards science.

### *3.1 Suggestions*

When the results of the study are evaluated, various applications can be made for the students' greenhouse gas concept, its causes and results. Studies can be carried out to improve the perception levels of students towards environmental problems.

In addition, within the scope of the study, it is suggested that the effect of the PhET simulated POE method should be applied in different science subjects to be clearly demonstrated. For this, teachers should be encouraged to use simulations in science lessons by giving various trainings on the use of simulation applications.

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# Developing English for Tourism Learning Model Based on Hypermedia

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## Abstract

The development of the global tourism industry rapidly makes the importance of English communication skill at tourism workplace. State Polytechnic of Lampung has provided English subjects 1, 2, and 3 for students. Unfortunately, the implementation has not given any significant contribution to improve students' English communication skills especially English for tourism. English instructional materials did not fulfill students' needs and stakeholders' needs and standard English competences in tourism workplace. The limitation of learning source become a learning problem for students due to limitation of time to practice English out site of classroom without teacher's guidance. Therefore, it is important to develop a kind of learning model which independence resource that gives a solution to solve the learning problems. Developing model of English learning for tourism based on *hypermedia* was intended to give an alternative independence learning resource to improve competences in English for Tourism based on *hypermedia*. The developing of English learning model base on hypermedia applied research and development (R&D) model used a combination of Dick and Carrey model, Hannafinpeck Model and Allen model. There were three stages in developing model of English for tourism based on *hypermedia*. The first step was conducting needs analysis; identifying instructional goals, conducting instructional analysis, and analyzing learners and contexts. The second step was designing material for learning based on *hypermedia* that was electronic module; writing instructional objectives, developing assessment instruments, and developing learning strategies. The third steps were developing learning material and implementation; developing and selecting instructional materials, implementing and conducting formative evaluation and revision. The results of the formative evaluation from subject matter experts (instructional, media and English for tourism), one to one evaluation, showed that model of English learning for tourism based on *hypermedia* generally was categorized very good (average score: 89,31). One to one evaluation by three learners was also and small group evaluation by eight learners which evaluated on clarity, impact on learners and feasibility showed that design model of English learning for tourism based on hypermedia was categorized very good. Field trial that was conducted to 37 students indicated that model design of English learning based on *hypermedia* for tourism was good and suitable with learning objective, easy to use and understand, demonstrate learning experiences, sufficient for English materials, useful, assessment measure learning outcome, feedback, interesting and engaging learning, motivating, and collaboration between students. The t-test paired sample test showed that design of English for tourism was effective to be used as learning resources with average pretest score was 58,05 and average post test score was 70,92 with gain score was 12,86, while the significant (2-tailed) was  $0,000 < 0,05$ .

**Keywords:** Learning Model, English for Tourism, Hypermedia

## 1. Introduction

English as an international language has been used in official forums such as meetings and meetings between leaders at the United Nations (United Nations) and ASEAN (Asian South East Asian Nations). English is currently used as the official language in 58 sovereign countries (sovereign countries) and 21 non-sovereign countries (non-sovereign countries) with a total of more than 470 million users. ASEAN member countries that use English as their main language (official and second language) are Singapore, Malaysia, and the Philippines, while foreign languages are Indonesia, Vietnam, Brunei, Laos, Myanmar, Thailand, and Cambodia. In Indonesia, English is the most widely used foreign language in international forums organized by the government, private sector, and universities. English is also a foreign language that is mostly mastered by business and industrial players in the tourism sector. Due to the importance of foreign languages in global relations and international tourism, English has been decided as a foreign language subject in Indonesia's academic and vocational higher education curriculum. The global tourism industry is growing rapidly and opening large workplaces in Indonesia. Based on data released by the Lampung provincial tourism office, it wed that from January to June 2019 there have been 100,469 foreign tourists visiting Lampung province and more than four million domestic tourists, its about 4,525,127. The number of tourist have visited to Lampung increasing up to 17.07 percent compared 2017. This caused the tourism industry in Lampung province to grow better. The tourism industry plays an important role in Lampung province because it is one of the mainstays of Lampung's income sector. The development of the tourism industry makes English communication skills increasingly important. Employees working in the tourism sector must be able to communicate with foreigners using a foreign language such as English. Based on the results of interviews with the regional administrators of the Indonesian Guides Association (DPD HPI) Lampung, it shothat the tourism English language skills of the tour guides are still lacking, especially the ability to speak (speaking), read (reading) and write (writing) and the TOEIC score is still below the SKKNI standard for competence. English. Tour guides who have good English skills will provide comfort for foreign tourists and will have a positive impact on all things in the tourism industry sector (Erazo *et al.*, 2019).

World Bank data in 2016 showed that the quality of Indonesian professional workers who have competence in English communication skills are 44%, computer skills 36%, faster learning abilities 30%, thinking skills 33% and basic skills 13%. In addition, the Ministry of Manpower noted that Indonesia's obstacle in the ASEAN Economic Community is English communication. The results of the EPI (English Proficiency index) survey in 2020 held in 88 countries, Indonesia ranked 74th out of 100 countries and ranked 15th out of 24 Asian countries. Indonesia survived from 2020 into the low ability category with a score of 453 (low proficiency). While Singapore rank is at the first with a score of 611 (very high proficiency), Malaysia is at third with a score of 547 (high proficiency) and the Philippines is at the second rank with a score of 562 (very high proficiency). The data shows that Indonesia is left behind in the term of English skills compared to other ASEAN countries (EF Education First, 2020).

The development of teaching and learning in vocational education in Indonesia is very important to full fill the demand of the quality labor in free trade era of the ASEAN Economic Community (AEC) (Suartini, 2019). Lampung State Polytechnic (Polinela) as a vocational higher education institution also needs to prepare its graduates in the fields of knowledge studied and the ability to communicate in foreign languages, especially English. Silber-Varod, et al. (2019) stated that the core competence of communication in 21st century learning (21st century) is very important and dominant compared to six other core competencies such as; collaboration, communication, creativity, critical thinking, information literacy, problem solving, and social-emotional skills.

Polytechnic is a vocational higher education that aims to prepare students to get jobs or entrepreneur with certain applied skills which equivalent to a bachelor's program (S1). In carrying out this mandate of the law, Polinela proclaims and implements the motto "Preparing smart, professional and competitive graduates". By this motto, the Polinela's civitas academia will be moved out and always enthusiastic in educating students to become graduates who are able to compete not only at the national level but also at the ASEAN regional level and even at the international level.

Politeknik Negeri Lampung has a curriculum that provided learning English 1, 2, and 3 courses for students in all study programs. Unfortunately, the implementation has not made a significant contribution to improve students' English communication skills. The results of the TOEIC test (Test of English for International Communication) conducted by ETS (Educational Testing Service) in 2018 showed that on average 329, students' English communication skills were categorized at the basic level (average score of 329). There are five students (1%) at the basic work proficiency level (score 605-780), at the intermediate level or elementary proficiency plus (score 405-600) as many as 155 students (25%), at the elementary level or elementary proficiency (a score of 255-400) amounted to 311 students (51%), and at the beginner level or basic proficiency (score 5-250) there were 138 students (23%). It can be concluded that in general, students' skills in English communication are very low.

The achievement of English learning outcomes above cannot be separated from the role of lecturers, materials and English learning strategies applied in the teaching and learning process and how much students have the opportunity to practice English. The covid 19 pandemic in 2020 made the results of learning English in general at Polinela and Tourism Travel Study Programs in particular not optimal. The learning process carried out face-to-face no longer could be done to avoid the spread of the COVID-19 virus, therefore learning process used an online system using social media such as WhatsApp, Twitter, Instagram and teleconference applications such as Google Meeting and Zoom. New normal conditions where the learning process was forced conducted online, so that new problems arise such as learning delivery less interesting and boring. Giving assignments by lecturers without considering the psychological and emotional aspects of students also created new problems.

The results of observations by researcher showed that independent learning resources (modules, handouts and web learning) were very limited. The problem of the availability of independent learning resources was a priority need to be resolved, considering that there were a few opportunities for students to practice English outside of the classroom. Another problem in learning tourism English at the Travel and Tourism Study Program at Polinela was lack of opportunities for students to practice their English language skills. The tourism English course, namely professional English for tourism, is only given in two semesters, each with two semester credit systems (2 credits: 1 credit for theory and 1 credit for practice). In a week, students are only given 50 minutes of theory and 120 minutes for practicum. The use of English as a habit where it was practiced with friends, lecturers and people around did not occur so that the experience of practicing English was less. Roblyer, et al., (2010) stated that common problems in learning foreign languages include the lack of opportunities to use foreign languages by teachers and students in their environment. Therefore, it is necessary to design a learning model where students can use language optimally to expose English by listening to native speakers and practice examples of using English (language expression) in everyday life. The results of a research which conducted by Wahyuningsih and Afandi (2020) on the problem of speaking English showed that students did not master adequate vocabulary, less proficient in grammar, less precise in pronouncing words, lack of English input outside class, lack of self-confidence, and lack of curriculum for developing speaking skills. Learning English for tourism should emphasize two aspects of language competences namely; listening and speaking, general conversation, providing services, providing information and offering assistance, giving information, offering help and requests for cooperation (Bury and Oka, 2017).

Educational technology has roles in solving the learning problems such as facilitating learning and increasing learning outcomes or improving learning performance. Improving students learning outcomes or achievements need to considering internal and external condition factors. Internal factors or student characteristics (learner characteristics) are related to memory (stored memories), mental conditions (state of mind) and students' intentions or willingness and learning goals while external factors include the learning environment, learning resources, learning management where the two factors are interconnected (Gagne, Robert M, 2005). Therefore, learning will occur when students can connect internal and external conditions so that the changes in knowledge and skills occur (changes of behavior) where this could be called a learning condition. Creating learning conditions both internally and externally, we can start by designing a good instructional model.

The instructional design model is a learning planning system model that has several characteristics, including; the process of determining goals, selecting and developing materials that intervene in the learning process and using feedback from students to improve learning instruction. Gagne (2005) assumed that learning and the desire to use

learning conditions as a framework for designing learning, so we can develop learning resources by utilizing technology and media. Technology and media have a very important role in learning (Smaldino, et al., 2008). The best technology and media are those can be used to promote student. One of the developments of learning models is by using technology, such as on line modules based on hypermedia.

The development of hypermedia-based learning design models can use media such as e-modules in the form of learning modules which learning materials are in the format of books or text documents (hypertext) that are stored on a hard disk, CD, or flash disk and can be read using a computer through offline or online. Along with the development of information technology in the industrial era 4.0, electronic modules developed into electronic modules. E-module contains not only document text (hypertext) but more than just document text that is integrated (linked) with other multimedia technologies such as audio, graphics, images, animation or video in other words hypermedia-based. Hypermedia can be described as an information management tool (software) that allows linking related pieces of information or concepts in a text, to issue an underlying knowledge base structure so that information retrieval is simplified and facilitated (Louw and Bredenkamp, 1994).

Hypermedia-based learning models in developing learning materials can be in the form of online modules or electronic modules (e-modules) which are developed using multimedia applications that combine various media features in the form of article text, images, graphics, music, animation, and videos, as the result it will be more interesting, and more interactive learning media. It also can be accessed by online through the android application or barcode scanning application on android mobile phones, PCs, laptops and other electronic reading devices. Hypermedia-based learning design with E-modules can be an independent learning medium for students (self-study).

The digital advances make the millennial generation more familiar with Android phones compared to textbooks. The digital marketing e-marketer research institute estimates that in 2018 the number of active smartphone users in Indonesia is more than 100 million people, while Indonesia's population is 250 million. The shift of text books and module texts into electronic books (e-books) and electronic modules is unavoidable because advances in information and technology (IT) e-books and e-modules can be compiled with multimedia applications that combine various media in the form of text, images, graphics, music, animation, video, and interactions into digital files (computerized) so as to produce learning media that are more interesting, and more interactive.

Hypermedia-based English learning model with e-module applications can be accessed with android gadgets. The publication of e-modules in the form of applications uploaded to a Playstore can also make easier for anyone to access and study English more effectively and efficiently so that the instructional objectives of learning can be achieved better. The use of online modules in the learning process will foster creativity, productive thinking habits, create active, effective, innovative, and fun conditions, and can develop literacy skills in students. Learning with electronic modules, lecturers can deliver all English material according to the learning targets without sacrificing the learning effectiveness because students can learn the material early through smartphones or computers that can be accessed anywhere and anytime with high flexibility therefore lecturers have time to provide more detailed explanations about the material being taught that considered difficult by students. Learning interactive hypermedia will make the learning process more fun, clear, teaching time can be reduced, and very flexible because teaching and learning can be done anywhere and anytime. The use of hypermedia makes students more happy (enjoyable), motivating, interacting, easy to understand, and encouraging independence (Gaudence *et al.*, 2018). Therefore lecturers should develop their own multimedia applications in order to contribute effectively in solving some learning problems (Babiker, 2015).

Based on the description of the importance of intervening on learning conditions both internally and externally, and to make the tourism English learning process more optimal, researcher is interested in developing a learning model based on hypermedia for tourism English at Politeknik Negeri Lampung as an alternative independent English learning model that where similar research has never been done before.

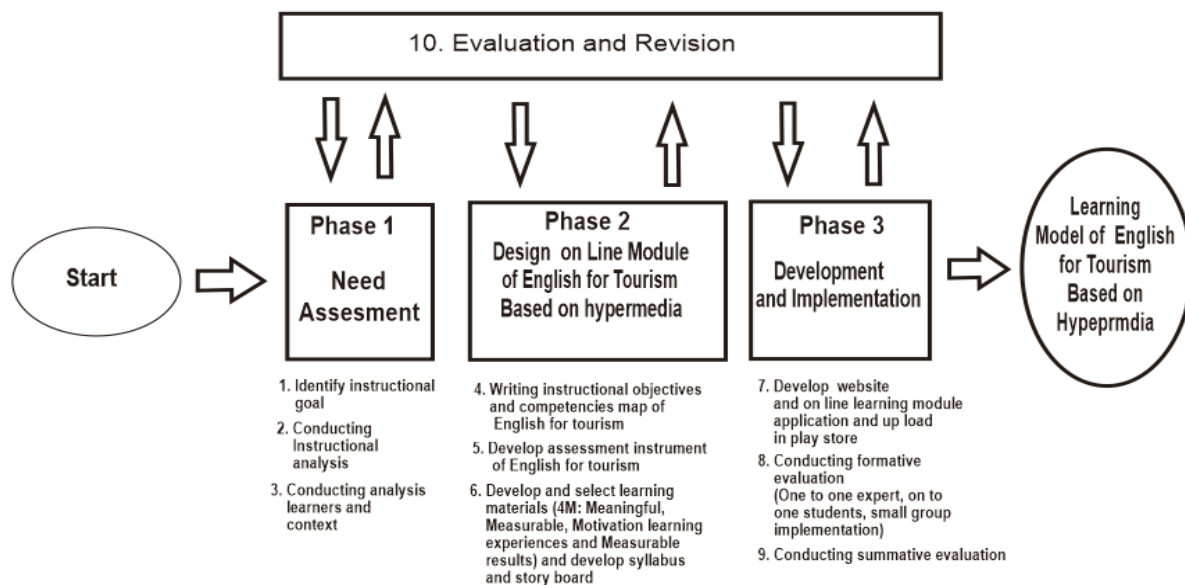
## 2. Method



The learning model of English for tourism based on hypermedia was a research development method (R & D) which aims to improve the quality and quality of education. The Research and development of learning model of English for tourism based on hypermedia used a combination model of the Dick, W. & Carey (2015), Peck (1988), and Allen (2007) models.

This research consisted of four major phases; 1) Needs assessment, 2) on line module design, and 3) development and implementation.

- 1) Needs assessment;
  - Identify instructional goals
  - Conducting Instructional Analysis
  - Conducting Analysis of Learners' Characteristics and Context
- 2) On line module design
  - Writing Instructional Objectives
  - Develop Assessment Instruments
  - Develop a learning strategy
  - Develop and Select Instructional Materials
- 3) Development and implementation
  - Design and conduct formative evaluation of learning materials
  - Revision of learning materials and
  - Design and Conduct Summative Evaluation
  - Evaluation and Revision



Picture 1: Instructional model of English for tourism based on hypermedia (combination of Hanaffin And Peck Dan Dick & Carey an Allen Models)

### 3. Result and Discussion

The development process of learning model of English for tourism based on hypermdia through on line modules combined three models of the Dick and Carey, Hannafin Peck and Allen Model which is divided into four phases;

#### 3.1. Stage One; Needs Analysis;

##### 3.1.1. Identify and determine general instructional of general student English,

The identification of general objectives at this stage uses an analytical approach where the final goal (front-end analysis). What kind of abilities will be achieved at the end of learning English in tourism at the Polylinela Travel Study Program according to the SKKNI in the tourism sector.

The identification of general objectives of learning English in tourism is carried out using four general approach methods as suggested by Dick and Carey (2015), namely; 1) Subject-matter expert (SME) approach in tourism English learning (ESP; English for specific purposes); 2) Content outline approach; 3) Administrative mandate approach, and 4) Performance technology approach. Researchers used three approaches in determining the instructional objectives of learning English tourism in the Lampung State Polytechnic Travel Study Program, namely; the first is the subject-matter expert (SME) approach, the second is the content outline approach and the third is the performance technology approach.

Based on the results of the identification of the general objectives of learning English in tourism, which were carried out with three approach methods; subject-matter expert (SME) approach in tourism English learning (ESP; English for specific purposes), content outline approach, and performance technology approach can serve as instructional purposes for tourism English learning is "Students can actively communicate English orally (spoken) and written in the context of the tourism industry."

### 3.1.2. Conduct instructional

The second step is to conduct an instructional analysis. Instructional analysis is to identify skills and knowledge that must be mastered in instructional (Dick, W. & Carey, 2015). In this step the researcher carried out three activities, namely; 1) Classify the objectives of learning English for tourism into learning domains (intellectual skills, psychomotor skills, attitudes, and verbal information), 2) Arrange and sequence the main steps needed to achieve tourism English learning objectives, and 3) Analyze supporting skills/competencies (subordinate skills) by examining each step to determine what students need to know and be able to do before they reach the general goal of learning tourism English.

Language is generally categorized into two, namely spoken and written. Meanwhile, the skills are divided into four skills, namely, listening (listening), speaking (speaking), reading (reading) and writing (writing). The four skills in language productivity are grouped into two, namely receptive skills or language acceptance skills; listening and reading and productive skills or language expression skills; speaking and writing (Davies, (2000), Lenny Johana Alvarado Rico (2014)). The learning domain is divided into several skills, namely; intellectual skills, psychomotor skills, attitudes, and verbal information (Dick, W. & Carey, 2015). Gagne in Suparman (2012) states that the capacity or ability in the cognitive domain or friend is divided into three skills, namely; intellectual skills, verbal information and cognitive strategies.

### 3.1.3. Conduct analysis of learners and context

In this third step, the researcher conducted an analysis of students, namely students of the Travel Study Program, Economics and Business Department at the Lampung State Polytechnic and context analysis, namely tourism industry stakeholders such as tour and travel companies, hotels, restaurants and tourist destinations. At this stage, the researchers conducted interviews and provided questionnaires (google form) for students and tourism stakeholders. Questionnaires and interviews with students were conducted to obtain information about; (1) The initial ability of the student's tourism English, (2) Prior knowledge of the subject matter to be given, (3) Attitudes or responses to content and material delivery systems, (4) academic motivation, (5) Education level and ability, (6) Preferences/favorites for learning in general, (7) Attitude towards organizations/ institutions that provide instructional learning in this case the travel study program, and (8) Group characteristics.

Context analysis to find out information from stakeholders where English for tourism will be used for example DUDI in the tourism sector and tourism organizations or associations such as ASITA (Association of Indonesian Travel Agencies), HPI (Himpunan Pramuwisata Indonesia), IGHMA (Indonesian Travel Agencies). General Hotel

Manager Association), and AELI (Association of Experimental Learning Indonesian). Context analysis was carried out by providing a questionnaire/questionnaire and unstructured interviews in several institutions and the business and industrial world in the tourism sector. In this activity the researchers also paid attention to the characteristics of the tourism industry, especially in Lampung to solve the problem of tourism English communication skills faced by the tourism industry and business (DUDI) sector.

The results of the analysis of students at the Tourism Travel Study Program, Department of Economics and Business of Polinela, showed that English language skills are still quite low. The average score of the TOEIC (Test of English for International Communication) test which was followed by 69 people was 185 at the basic level. Based on the level of English proficiency there were 17 people at beginners level (score 255-400), 45 people were at the basic level (score: 255-400), 6 people were at the lower intermediate level (score: 405-600) and 1 person was at the middle level (score: 405-600). While the value of learning outcomes for the first semester of in English class which were attended by 110 students showed that the students' English skills about 30 students (27.3%) were A grade, 51 (46.4%) got B grade and 29 people (26.4%) got C grades.

The results of the self-evaluation questionnaire for the tourism English language skills of the Polynela Travel Study Program students based on the Indonesian National Work Competency Standards (SKKNI) sub-sector travel agency sub-sector number (No. Kep 238 / MEN / X / 2004) shows that competence spoken English, reading and writing are still not as expected.

Students' speaking skills related to communication with tourists and colleagues related to basic English and daily activities at work and tourism service activities are sufficient while understanding and using polite and friendly sentences and knowing when to use formal or informal was as good as talking over the phone. The results of the questionnaire on students' reading ability in English for tourism in the table above, it could be seen that students' competences in reading general signs of the tourism industry in English is sufficient, reading working documents is as good as reading and understanding work. instructions and work procedures, while the ability to read graphs is sufficient. While the results of the self-evaluation of students' writing skills in table 3 showed that the competences of students in writing messages, instructions, and identity in English when receiving calls is sufficient, as well as the ability to write in basic and everyday documents in English at work. While the competence to fill out the form is good.

The results of the contextual analysis of stakeholders regarding the needs of tourism English used in communicating with foreigners or foreign customers were obtained from the questionnaire. The questionnaire was given on line (online) using a google form to the tourism industry stakeholders. The google form application help researcher to analyze data easier because the google form can automatically present the results of data analysis graphically and can be exported to excel data. The questionnaires were distributed via social media Whatsapp (WA) to tourism industry stakeholders, tourism associations, hotel students and the tourism office in Lampung province. The number of respondents who responded to the online questionnaire was 158 which consisted of elements; tour and travel (17 respondents), hotels (71 respondents), tourist destinations (4 respondents), tourism offices (5 respondents) and hospitality students (51 respondents), educators in the tourism sector (5 respondents) and professional certification bodies in tourism (2 respondents) and course institutions in the field of tourism (3 respondents).

The results of the analysis of the tourism English competency questionnaire of the stakeholders according to the SKKNI (Indonesian National Work Competency Standard) in the tourism sector for the travel agency sub-sector number (No. Kep 238 / MEN / X / 2004) are divided into three competencies namely; 1) communicating in spoken English, 2) my ability to read and 3) writing skills.

#### 1) Competences of stake holders in speaking English

The competences of stakeholders in English speaking skills has been identified based on the results of the questionnaire analysis. The questionnaire covered three aspects of speaking ability to communicate in spoken English with tourists and colleagues, understanding and using polite and friendly sentences verbally both formally

and informally, and speaking by telephone. The following table shows the results of stakeholder competencies in speaking skills related to English for tourism in the workplace.

Table 1: Competences of tourism stake holders in speaking English

No.	Tourism English Competency	Worst	Fair	Good	Excellent
1	My ability to communicate in spoken English with tourists and colleagues regarding matters relating to basic and daily activities at work and tourist service activities	3,6%	26,6%	43,7%	23,4%
2	My ability to understand and use polite and friendly sentences verbally and know when to use formal or informal sentences in English.	3,8%	24,1%	41,1%	31,0%
3	My ability to speak by telephone (greeting, leaving a message, asking apology, and offering helps) in English.	3,8%	26,6%	38,0%	31,6%

The table above shows that the speaking skills of stakeholders related to communication with tourists and colleagues related to basic and daily activities at work and tourism service activities, understand and use polite and friendly sentences verbally and know when to use formal or informal and talk over the phone mostly were good.

## 2) The ability of stake holders in reading

The second analysis regarding stake holders' English reading competence includes reading general signs of the tourism industry in English, reading work documents and reading and understanding work instructions and work procedures, while the ability to read graphs is sufficient. The results of the analysis in the following table;

Table 2: Competences of stake holders in reading

No.	Tourism English Competency	Worst	Fair	Good	Excellent
1	My ability to read general signs (signates, logos/images, and signs) of the tourism industry in English	6,3%	29,1%	34,8%	29,7%
2	My ability to read working documents (brochures, leaflets, memos, emails and facsimiles) in tourism English.	2,5%	30,4%	39,9%	27,2%
3	My ability to read and understand work instructions and work procedures in English (guidance modules, memos, emails, and leaflets/brochures).	3,8%	27,2%	43,7%	25,3%
4	Ability to read diagrams / charts / graphs in English (tourism trend graphs, reports, etc.)	6,3%	39,9%	38,0%	15,8%

The ability of the stakeholders in reading English for tourism in the table above shows that the competence in reading general signs of the tourism industry in tourism English is good, in reading work documents and in reading and understanding work instructions and work procedures, reading graphs is also in the good category.

## 3) The ability of stake holders in writing English

Writing competencies that are standard in the SKKNI (Indonesian National Work Competency Standard) in the field of tourism work include; the ability to write messages, the ability to fill out or fill out forms and write basic and everyday documents in the workplace. The results of the analysis of the ability of stakeholders in writing skills are shown in the following table:

Table 3: Competences of of stake holders in writing English

No.	Tourism English Competency	Worst	Fair	Good	Excellent
1	My ability to write messages, instructions, ID in English when receiving a telephone.	5,1%	27,8%	38,6%	28,5%
2	My ability to complete or fill out forms in English (registration form, travel schedule form, insurance claim form, passport form, visa form, report form, map and graphic form).	4,4%	25,3%	46,2%	24,1%
3	My ability to write basic and everyday documents in English at work (flyers, messages, correspondence, memos, emails, simple instructions/procedures, customer manuals etc.)	7,0%	27,2%	41,8%	24,1%

Based on the results of the analysis of the writing skills of stakeholders, it showed that the competence of stakeholders in writing messages, instructions, and identities in English when receiving a call was as good as writing in basic and everyday documents in English at work. While the competence to fill out or fill out the form is good.

The results of the questionnaire show that the tourism English materials desired by tourism stakeholders to improve their competence include; speaking, listening, reading, writing, grammar, vocabulary, pronunciation, tour guide, interpreter, culinary, literature, handling complaints, hospitality, public speaking, and storytelling,

### 3.2. Stage Two. Designing Instructional Model of English for tourism based on hypermedia

#### 3.2.1. Writing instructional objectives, and tourism English competency maps

In this step the researcher wrote instructional objectives that describe in detail what kind of competencies that students should be able to do after they completed each learning unit in the tourism English e-module (on line module). Researchers wrote general and specific instructional objectives. General instructional objectives are guided by Bloom's taxonomy (1959) which has been revised by Krathwohl and Anderson which consists of three areas, namely; 1) cognitive (ability to remember, understand, apply, analyze, evaluate and create), 2) affective (receiving, responding, and creating, appreciating, organizing, characterizing according to values), 3) psychomotor (imitating, manipulating, precision, articulation, naturalization).

Specific instructional objectives (SIO) can be translated as specific instructional objectives. SIO contains elements that can provide clues to be able to develop tests and can actually measure student behavior. The elements contained in SIO are ABCD (**A**udience, **B**ehavior, **C**ondition, **D**egree); Audience are students, Behavior is specific behavior that will appear after the learning process using tourism English e-modules, Condition is a condition or limitation imposed on students or tools used in learning, and Degree is the level of success of learning which in this case tourism English course.

The results of the preparation in writing special instructional objectives for tourism English for students of the Tourism Travel Study Program, Department of Economics and Business in Polinela which was an elaboration of the general instructional objectives, namely "Students will be able to fluently communicate English orally (spoken) and written in tourism industrial context." The specific instructional objectives of tourism English are adapted to the context and situation of the usage English in tourist attractions which were divided into several language skills such as listening, speaking, reading, writing, and language use and vocabulary. The examples of the specific instructional objectives of the tourism English learning electronic module; If given examples of English communication with various media, both video, audio, and online text in e-modules about conversations and readings at the Tour and Travel Agency, students will be able to communicate verbally (spoken) and writing in the context and situation at the Tour and Travel Agency at least 80% correctly.

### 3.2.2. Developing tourism English assessments,

The fifth step is to develop an assessment instrument that aims to determine whether students can achieve the performance objectives in tourism English learning. Researcher developed an assessment instrument (criterion-referenced assessment) that can directly measure the competencies written in the instructional objectives. Assessment instruments in the form of pre-test and posttest. In developing the assessment instruments, the researcher first makes an assessment grid.

#### a) Pre-Test Initial Assessment Grid

The initial test or pretest is designed to assess students' initial abilities before learning English for tourism using an electronic module (on line module) of hypermedia-based English learning. The pre-test includes an initial ability assessment of four tourism English skills, namely speaking, listening, reading and writing. The pre-test grid has been made to eased developing of the test.

#### b) Post Test Assessment Grid

The final test or posttest is designed to assess students' initial abilities after learning tourism English using an electronic module of hypermedia-based English learning. The posttest includes an assessment of the final ability of the four tourism English skills, namely speaking, listening, reading and writing.

### 3.2.3. Developing learning strategies or Develop Instructional Strategy

In this sixth step, the researcher modified the learning model, namely the Allen model (2007) into the development of a hypermedia-based learning strategy for the model of tourism English learning. There are three main steps to be taken they were;

- a) The pre-instruction phase, in developing learning strategies, several things such as attitudes, motivations and skills before formal learning begins.
- b) The learning phase (instruction phase), in developing a learning strategy, the researcher considers all behavioral factors and other influencing factors that occur during learning or training (4Ms; Meaningful, Memorable, Motivational learning experiences and Measurable results).
- c) Stage of learning outcomes (performance). In this third stage, assessing learning outcomes which include all changes in behavior during learning or training and in terms of improving performance.

The development of English learning model based on hypermedia must have a meaningful, memorable, motivational learning experience so that there was an increase in better grades after learning. The strategy of material development as far as possible creates 4Ms, namely; 1) meaningful, 2) memorable, and 3) motivational learning experiences and 4) measurable learning outcomes.

The preparation of learning development strategies also considers several opinions from experts such as Smaldino, et al. (2008) and Gagne (2005) on how to design module. Smaldino. et al. (2008) stated that the learning module is a set of independent learning materials designed to be used by one student or group without the presence of a lecturer or teacher. The hypermedia-based tourism English learning electronic module is an independent online learning module that can be accessed online via an android gadget or mobile phone as well as a personal computer (PC). Therefore, the tourism English learning electronic module contains several components, they were;

- a) Introduction (rationale); contains an outline of the contents of the module and why students need to study it,
- b) Learning objectives (instructional objectives); contains what will be achieved and mastered after learning independently,
- c) Initial test (pretest); a test that measures things or knowledge that was mastered before learning,
- d) Hypermedia learning material (multimedia materials), contain of a variety of technologies and online learning media to encourage students more active and use all five senses.
- e) Learning activities; includes learning activities with various strategies and media that increase interest and meet student needs.

- f) Practice feedback; contains exercises for each unit of learning objectives and correction of answer keys.
- g) Final Test; contains a final assessment to measure whether students have mastered all the learning objectives in the module.

In this sixth step, the researcher developed a learning strategy, namely how to make the contents of the English unit in the hypermedia-based tourism English learning e-module was delivered. The learning strategy was developed based on a self-regulated and hypermedia-based learning model.

The development of an English e-module learning strategy in the form of an Android-based application or software is organized into five main learning components by Gagne (2005) as part of an overall learning strategy. The five components were included;

- 1) Pre-structural activities; Researchers will identify what students must do before learning and doing assignments in units in e-modules.
- 2) Content presentation; The researcher presents English contents for tourism in an e-module as attractive as possible with hypermedia-based learning material contents. Researcher selected, adapted and modified English language materials for tourists in the form of videos, audio, text, exercises and quizzes so that they are more interesting and fun. The source of the tourism English materials were obtained from various sources for instance; from libraries both offline and online (textbooks, e-books, modules, hand out e-modules) and sources from the internet (youtube, MP4 audio, MP3 and audio books). (Hamad et al., (2019) stated that; "...YouTube videos and Listening Audio Tracks Imitation (YATI) is a very effective CALL (Computer-Assisted Language Learning) tool towards improving students' speaking skills. This study recommends the use of YATI approach in order to help students overcome speaking problems. Youtube and imitation audio tracks are very effective for improving English speaking skills and are recommended as solutions to solve problems in speaking mastery. Wang and Chen (2020) stated that learning English using Youtube is to get more learning resources (explore more learning resources), attracted students' attention to learn English, and increased cultural. Bardakci (2019) suggested that students should use Youtube to improve their academic competences.
- 3) Student participation; The researcher designed an active involvement of students in learning with role play. Researchers designed an e-module application by adding direct communication media such as Whatsapps (WA) and email so that lecturers and students could communicate directly (WA) or indirectly (email). Chavangklang and Chavangklang (2018) provided recommendations in the preparation of learning materials using role play learning activities. He stated that role play activities were the highest activity in terms of student learning satisfaction.
- 4) Assessment; Researchers developed an assessment system for each learning unit by considering its effectiveness and efficiency. For example, evaluation questions were arranged according to the level of difficulties, the number of questions were not too many, students could find out the score directly and corrections in each questions after completing work, some questions were made in the form of google form so that it was fun not burdensome and students without realized that they had improved their English language skills. Researchers compiled formative evaluations for each unit to determine the progress of learning outcomes and summative evaluations to determine the overall level of learning achievement. Palacio et al., (2016) stated that; "*Naturally, improvement of student learning may require a longer period of development and observation. We need to continuously examine student performance on tests and monitor progress to be able to establish the degree to which course standards are being attained.*" It was natural that improving student learning requires a longer period of development and observation. We need to continuously assess the performance of participants with tests and monitor their learning progress to be able to determine the extent to which learning standards or courses are being achieved.
- 5) Follow-up activities; The researcher designed a learning strategy in which the lecturer could provide an overall review to determine whether the student's memory and knowledge transfer needs had been met. The delivery system in the tourism English e-module used Android-based instructions application and internet web access which formed independently to guided learning, exercises interactive multimedia to facilitate lecturers, simple online syllabus to comprehensive solutions organized in learning portals covering content, instruction, interaction and assessment. Hendikawati et al., (2019) stated that the development of Android-

based learning media (Android-based CAI: Computer Assisted Instructional) could be used as a learning resource and can support self-regulated learning.

### 3.3. Stage Three. Developing and Implementing

#### 3.3.1. Develop and Select Instructional Materials

At the stage of developing and selecting materials in tourism English learning e-modules, it is necessary to consider three factors in the selection of media and delivery systems, namely;

- 1) Availability of existing teaching materials (textbooks, modules or handouts, ppt, video, audio, etc.) in travel study programs, online libraries and online sources on the internet. The availability of these materials is possible to be selected and or adapted and modified according to the needs of the tourism sector and is current or up to date. Shen et al., (2014) stated that up-to-date information in English material is useful for developing students' understanding of English or culture.
- 2) Production and implementation constraints, in solving production constraints and problems or making software for e-module application for tourism English learning, researchers involve IT personnel inside and outside the Polinela campus. Development of hypermedia-based e-module materials by creating various materials that were linked to one another and utilizing online material sources such as YouTube, websites, weblogs, google forms, google classroom, google maps, and social media applications (Instagram and WhatsApp). As for the implementation of the use of the tourism English e-module, the researcher involved students, lecturers, design experts, tourism English content experts and learning instructional experts. Han, 2010 in Zhang (2020) stated that: material sourced from the internet and video or audio that has been edited or recorded by the teacher should be the target and the main key language material must be explained but it should not be too long because it will cause excess student cognitive knowledge to become a problem and have a serious effect on student learning outcomes. The use of google forms in making test questions in the module will make it easier for students to work on questions with a PC, notebook or Android, while the convenience for lecturers was in terms of correcting student answers, because lecturers do not need to correct manually. Nguyen *et al.*, (2018) stated that google forms is a free online application that can be used in the classroom to increase student participation, encourage participation in the learning process, and evaluate learning. He also added that the google form is easy to use (user-friendly), easy to administer and helps teachers save paper and save time on assessment.
- 3) The number of facilities provided by lecturers or instructors during the learning process using the e-module of the student English language. The facility to access the e-module application is enough to use an android phone, computer (PC) or netbook that is connected to the internet. In this step the researcher searched for and selected tourism English materials suitable for tourism in libraries (textbooks and textbooks) and online sources; movies, videos, audio, websites, and YouTube, then adapted to meet instructional objectives.

At this stage the researcher also developed and selected materials for an English e-module for hypermedia-based tourism starting with developing rough concept materials and material prototypes quickly. The English Tourism materials must contained 4Ms, namely; 1) Meaningfulness, 2) Memorable, and 3) Motivational learning experiences and 4) measurable learning outcomes. Electronic module learning materials are obtained from various sources, both offline (textbooks, modules, magazines, brochures and handouts, videos, MP3, Mp4) and online (websites, blogs, YouTube, social media, and e-mail).

In this seventh step, the researcher also developed a storyboard to visually described what would be done in developing a hypermedia-based tourism English module. The storyboard was created as a means of producing which is then used by researchers to create a physical form or final draft of hypermedia-based e-module development. Creating a storyboard was made on a working paper in the form of a chart image as a mapping of the results of the analysis of objectives and learning. The chart images were included in the menu plan created on the website, including: user manual, materials (listening, speaking, reading and writing), audio, video, language use exercises (practices), dictionaries and bibliography. The menus on the hypermedia-based tourism English learning e-module website were developed and compiled as a project outline that describes all components of the hypermedia-based e-module, learning materials in the form of pdf word text, pdf PowerPoint, user manuals,



materials (listening, speaking, reading and writing), audio, video, language use exercises (practices), games, dictionaries and bibliography of instructions for using hypermedia-based tourism English learning e-modules.

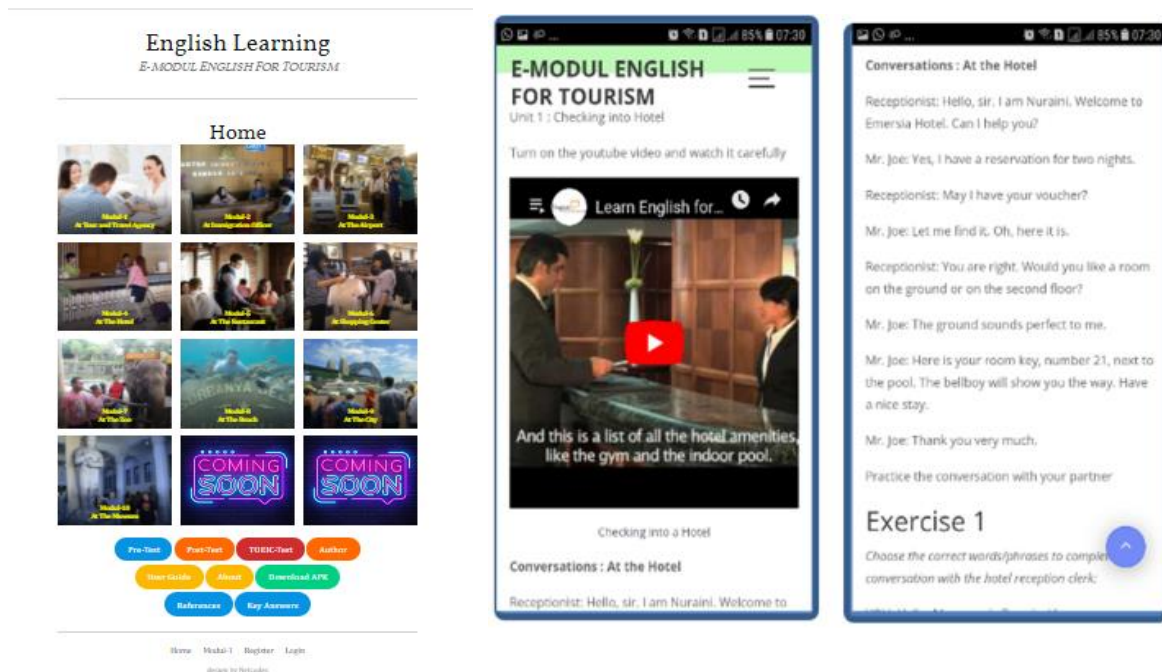


Figure 2: Display of Tourism English E-module

The steps for developing the hypermedia-based tourism English learning electronic module before being uploaded to the website they were; 1) composing scripts, 2) display design, 3) text typing, 4) provision of photos and pictures, 5) providing of conversational materials (speaking), 6) providing of listening materials, 7) provision of reading materials 8) provision of writing materials (writing) 9) provision of language usage materials (language usage) 10) provision of vocabulary materials 11) provision of assessment materials (pretest and posttest) 12) provision of video materials 13) provision of audio materials 14) provision of exercise materials 15) discussions with colleagues.

Electronic module material or hypermedia-based tourism English e-module that has been compiled manually and then uploaded on the website so that it could be accessed in the form of Android-based applications (apps) and website portals (<https://englishlearning.serbaonline.id>) which could be accessed via an android phone (smartphone), PC or netbook connected to the internet. An English e-book for Tourism in the form of an application could also be uploaded and published on the google play store so that it can be accessed anytime and anywhere by students or users.

### 3.4. Evaluation and Revision

In this eighth step, the researcher designed and conducted a formative evaluation of learning materials to collect data and information during the development of a tourism English e-module that could be used to increase the effectiveness and efficiency of learning using a hypermedia-based tourism English e-module. In conducting formative evaluation, researcher evaluated as follows;

#### 3.4.1. Conduct a one-and-one evaluation or clinical trial

One-to-one evaluation is divided into two they were; one-to-one evaluation by experts and one-on-one evaluation by students (one to one learner). One-on-one trials carried out by experts created a validation instrument that was validated by experts to test the feasibility of content, design, and language. The expert validation questionnaire instrument (one to one expert) before being used was validated by the expert in terms of language clarity so that it

did not cause multiple interpretations. Instrument validation is used to measure aspects of the clarity of the measurement objectives that were formulated, the suitability of the questions for each aspect, the use of language, and the clarity of the instructions for using the instrument. The instrument validator to see the feasibility of the linguistic side (construct) was reviewed by a linguist. The results of instrument validation from linguists showed that the legibility of the validation instrument was good. As for grammar, linguists suggest that; The wrong use of punctuation marks, the use of capital letters, and the writing of foreign terms and compound words. Grammatically, such writing errors were relatively easy to correct, and did not interfere with the reader's understanding of the substance of the message conveyed by the author. Therefore, overall, the language of this questionnaire instrument could be said quite straightforward, easy to understand, and could be effective in communicating the author's message to the reader.

The validator intended to see the feasibility from the design side was reviewed by a learning design expert. There were three validators to see the feasibility from the media and content of English learning materials. The results of One to One Evaluation by learning design experts showed that the quality of the content of the hypermedia-based tourism English learning electronic module could be categorized as very good with a total score of 96.15. The instructional design expert (Instructional Design) suggested that there should be synchronization between general instructional objectives and specific instructional objectives with the needs of English in the field. Based on the evaluation of media experts the quality of hypermedia-based tourism English learning electronic modules from the aspect of module design, multimedia design, could be categorized very good with a total score of 96.15. Learning media experts suggest that photos and videos derived from Indonesian local facts would be better.

The evaluation one to one tourism English experts, the quality of hypermedia-based tourism English learning electronic modules from the aspects of speaking, listening, reading, writing, vocabulary skills, the use of language and grammar (language usage), exercises and test material (pre-test and post-test) could be categorized a good with a total score of 89.26. The expert provided some advices on the content of tourism English material, preferably based on functional, situational, task-based syllabus or content-based syllabus (how to book a room, how to use hotel facilities). While the other expert stated that the presentation E-module on English for tourism and hospitality was very complete and should give students the opportunity to function as starting professionals in this industry. He added that the materials on the tourism English e-module with the division made into several tourism and hospitality tasks and situations was in line with the possible actions that students who are responsible for daily activities and direct activities in the tourism industry should take. The material for making destination and tourist destination guides, making diagrams and writing reports it seem that additional practical training and training were needed because these materials were for the management level and not at the staff or staff level employee.

The inputs and suggestions from the tourism English experts above were used as the basis for improving or revising hypermedia-based tourism English learning e-module products. Revisions to the tourism English electronic module include;

- a) Synchronization of ICT with tourism English needs in the field,
- b) The use of photos, pictures and examples that are more local in nature or in accordance with the context of the Lampung or Nusantara area,
- c) Tourism English content is more focused on the situational syllabus or the approach to the situation and context in which tourism English is used,
- d) Adjusting the level of difficulty in tourism English material (level; elementary, intermediate or advanced)

### 3.4.2. Conducting Small Group Evaluation

One to one learner evaluation by students was carried out by involving three students with the criteria of one student with above average ability, one student with average ability, and one student with low or below average abilities. The three students involved in the evaluation were students of the Polytechnic Travel Study Program, Department of Economics and Business, Polinela. One-on-one evaluation aims to determine the impact of the level of instructional clarity, benefits or impacts for students, and the feasibility of the material.

The pilot activity by students (one to one learner) is to see the content, design and product display of the hypermedia-based tourism English e-module application prototype, so in this activity the researcher provides an application link or hypermedia-based English e-module website address

(<http://www.englishlearning.serbaonline.id>) and a google link for the questionnaire form to students (<https://s.id/EvaluasiSatuSatu>). Students were given the opportunity to study the tourism English electronic module independently (self-learning) by following the instructions for using the e-module online using an Android mobile device or gadget or PC and laptop. After seeing the prototype and learning all English skills such as speaking, listening, reading, writing, language usage and vocabulary, then students are asked to provide assessment with the google form that has been given.

The results of the evaluation of one student or student were based on the responses and assessments of the three students involved. Responses and assessments are found on the google form that has been sent to students via social media (WhatsApp) and email. The results of student assessments of the hypermedia-based tourism English learning electronic module could be categorized into very good.

The small group evaluation was carried out by involving 8 students of Polinela Travel Study Program who were randomly selected which generally represent the characteristics of the target population. Small group evaluation activities or small group trials were evaluating hypermedia-based English e-module application prototypes. Small group trials conducted by students (small group) were first made an evaluation instrument that was validated by experts or linguists to test whether or not the questionnaire instrument was tested by small groups. Small group evaluation aims to determine the impact of the level of instructional clarity, benefits or impacts for students, and the feasibility of the material.

Small group evaluation activities by students intended to see the content, design and product display of the hypermedia-based tourism English e-module application prototype, so in this activity the researcher provides an application link. Students were given the opportunity to study the tourism English electronic module independently (self-learning) by following the instructions for using the e-module online using an Android mobile device or gadget or PC and laptop. After seeing the prototype and learning all English skills such as speaking, listening, reading, writing, language usage and vocabulary, then students are asked to provide assessment with the google form that has been given. The questionnaire were about; (1) The material in the tourism English e-module is in accordance with the learning objectives (2) The clarity of the instructions and learning steps in the tourism English e-module (3) The tourism English e-module is easy to use (4) The ease of understanding what is learned in the tourism English e-module (5) Demonstration/practice stimulates learning experience (6) Exercise/practice in tourism English is sufficient and in accordance with the student's topic (7) Learning material for tourism English e-module is useful and appropriate (8) Test or assessment material according to the material and learning objectives (9) The test material in the tourism English e-module measures learning achievement (10) Feedback from the test material (11) Student satisfaction using the tourism English e-module (12) The tourism English e-module is interesting and available stimulate learning (engage) (13) Students are confident in doing practice/practice questions and tests (14) Tourism English e-module encourages independent learning, students' confidence and motivation to learn (15) Tourism English e-module encourages collaboration between students

The results of the evaluation of a small group of students were based on the responses and assessments of the eight students involved. Responses and assessments were found on the google form that has been sent to students via social media (WhatsApp) and email. The results of small group evaluations or small group evaluations by students indicate that the response of the subject or student is that the level of clarity, benefits or impact for students, and the feasibility of hypermedia-based tourism English e-modules are very good. However, students still take notes in the form of suggestions and opinions, including; 1) adding a feature to answer practice questions 2) students can immediately know the value and 3) providing a slightly more detailed explanation to make it easier to understand. Researchers in this case give attention and consideration to revising the tourism English e-module material by adding these features.

### 3.4.3. Conducting Field Trials

The field trial or field evaluation involved about 30 students in Tourism and Travel Study Program at Polienla who were purposely selected. The field trial activity was intended to see the content, design and appearance of the e-module application prototype product and the effectiveness of using hypermedia-based tourism English e-modules. In this field trial activity, researchers looked at the effectiveness of e-modules. tourism English module based on hypermedia. The field test was first made an evaluation instrument that was validated by an expert or linguist to test whether or not it is appropriate for a small group trial questionnaire instrument. Next, the researcher asked the students' willingness to be involved in a field test (field evaluation) of the hypermedia-based tourism English learning electronic module product. The researcher sent the application installer (APK), the e-module website link (<http://www.englishlearning.serbaonline.id>) and the evaluation questionnaire link.

In the field trial, students were given an initial test (pre-test) and given a few weeks to study the tourism English electronic module independently (self-learning) by following the instructions for using the e-module online using an Android mobile device or gadget or PC and laptop. After seeing the prototype and learning all English skills such as speaking, listening, reading, writing, using language and grammar and vocabulary, then students are given a final test (post test) and asked to provide an assessment using the google form.

The results of the evaluation or field trials were based on the responses and assessments of the research subjects (30 students) involved. Responses and assessments were found on the google form that has been sent to students via social media (WhatsApp) and email. The questionnaire of field trials were about; (1) The material in the tourism English e-module is in accordance with the learning objectives (2) The clarity of the instructions and learning steps in the tourism English e-module (3) The tourism English e-module is easy to use (4) The ease of understanding what is learned in the tourism English e-module (5) Demonstration/practice stimulates learning experience (6) Exercise/practice in tourism English is sufficient and in accordance with the student's topic (7) Learning material for tourism English e-module is useful and appropriate (8) Test or assessment material according to the material and learning objectives (9) The test material in the tourism English e-module measures learning achievement (10) Feedback from the test material (11) Student satisfaction using the tourism English e-module (12) The tourism English e-module is interesting and available stimulate learning (engage) (13) Students are confident in doing practice questions and tests (14) Tourism English e-module encourages independent learning, students' confidence and motivation to learn (15) Tourism English e-module encourages collaboration between students.

The results of the Field Trail evaluation of 30 students showed that the subject's response was that the level of clarity, benefits or impact for students, and the feasibility of hypermedia-based tourism English e-modules were very good. However, students still take notes in the form of suggestions and opinions, including; 1) adding a feature to answer practice questions both essays and multiple choice, 2) students can immediately find out the value after doing the exercises and 3) provide a slightly more detailed explanation to make it easier to understand. Researchers in this case give attention and consideration to revising the tourism English e-module material by adding these features.

### *3.5. Effectiveness of Implementation of Tourism English E-Module*

The implementation of the tourism English learning electronic module is to determine the effectiveness of e-module products on student learning outcomes. The researcher used data collection techniques for pretest and posttest in the form of objective test, performance test and essay test. The pre-test and post-test instruments were made in the google form application and developed based on a grid of tourism English learning indicators that have been formulated in the needs analysis. Indicators include the competences of speaking, listening, reading and writing.

Before the pre-test and post-test instruments were used, they were validated by an English grammar expert validator. Assessment of instrument validation using a value scale of 4, 3, 2, 1; namely 4 means very good, clear, and appropriate, 3 means quite good, clear, and appropriate, 2 means not good, clear and appropriate, and a value of 1 means very poor, clear and appropriate. Analysis of the data to calculate the results of the pre-test and post-

test scores of the tourism English e-module implementation test using a paired t-test. Before the t-test was carried out, the norms and homogeneity were first carried out.

Table 4: 1 Uji t-test (Pair Sample Statistics)

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRE TEST	58.05	37	9.189	1.511
	POST TEST	70.92	37	8.697	1.430

Based on the results of the t-test analysis in the table above, it is known that the calculation results are known to have an average initial test = 58.05 and a final test = 70.92. The number of respondents used as a sample is 37 students. The standard deviation for the pretest is 9,189 and the standard deviation for the post test is 8,697. The mean standard error value for the pretest is 1.511 and for the post test is 1.430.

Table 4: 2 Uji t-test (Paired Sample Test)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRE TEST - POST TEST	-12.865	4.498	.739	-14.365	-11.365	-17.398	36	.000

Based on the output table "Pair Sample Test" above showed that the value of Sig. (2-tailed) of  $0.000 < 0.05$ , it could be concluded that there was a significant difference between the results of the English for tourism e-module on the pre-test and post-test data.

#### 4. Discussion

The use of technology in learning is solely to facilitate learning and improve learning outcomes. The integration of technology in learning is very important for teachers or educators to do. Educators can develop various teaching materials based on information and communication technology so that learning outcomes will be more effective. The development of hypermedia-based tourism English learning model is inseparable from the use of information and communication technology. It is designed in the form of a website with various media content such as video, audio, text, images and graphics that are designed as attractive as possible so that it encourages and makes it easier for students to master English in contexts and situations in the tourism sector. Hamdan et al., (2017) stated that the layout of the website, specifically its design, color, font size, table, and diagrams, also affects the students' reading. A website, which is too crowded with information and advertisements, in readers losing concentration. Students can use the tourism English E-module by accessing it on line anytime and anywhere via android mobile gadgets or computers and laptops, so that students are very flexible in following the learning process to improve their English skills. The effectiveness of learning outcomes using tourism English e-modules can be measured by conducting formative evaluations involving students or students.

Referring to Allen's (2007) opinion, online learning designs or e-learning designs must contain at least three things, namely; 1) meaningful, 2) easy to remember (memorable), and 3) motivational learning experience. He explained that: "When designing and developing a learning intervention is an appropriate thing to do, focusing on just three

fundamental targets will guide your work and make success a high probability: make learning experiences M1) meaningful, M2) memorable, and M3) motivational,” which means when designing and developing a learning intervention the right thing to do is to focus on only three basic targets that will guide the designer's work and make the chances of success high, namely by making the learning experience 3M: M1) meaningful, M2) memorable, and M3) motivating.

Dick, W. & Carey (2015) argues that in developing instructional materials or products such as e-modules it must contain at least three aspects, namely; 1) clarity of instruction, 2) impact on learners, and 3) feasibility.

1) Clarity of Instruction

Clarity of learning in an instructional contains things, among others; the material is in accordance with the learning objectives, clear instructions and learning steps, easy to use, understands what is learned in the e-module, demonstrations/practical exercises to stimulate the learning experience, and adequate and appropriate exercises according to the topic (Smaldino, Sharon E, Lowtther, Deborah L , and Russell, (2008), Dick, W. & Carey (2015), Merril (2013)).

2) Impact on learners

Instructional material can be said to be effective if it has a good impact on students. The impact of learning includes; e-module learning materials are useful and appropriate, test materials measure learning achievement, tests or assessments according to learning materials and objectives, feedback from test materials and student satisfaction (Dick, W. & Carey (2015), Merril, (2013), Peck, (1988)).

3) Feasibility

According to experts, the feasibility of instructional materials includes things like; Attractive and stimulates learning (engage), confident in doing practice questions and tests, encourages independent learning, confidence and motivation to learn and encourages student collaboration (Smaldino, Sharon E, Lowtther, Deborah L, and Russel, (2008), Dick, W. & Carey (2015), Merril, (2013), Peck, (1988)).

Based on the results of a one-to-one trial or one-to-one evaluation by students (one to one learner) it shows that the language of the hypermedia-based tourism English electronic module is generally in the very good category, namely; a) The material in the tourism English e-module is in accordance with the learning objectives with a percentage level of 100%, b) The clarity of the instructions and learning steps in the tourism English e-module is very clear with a 100% percentage level, c) the tourism English e-module easy to use with a percentage level of 100%, d) Ease of understanding what is learned in the e-module is very easy to understand with a percentage level of 100%, e) Demonstration/practice exercises stimulate the student learning experience very much in accordance with the percentage level of 100%, f) Exercises /Tourism English practice is sufficient and in accordance with the topic with a percentage level of 100%, g) The tourism English e-module learning materials are useful and in accordance with the 100% percentage level, h) Test or assessment materials according to the material and learning objectives with a percentage level of 100 % , i) The test material in the tourism English e-module measures learning achievement with a percentage level of 100% , j) Feedback from the test material with a percentage level of 66.7% agree and 33.3% disagree), k) Student satisfaction using the tourism English e-module with a percentage level of 100%, l) Tourism English e-module interesting and there is learning (engage) with a percentage level of 100%, m) Students are confident in doing practice/practice questions and tests with a percentage level of 100%, n) Tourism English e-modules encourage independent learning, confidence and motivation student learning with a percentage rate of 100%, o) The tourism English e-module encourages collaboration between students with a percentage rate of 100%.

From the test results above, it can be concluded that in general with indicators of clarity, the impact on students and the feasibility of hypermedia-based tourism English e-modules can be categorized as very good. Based on the results of small group trials or small group evaluations by eight students of the Lampung State Polytechnic Economic and Business Travel Study Program, the electronic module language of hypermedia-based tourism in general was in the very good category, namely; a) The material in the tourism English e-module is in accordance with the learning objectives with a percentage level of 100%, b) The clarity of the instructions and learning steps

in the tourism English e-module is very clear with a percentage level of 87.5% agree and 12.5% disagree. c) The tourism English e-module is easy to use with a percentage rate of 100%. d) Ease of understanding what is learned in the e-module is very easy to understand with a percentage level of 100%, e) Demonstration/practical exercises stimulate student learning experiences that are very in line with the percentage level of 100%, f) Tourism/English speaking practice/practice is sufficient and appropriate with topics with a 100% percentage level, g) Tourism English e-module learning materials are useful and in accordance with 100% percentage levels, h) Test or assessment materials according to learning materials and objectives with a 100% percentage level, i) Test materials in e -The tourism English module measures learning achievement with a percentage level of 100%, j) Feedback from test materials with a percentage level of 100%, k) Student satisfaction using the tourism English e-module with a percentage level of 100%, l) E-language module English tourism is interesting and there is learning fishing (engage) with a percentage level of 100%, m) Students are confident in working on questions l practice/practice and test with a percentage level of 100%, n) Tourism English e-module encourages independent learning, confidence and student learning motivation with a percentage level of 100%, o) Tourism English e-module encourages collaboration between students with a percentage level of 100 %.

Based on the results of the field trial to 30 students, it shows that in general the quality of the tourism English learning module is seen from the aspects of clarity, impact on learners and feasibility was very good where; a) The material in the tourism English e-module is in accordance with the learning objectives with a percentage level of 100%, b) The clarity of the instructions and learning steps in the tourism English e-module with a percentage level of 87.5%, c) The tourism English e-module easy to use very easy to use with a percentage level of 100%, d) Ease of understanding what is learned in e-modules with a percentage level of 100%, d) Demonstration/practice exercises stimulate student learning experience with a percentage level of 100%, e) Language exercises/practices tourism English is sufficient and in accordance with the topic with a 100% percentage level, f) Tourism English e-module learning materials are useful and in accordance with a 100% percentage level, g) Test or assessment materials according to the material and learning objectives with a 100% percentage level, h ) The test material in the tourism English e-module measures learning achievement with a percentage level of 100%, i) Feedback from the test material d ith 100% percentage level, j) Student satisfaction using tourism English e-module with 100% percentage level, k) Tourism English e-module is interesting and there is learning (engage) with 100% percentage level, l) Students are confident in working on practice/practice questions and tests with a percentage level of 100%, n) tourism English e-modules encourage independent learning, confidence and student learning motivation with a percentage level of 100%, m) Tourism English e-modules encourage collaboration between students are very good with a percentage rate of 100%.

Large group trials were conducted on 37 students of the Tourism Travel Study Program, Department of Economics and Business, Lampung State Polytechnic. The effectiveness of the tourism English learning electronic module after the initial test (pretest) and the final test (posttest) was measured by conducting a paired sample test t test. It is known that the results of the calculation are known that the average initial test = 58.02 and the final test = 70.92, the progress value of students or students is 12.865. Based on the output table "Pair Sample Test" shows that the value of Sig. (2-tailed) of  $0.000 < 0.05$ , it can be concluded that there is a significant difference between the results of the tourism English e-module on the pre-test and post-test data.

## 5. Conclusion

The overall implementation of research and development of hypermedia-based tourism English learning models can be drawn several conclusions, as follows;

- 1) Developing model of English learning for tourism based on *hypermedia* was intended to give an alternative independence learning resource to improve competences in English for Tourism based on *hypermedia*. The developing of English learning model base on hypermedia applied research and development (R&D) model used a combination of Dick and Carrey model, Hannifinpeck Model and Allen model. These three models has their own characteristics such as very complete and systematic, met with information communication and technology (ICT) software which help researcher in developing the hypermedia based learning model. There were three stages in developing model of English for tourism based on *hypermedia*. Dividing steps in developing learning models into three phases such as conducting needs

- analysis; designing material for learning based on hypermedia and developing learning material and implementation and evaluation have made a good result of designing learning model and much efficiency.
- 2) Validation results from learning design experts, media experts and tourism English materials experts, one-to-one trials by students (one to one learners), small group evaluations, field trials on the acceptability, usability and feasibility of the hypermedia-based tourism English model is overall very good. This means that the model can be used and is feasible for tourism English learning.
  - 3) The results of calculating the effectiveness of the hypermedia-based tourism English learning model, it is known that the average value of the initial test = 58.02 and the final test = 70.92, the progress value of students or students is 12.865, and the results of the output "Pair Sample Test" shows that the value of Sig. (2-tailed) of  $0.000 < 0.05$ . This means convincingly that the hypermedia-based tourism English learning model for tourism English learning at the Lampung State Polytechnic Travel Study Program has shown real effectiveness in improving tourism English skills.

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# Inadequate Grammatical Proficiency of B. Ed. English Majors: Claims and Confessions

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## Abstract

Subjective critiques can often be heard about the quality of English language teaching and learning in higher education in Nepal — both as being deteriorated and upgraded. This study stemming from the major finding of a previous one — low grammatical proficiency of B. Ed. English majors studying at a community campus in Nepal — was an attempt, as a case study, to explore the reasons perceived by the English majors themselves and their teachers as the participants. Focus group discussions were conducted separately with the different groups of participants. Discussed thematically in this article, the major reasons for this as perceived by the participants were the decreased sense of responsibility and misconceptions about the essence of the practical examinations, inappropriate instructional techniques — specifically excessive lectures — and students' poor English-base and absenteeism as a tendency. Likewise, some other reasons were students' insufficient exposure to English, their hesitation to produce English and a lack of professional development opportunities for the teachers. Low grammatical competence of the students and less favorable learning environment were also identified as being attributable to the problem. Finally we suggest that some common efforts of the students, the teachers and the institution are required to improve the situation.

**Keywords:** Curriculum, English Majors, Performance, Proficiency

## 1. Introduction

### 1.1 Setting the Context

As an ELT teacher at Kanakai Multiple Campus Jhapa, Nepal, I (Author 2) was always troubled with the low English language proficiency of the B. Ed. English majors — then in the fourth, or the last, year of the entire course duration. I had practically observed among them such discrepancies as low participation, low performance in English-related activities and low pass rates in English. These discrepancies inspired me to assess their English language proficiency. Meantime, I had an opportunity provided by the campus to conduct a mini-research study mentored by Author 1 (principal author here). In consultation with my mentor, I delimited my study to the B. Ed. English majors' grammar proficiency. Ten grammatical notions, namely, subject-verb agreement, causative verbs,

conditional sentences, infinitive and/or *-ing*, tag questions, reported speech, parts of speech, different types of adverbs, question formation (assertive-imperative transformation), and periphrastic ‘Do’ were identified as the constructs to be included in the test. Through the predominantly quantitative research, their mean score was found to be 46.94 (Thapa, 2022), which is equivalent to grade ‘C’ as per the standard of the National Examination Board (NEB). Usually, it is much less than what is expected from them at their level. In other words, the earlier research had revealed that they had insufficient proficiency in different areas of grammar.

Though their level had been determined numerically in the previous study, the ‘why’ aspect still remained unanswered. Stemming from this problem, I conducted another study, which was again designed and supervised by Author 1 (the principal author). This article sets out to report the results of the latter study.

## 1.2 The Gap

As stated in the Secondary Education Curriculum of Nepal (CDC, 2076 [2019]) assumes itself as a bridge to tertiary education, which also means that a student who opts to go with an English major at the university level should have studied English as a major subject. Thus, one is already expected to be somehow proficient in English before they enroll in higher education with English as a major/specialization subject. However, my experience as an English teacher at the institution selected for this study suggests that this is not usually the case. We, the concerned teachers, commonly encounter B. Ed. English majors still struggling hard even for simple communication through English. In the course of this study what a student remarked referring to his inability to express himself in the examination is not simply a statement but a representation of the total scenario: “I know the thing [from] within but I can’t express it in English”. Then one can assume that there is some gap even in the teaching and learning process, too.

A problem generally faced by the English teachers at the campus selected for this study is that even if the students do not possess some basic proficiency in English, they tend to go with it as a major subject. There can be several reasons for this. Philipson (2012) explains that “English has been marketed as the language of development, modernity and scientific and technological advancements” (p.11). Of course, the students fall in the same spell of the marketing of the English language. Gao (2019) considers that the perceived social and economic rewards that come with learning English have continued to motivate all. He notes, “access to quality English language education remains a strategically decisive factor in enabling individuals to realize upward social mobility in many of the contexts” (p.4). Moreover, increased migration, the internationalization of education, the growth of multinational capitalism, globalization, and the development of the Internet and online communication have helped the spread of English around the world (Hall, 2016). This explains why the students of the third world tend to go with English even if they have little aptitude in it.

Cummins, López-Gopar and Sughrua (2019) put forth the concept of the academic language and conversational fluency which the students need to achieve as they learn English in the formal setting. By conversational fluency, they mean the interlocutor’s effort to carry on a conversation in a familiar face-to-face environment. The conversation is usually supported by such extra-linguistic characteristics as facial expressions, gestures, eye contact, intonation, and the immediate situation. By contrast, to them, academic language proficiency represents an individual’s access to and command of the specialized vocabulary and functions of language. It refers to the students’ ability to understand the oral and written language in the academic setting. A student reading English in higher education is naturally expected to have acquired at least some degree of conversational fluency as well as academic proficiency in English.

While some proficiency in academic language is naturally expected from English majors, they are also supposed to have a sound knowledge of even generally less frequent vocabulary and complex grammatical structures. Ur (2012) emphasizes the fluency and accuracy aspects of English, and views that the priority upon them has not been changed very much. They are necessitated to make a delivery with the required fluency and accuracy. At the same time, the lack of any receptive or productive skills is not easily excused to them. Their orthographic presentation

is also anticipated to be neat and clean. However, the English majors under this study considerably lack it; also as evinced by their answer sheets.

A crucial question is that if the English majors themselves are not good in English, on whom will the future generation(s) rely for learning English? One reason why B. Ed. English majors are expected to have the required competence in English is that they are the projected future English teachers. The B. Ed. English majors are required to go through twelve papers in English (including Compulsory English) spreading over four years, in addition to the core subjects. The total duration prescribed for each course is 155 periods, each comprising 55 minutes. The curriculum seems to have attempted to include a diverse range of courses encompassing from Research Methodology to the Foundation of Language and Linguistics; from Academic Writing to Teaching Practice. The general and specific objectives of each course are clearly stated. Upon a closer inspection, one can contemplate that the course aims to produce informed and proficient future English teachers.

However, the observation of the score sheets reveals that the learning achievements of the B. Ed. English majors were below the average. Who is more responsible for this will somehow would be another issue, yet we could objectively argue that many of those English majors were far from the attainment of the objectives of the curriculum. It is natural that B. Ed. graduates are regarded as to-be trained teachers, teacher trainers, educational planners and managers, educational researchers, curriculum designers, and all sorts of human resources needed for the educational sector.

Then some questions often trouble us: What a catastrophe are we heading to, since the going-to-be English teachers themselves are not good in English? Who is to blame for this — the curriculum, the teachers of the English majors, pedagogy, or the students themselves? These are some of the questions eliciting this research. In this article we unfold the reasons for the self-perceived low grammatical proficiency of the English majors and the reasons perceived by the teachers involved in teaching the courses to them.

## 2. Review of the Literature

As the literature existing in this field indicates, a number of factors are associated with the undesirably low proficiency of English majors in the English language itself. A prominent one is a gap between the actual practice and the class objectives (Alsammari, 2022). As he observed, the major factors causing low proficiency in English among Saudi EFL learners were objectives, learners, teachers, curricula, assessment, and practicality. Similarly, Jaya, Petrus, and Pitaloka, (2022) found that, in the Indonesian context, learners' low proficiency in speaking English was associated with the lack of general knowledge, lack of speaking practice, fear of making mistakes, lack of the knowledge of word usage and grammar practice, low motivation, low participation, reading laziness, shyness, less dictionary usage, nervousness, fear of criticism, and unfamiliar pronunciation.

The proficiency of learners is often regarded to be important. The relevant literature also indicates that there is a significant positive relationship between students' proficiency in English and their overall academic success (Ghenghesh, 2015; Bo, Fu, & Lim, 2022). They established that students' proficiency score significantly predicts their current grade point average (GPA) with their prior academic performance being controlled.

A similar study conducted on difficulties in speaking performance experienced by English majors in the Vietnamese context showed that the difficulties were associated with psychological, rather than linguistic and environmental factors (Dongi, 2022). However, another study carried out with non-English majors in Vietnam observed more linguistic difficulties than the psychological ones (Trinh & Pham, 2021).

Vocabulary is another aspect affecting the performance of language learners. Alharbi's, (2021) study aiming to check the vocabulary knowledge among first-year English majors in Saudi Arabia found that receptive and productive vocabulary was more limited in males than in females, whilst, overall, the students' level of vocabulary knowledge was below the desired vocabulary levels as learners of EFL.

The low performance of university level EFL students goes beyond specific language skills. Salman and Hazem's (2022) study indicated that grammatical competence had some impact on written performance. Their findings revealed various types of errors, the most recurrent ones being the malformation errors characterized by the use of the wrong form of the morpheme or structure including omission errors.

In the Omani context, Al-Mahrooqi (2012) found that despite the pouring of large resources into ELT, the outcomes were not as satisfactory as expected. The major factors causing this were ineffective teachers, inadequate curricula and uninterested students, limited exposure to English outside the classroom, unsupportive parents, a poor school system, and peer-group discouragement. In Prapphal's (2014) study in Thailand, the majority of the graduates were found not meeting the standard required to study at the graduate level. As she revealed, the course goals and objectives, materials, tasks and activities, testing and evaluation as well as the roles of teachers and students were the major factors associated with the low proficiency of the English majors.

Abou-El-Kheir and MacLeod (2019) also highlighted the low proficiency of English majors in the Gulf Cooperation Council (GCC) countries. Despite a lot of reformation in the policies and practice, a majority of the students who graduated from high school did not have the required English language skills to be successful at the post-secondary level in Bahrain and Kuwait. As they observed, those countries had not been able to produce secondary school graduates with ample preparation for tertiary education in English, nor were they able to communicate effectively in English in the workplace. Cooper (2015, as cited in Abou-El-Kheir & MacLeod, 2019) also mentioned that a large percentage of students are graduating from the K-12 system without the skills and abilities, particularly in English, necessary to undertake tertiary education. They also indicate the need for boosting English language proficiency in the learners in the GCC countries.

Hence, owing to the literature mentioned above, it can be concluded that the low English language proficiency of the learners is not only a problem limited to Nepal but is widespread among the countries where English is taught and learned as a foreign language, meaning that they are struggling in a similar way as in Nepal. Then an implication of the review is that resources should be developed and those already available should be utilized towards developing the proficiency of the English majors rather than just getting worried or frustrated about the situation.

### **3. Methods**

The research from which this article stemmed was guided by the qualitative approach and the case study design. B. Ed. English majors from Kanakai Multiple Campus, Jhapa, Nepal and six teachers who taught them were conveniently selected as the sample participants for the study. The primary data were collected using FGD guidelines. The qualitative data obtained thus were analyzed descriptively. The methods followed are elaborated in the text that follows.

#### *3.1 Approach*

This study underpinned the qualitative approach. This is to say that words, rather than numbers, were obtained as the data, and descriptive interpretative, rather than statistical calculations, were applied to the analysis of the data.

#### *3.2 Design*

The research builds on the case study design involving the study of a group within an institution. Duff and Anderson (2015) clarify the scope of case study research and write, "Case studies permit researchers and readers to gain grounded new understandings of certain issues" (p. 113). It was undertaken to provide a "holistic description of language learning or use within a specific population and setting" (Mackey & Gass, 2022, p. 308)), thereby unveiling the reasons for it. The inadequate proficiency of the B. Ed. English majors in the given institution constituted the case for the research.

In this research we focused on exploring the real learning situations leading to the low proficiency of the English majors. Here, the ontological stance is that there must be some factors working on the low proficiency of the students and one can reach those factors by a systematic study of the case.

### 3.3 Site

The site of this research was Kanakai Multiple Campus, Surunga, Jhapa from which the participants were selected.

### 3.4 Participants

The participants of the research were B.Ed. English majors (n=22) and English teachers (n=6) representing the entire course duration for B. Ed. (4 years) from Kanakai Multiple Campus, Surunga, Jhapa — all conveniently selected on their willingness-to-participate basis. Table 1 displays the overall picture of the participants.

Table 1: Participant Description

Academic year	Students			Teachers		
	Male	Female	Sub-total	Male	Female	Sub-total
B. Ed. first	3	2	5	1	-	1
B. Ed. second	2	2	4	1	-	1
B. Ed. third	3	3	6	2	-	2
B. Ed. fourth	4	3	7	1	1	2
<b>Total</b>	<b>12</b>	<b>10</b>	<b>22</b>	<b>5</b>	<b>1</b>	<b>6</b>

### 3.5 Techniques, Tools and the Data

Focus group discussion (FGD) was applied to the collection of the data. Accordingly, two sets of FGD guidelines were developed to administer with the students (English majors) and the teachers as separate cohorts to elicit their opinions, experiences and reflections as the primary data. Likewise, the examination results of the English majors and curricular provisions, specifically the objectives and the instructional techniques, also were used as the secondary data.

### 3.6 Data Collection Procedures

The primary data were collected from the participants who were selected on the convenience sampling basis, meaning that “those who happen to be available at the time ... captive audiences such as students and teachers” (Cohen, Manion, & Morrison, 2018, p. 216). In this research those relevant individuals present at campus on the day of data collection were selected for FGD — the students (n= 22) and the teachers (n=6) as separate cohorts. Their opinions, experiences, positions and reflections were carefully recorded and noted down.

Moreover, the curricular provisions of B.Ed. major English — the objectives and the instructional techniques — were obtained from the respective syllabuses as the secondary data. Besides, the marks obtained by the English majors were collected from the marks ledger.

### 3.7 Data Analysis Procedures

The data obtained thus were manually processed and descriptively analyzed under different thematic patterns into which they merged.

#### 4. Results and Discussion

Upon a close observation of the data collected from the B. Ed. English majors and their teachers, this research unveiled the prominent causes of the low grammatical proficiency of the English majors. The low proficiency was found to be the result of multiple factors in crux, so should not be understood in isolation. In this section we advance and discuss them under the respective themes that merged.

##### *4.1 Decreased Sense of Responsibility, Negligence and Misconceptions*

Most of the English majors opined that the course was not interesting but tough for them to study on their own. A large majority of them frankly admitted that they possessed no books and other resources prescribed for the courses. The teachers also affirmed it. “The only source of the books for the students is the library”, responded a teacher. When it comes to the practical exams, the students viewed it as a strenuous task to be done after the examination. A student exclaimed that they did not typically prepare for the practical exams in the regular classroom except by reading the theoretical subjects. Both the teachers and students agreed that the course was completed in the prescribed time. However, a student expressed her resentment regarding this hence: “The focus of the teachers is to complete the course but not to get the students to achieve the objectives”. Indeed, it was a question against the teachers’ professional honesty.

However, in the teachers’ eyes, the reasons for the low proficiency primarily rooted in the English majors themselves. According to them, the students’ poor English base, their negligence and lack of rigor, especially in the practical subjects, were the primary reasons for their low proficiency.

The English majors and teachers shared some (mis)concepts and beliefs about learning English and ELT. They both agreed that teaching and learning grammar is the most significant component of developing English language proficiency. They also admitted in common that the students had only struggled for English without sufficient background as the B. Ed. English majors. Likewise, both poles believed that the practical activities were meant for tackling the examination, which is but a misconception!

Hence, far from the essence of the curriculum, negligence seems to have been practiced both on the part of the teacher and the students. Again the students seem to have had the misconceptions that the practical classes were to be treated discretely from the classroom teaching and learning and that they also needed special preparation targeting at passing the examination, rather than developing their linguistic proficiency. Thus, although the course was completed on time, the students’ achievement was not ensured properly. This resulted in the English majors’ low general English proficiency, including proficiency in grammar.

##### *4.2 Inappropriate Instructional Techniques*

As the English majors claimed, their teachers’ negligence and the institutional environment were the major reasons for their low grammatical proficiency in English in general and their grammatical proficiency in particular. They accused that the teachers regarded course completion as their only task rather than helping them develop proficiency in English. In doing this, they followed the traditional lecture method excessively without any pair and group work or the use of ICT. In their perception, they never had to use English outside of the classroom.

Each of the courses in the B. Ed. curriculum, including English, specifies suitable instructional techniques. However, the students reported that the teachers excessively used the lecture method for all the courses. “I remember one of our teachers using ICT while teaching,” commented a student but this was only rare. They collectively voiced that they were given no group or pair work in and out of the classroom. In fact, this phenomenon has raised a crucial question to the professional dignity of the teachers.

One of the students, however, reflected that their teacher had once asked them to make some presentations but due to the low participation of the students, it was found ineffective and ceased then and there.

Upon our inquiry with the teachers regarding the students' resentments, they claimed that they tried to use multiple methods suitable for the courses and the students but due to the limited time and the pressure for course completion, they could not follow them properly.

An observation of a teacher is worth mentioning here. She reflected herself back on her B.Ed. first-year class where she had inspired the students for self-study. Surprisingly, the students had quit her class from the next day onwards accusing her to have had insufficient teaching techniques, so leaving her work to them.

Consistent with the students' claims, the teachers also made some confessions. They implicitly admitted that, because of the pressure of the timely course completion, they were not able to use varieties of appropriate and practically oriented teaching techniques which could have been beneficial to a few students only. They confessed that although their instructional techniques were beneficial to a few and less supportive to many they had no option beyond this. They also accepted that they could not motivate and include all their students amply and appropriately.

In summary, the traditionally practiced excessive use of lectures at the cost of some other student-centered ELT methods and techniques can also be attributed to the low English proficiency of the students.

#### *4.3 Students' Poor Background and Absenteeism as a Tendency*

The students admitted that their English base was weak and that they did not attend the classes regularly. Seventeen students out of twenty-two informed that they were from Nepali medium public schools and, therefore, were poor at English. All the students except one accepted that they had insufficient knowledge of the use and usage of the English language. Although the Nepali medium at public schools does not mean that one necessarily lacks adequate competence in English, one of the female students complained, "Our teachers [at school] never taught English through English". They agreed that their base was not strong enough as English majors. They also admitted that they did not purchase books and other resources required for the courses. Nevertheless, their reason for struggling with English as the major subject was to improve their English. Apart from that, one student said that she wanted to go abroad and another said he wanted to be an English teacher.

The teachers complained about the students' irregularity in the class. They generalized the students' not attending the classes regularly and not actively participating in the learning process including both curriculum-based and additional practical activities as some indicators of their demotivation. They also had a belief that the campus had enough environment for those students who were intrinsically motivated. They believed that an irregular student could not comprehend what he/she had to but again would frequently remain absent. One of the teachers exposed that only three were ready to take part in the extempore speech competition in English. "Most of the students are demotivated to learning", moaned a teacher, "They come to campus but only they know what for".

Thus, it is natural that the students with admittedly insufficient background knowledge and skills in English cannot perform as desired. On top of that, a good proficiency from English majors cannot be expected unless they are intrinsically motivated. However, this phenomenon is also deeply in crux with other factors, chiefly the institutional environment the English majors find themselves in.

#### *4.4 Inefficient Exposure, Hesitation and Lack of Professional Development Opportunities*

Rather a small amount of exposure to English that the English majors received was found to be another problem. The students reported that they did not need to use English except in the English classroom. "We need not speak English anywhere", stated a female student. The Nepali language is so pervasive everywhere inside Nepal that one is not usually required to know another language to communicate at the social/community level. This situation also affects learning other languages including English. As a response to our query, "Do you speak English with and among your friends?" they responded negatively. The reason they had for this was their fear of making [grammatical] mistakes and insufficiency of vocabulary they needed to possess to make others understand what they said. Thus, a lack of confidence was apparent in them.



When we reported the teachers on the students' self-perception, they regarded it as one of the major problems. Some of the apparent responses were: "They are shy and silent"; "Majority of the students tend to answer in Nepali when asked"; "Students who try to speak English are outnumbered."

The teachers were not satisfied with the students' participation in the English-related activities and programs in the campus, either. One of the teachers harshly remarked, "One can drag a horse onto the water but can't make him drink".

Most of the teachers claimed that the campus had never arranged any seminars or conferences to boost ELT. The teachers remarked that they got no any opportunity to take part in national or international conferences. Only a teacher was found to have attended many international conferences and presented papers there. This suggests that even the teachers had a minimum degree of exposure and professional refreshers that an ELT professional requires for professional development.

In sum, arguably, the insufficiency of exposure to the English language skills on the part of the students and professional development opportunities on the part of the teachers must have a good share in the English majors' low proficiency in English.

#### *4.5 Low Grammatical Competence of the Students*

The previous study had indicated that the English majors' grammatical competence was equivalent to grade "C" as per the NEB standard (Thapa, 2022). The students showed their consent to this and agreed that they were poor at using grammatical structures correctly. "We have never read the grammatical rules and structures in our classrooms yet," stated a female student. It was apparent from their discussion that the only grammatical input the students received was the teachers' lectures. On the one hand, the students seemed to have made little effort, if any, to improve their level, and on the other, the teachers did not seem much worried about this. "We have prescribed them a lot of grammar books and they are available in the library but they are not serious", a teacher expressed his discontent.

"The students' answer sheets of the internal examination is a sight to see" wondered a teacher. He continued, "They wrote whatever came to their mind without any logical sequence and grammatical coherence." As he perceived, "Systematic teaching and learning of grammar is a necessary condition for good proficiency in the language."

#### *4.6 Learning Environment: Overall Observation*

An overall observation revealed that the learning environment of the campus was not very conducive. The classroom size was too large to fit the number of students. The English clubs, which could boost learning English, were almost non-operational. The co-curricular activities were not sufficient enough to include a large number of students. "Even if we did not participate in the program, we were found to the side of the spectators" remarked a student. Yet, the teachers viewed, "There is a lot of space in the campus for those who are intrinsically motivated. They pointed out some individual examples in which their students had achieved success.

## **5. Conclusion**

In conclusion, the low grammatical proficiency in the B. Ed. English majors seems to have stood on a 'tripod' constituted by the students themselves, the teachers and the institution. The English majors themselves seemed to have struggled for English without sufficient aptitude, background and intrinsic motivation. Rather, it stands out that they were either instrumentally or integratively motivated. This explains why the students exercised absenteeism and low participation in the classroom activities. This further indicates that some kind of entrance test should be administered to ensure that the students opting to be English majors have at least a tolerable degree of aptitude and intrinsic motivation for English. Likewise, equating their profession to completing the course and

preparing the students ultimately for examinations are the teachers' misconceptions. They should understand that every profession including teaching has some challenges which the professional is required to cope with. Similarly, it is not very genuine of the campus to remain indifferent toward providing the ELT teachers with some kind of professional development opportunities, and creating a favorable learning environment for the students. We recommend that each part of the 'tripod' should honestly and sincerely bear their responsibilities to get the situation better.

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# The Role of Quality Standards in Preparing Nutrition Fact Sheets for School Feeding

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## Abstract

Building on the achievements of the programs of the African Union Commission on school nutrition on the one hand, and striving to achieve the quality standards approved by the United Nations included in the program "Changing the education", and through a review of the health and nutrition literature, using a content analysis guide to extract implications for school feeding, and consultation with nutritionists to develop practical mechanisms that take into account of the peculiarity of Algerian nutrition, using and a semi-directed interview guide. This study aims to strengthen efforts to improve school feeding in Algeria by creating a model of technical sheets for school feeding in order to prepare healthy meals (lunch / collation), of high quality for school children all over Algeria.

**Keywords:** Nutrition, School Feeding, Lunch, Collation

## 1. Introduction

Over the past three years, the world has experienced a slowdown in development due to the Covid-19 pandemic, which has disrupted many development programs in general and in Africa in particular. And among these development programs what is related to food security on the African continent and its relationship with the promotion of health and nutrition of children in order to ensure an appropriate school environment and to overcome the difficulties that prevent the access to education, as well as increasing the retention rate in schools.

Based on the results of the seventh edition of Africa School Nutrition Day, organized by the Department of Education, Science, Technology and Innovation of the African Union Commission, on 1 March 2022, in partnership with the United Nations World Food Programme, under the slogan "Nutrition and Human Capital Development in Africa through Increased Investment in Local School Feeding", the recommendations of the seventh edition of the Africa Day of School Nutrition were represented in nine (09) points, mainly focused on encouraging to continue to increase the funding of school feeding programs according to the capacities of each country, to restore the gains made before Covid-19, such as the goal of reaching the threshold of 60 million school children benefiting from the daily school meal.

This was noted by the Minister of National Education in Algeria, through his speech on the occasion of the African Day of School Feeding, where he spoke of the efforts made by the Algerian State in terms of promotion of school

nutrition, to which the President of the Republic, Mr. Abdelmadjid TEBBOUNE, pays great attention, where the State has drawn up an ambitious policy with a view to generalizing the benefit of school nutrition based mainly on construction programs and renovation of canteens, generalizing school nutrition and making it available to all primary school children. The number of school canteens increased by 36%, with a notable increase in the number of schoolchildren benefiting by 66%. On the other hand, the State has decided to increase the cost of meals by (44%) during the 2022-2023 school year, considering the school canteen as a complement to the educational act.

And on the basis of the commitment of the Algerian State to contribute to the efforts of the African Union to promote school nutrition in Africa and its support for all mechanisms that would develop school nutrition based on local products, for a development sustainability of the African continent. The Ministry of National Education works in collaboration with several ministerial sectors to embody and develop these systems, either in the field of scientific research, as is the case with the Ministry of Higher Education and Scientific Research and the Ministry of Health and Hospital Reform, either in the field of program implementation with both the Ministry of the Interior, Local Authorities and Regional Planning, the Ministry of National Solidarity of the Family and the Status of Women and the Ministry of Youth and Sports.

Thus, the issue of this study sheds light on the practical mechanisms that would contribute to raising the quality of local school feeding in Algeria by strengthening the achievements of the programs of the African Union Commission on the one hand, and by striving to achieve quality standards endorsed by the United Nations and included in the Changing Education agenda, which envisions the embodiment of a transforming education system, prioritizes investment in learning and the learner. Among these devices, we find the technical sheets of school canteens, which will determine the specifications and the health standards to be respected in the preparation either of lunches for schoolchildren, or of a light meal (collation). By asking the following question:

How to integrate quality standards into technical data sheets for school feeding in the Algerian education system?

### *1.1 General hypothesis*

The quality standards are embodied in the technical sheets for both lunch and collations in the Algerian school through the application of the specific program to food groups and their relationships with age groups and the number of calories. for each age group.

### *1.2 Objectives of the study*

This study aims to strengthen efforts to improve school feeding in Algeria using high quality local food products. As well as creating templates for school feeding data sheets to use as a reference to prepare healthy, high-quality meals for schoolchildren across Algeria.

### *1.3 The importance of the study*

The interest of the study lies in the evaluation of applied policies and field practices in the development of references for the preparation of school canteens in Algeria, as well as in the correction of the cognitive course used in the basis of these references.

## **2. Methodological framework**

### *2.1 Notions*

#### *2.1.1 Nutrition*

According to the World Health Organization, it is a set of processes implemented by the living human body to maintain the life, vitality, growth and proper functioning of organs and proteins, that's to say a term for insufficient, excessive or unbalanced consumption of food components (wilcock 2003, 23).

### 2.1.2 Nutrients

Food is transformed into composite nutrients by digestive juices. There are approximately 40 essential nutrients. They are essential for growth, reproduction and a healthy life and finally for productive and academic performance.

Nutrients can be grouped into two broad categories: (Guğu 2021)

- Macronutrients which are proteins, carbohydrates and lipids required by the body in large quantities and available to be transformed into energy;
- Micronutrients which are vitamin and mineral substances, with no specific energy value, but necessary in very small quantities (milligrams or micrograms).

### 2.1.3 School feeding programs

School plays a very important role in efforts to create a world in which opportunities for economic growth reach poor children everywhere; As it is the place where the personalities of future leaders among scientists, politicians, thinkers and economists are formed. In the school, school feeding programs are presented as an attractive element that encourages students to attend them, and also, continuing to provide these nutritional programs on a daily basis to teachers who are going through the growth phase helps to keep them school, and therefore strong support for the mechanisms for achieving educational objectives on the other hand (Word food programme 2022).

In addition, the Committee on the Rights of the Child, in its interpretation and implementation of Article 24, and in General Comment No. 15, has stated that school feeding is desirable to ensure that all students receive a full meal every day, which also increases the children's standard of living. Interest in learning and school attendance. The Committee also recommended that this be combined with nutrition and health education (UNESCN 2017, 7).

This is why researchers and specialists have stressed the need for food education for schoolchildren, and to start early; To positively influence one's eating habits, it is necessary to plan one's diet appropriately, according to healthy basics of health; This has been confirmed by the American Food Association (ADA) and the School Nutrition Association (SNA) regarding the consolidation of nutritional education concepts from primary school onwards, in order to ensure the improvement of nutritional status, health and education. Teachers and the community as a whole, provided that this involves nutrition education for the family, teachers and the promotion of comprehensive and integrated nutrition services in schools (Marilyn 2010, 366).

### 2.1.4 School meal

It is about ensuring that every child in school has the opportunity to have a healthy and nutritious meal in schools (AFRICAN UNION 2022).

## 2.2 Method used

The nature of this study is to establish scientific content that meets the need of school nutrition administrators to prepare hot and light meals for teachers, using the analytical method of reference literature in the field of health and nutrition, as well as the consultation of nutritionists with the objective of enriching theoretical knowledge with practical mechanisms that take into account the intimacy of Algerian society.

## 2.3 Research community

The study contains two research communities, the first community is the literature related to healthy eating in general and school children's nutrition in particular. Based on content from the United Nations World Food Programme, under the slogan "Nutrition and Human Capital Development in Africa through Increased Investment in Local School Feeding", and a collection of group-specific scientific articles of foods and their relationship to age groups and the amount of calories for each of these groups.

As for the second research community, they are doctors specializing in nutrition (three doctors, including a dentist), who have contributed to meeting the requirements of the nutrition technical sheets by the high-quality factor as well as the particularities and customs of Algerian society.

#### 2.4 Scientific research tools

In addition to the scientific observation used by the research team, two other tools were used: a content analysis guide to extract implications for school feeding and a semi-structured interview guide which was used in sessions with health professionals.

### 3. Results

#### 3.1 Basic nutritional needs according to age groups

##### 3.1.1 Basic macronutrient needs

The basic needs in energy, proteins and lipids are expressed in the table below

Table 1: Macronutrient requirements by Age and Sex

Age (years)	Gender	Energy (Kcal)	Protein (g)	Lipids (g)	Carbohydrate (g)
06-10	M / F	2 350	77	79	375
11-13	M	2 750	90	92	390
	F	2 500	82	84	355
14-17	M	3 000	100	100	425
	F	2 600	90	90	360

Source: (Guğu 2021) (modified)

The average energy value for school children (06-15 years) is 2600 Kcal, divided by 5 rations: Breakfast; Collation No. 01; Lunch; Collation No. 02; Dinner. According to the following table:

Table 2: Percentage of meal rations

Energy (Kcal)	Rations	Percentage %	Energy (Kcal)
2600	Breakfast	30	700
	Collation N° 01	11.5	300
	Lunch	23	600
	Collation N° 02	11.5	300
	Dinner	24	600

Source: (Bouaoud 2020) (Guğu 2021)

##### 3.1.2 Micronutrient requirements

Since individual micronutrient needs are extremely variable, recommended dietary intake levels have been set for most vitamins and minerals, by population category. The requirements in micronutrients (mineral element) for illustrative purposes are recorded in the table below:

Table 3: Requirements for micronutrients (mineral element) according to age and sex

Age (years)	Gender	Mineral element (mg)				
		Ca	Mg	P	Fe	Zn
07-10	M / F	1 100	250	1 650	12	10
11-13	M	1 200	300	1 800	15	15
	F	1 200	300	1 800	15	15
14-17	M	1 200	300	1 800	15	15
	F	1 200	300	1 800	15	15

Source: (Guğu 2021)



Illustrative micronutrient (vitamin) requirements are listed in the table below:

Table 4: Micronutrient (vitamin) requirements by age and gender

Age (years)	Gender	Vitamins				
		A (µg)	B1 (mg)	B2 (mg)	B3 'PP' (mg)	C (mg)
07-10	M / F	700	1,2	1,4	15	60
11-13	M	1000	1,4	1,4	18	70
	F	800	1,3	1,5	17	70
14-17	M	1000	1,5	1,8	20	70
	F	800	1,3	1,5	17	70

Source: (Gufu 2021)

### 3.2 Recommendations from nutrition specialists

Following working sessions with nutrition specialists, the research team drew up a list of recommendations that will help in the development of technical data sheets. These recommendations are summarized as follows:

- ✓ Ensure a good nutritional balance by favouring complex carbohydrates and fibers at the expense of lipids and simple carbohydrates;
- ✓ Whole wheat pasta, brown rice, hulled barley, millet, whole wheat couscous, whole wheat bread and other whole grain products, which are more nutritious than white and are also economical;
- ✓ Eliminate (or limit as much as possible) sticky treats (caramel);
- ✓ Prefer beneficial combinations of bread + cheese + fruit for collations;
- ✓ Preferably choose fruit juices “without added sugar” reserved for collations;
- ✓ Water is the only drink at lunch;
- ✓ Minimize sugar in food;
- ✓ Order of food ingestion (order of food service) and preferences to preserve oral health:
  - During a meal, the last food ingested has a great impact on the duration of post-prandial acidification of dental plaque;
  - Thus, cheese consumed after a sweet dessert decreases the production of acids from carbohydrates. Casein and other dairy proteins in cheeses protect the tooth by reducing its demineralization.
- ✓ Take child pathologies into account in school nutrition programs;
- ✓ Provide physical and cultural activities for children.

### 3.3 The Five Food Groups

Specialists have divided nutrients into five groups: (docteurlic 2022)

1. Milk and milk derivatives
2. Other products of animal origin
3. Plants (fruits and vegetables)
4. Fats, fatty substances
5. Starches and sugars

To these five food groups are added micronutrients (mineral element and vitamins) and a few special cases such as charcuterie (pies, poultry, sausages), chocolate and dried fruits.

By applying these standards on local school nutrition, and in consultation with medical consultants, it was possible to develop five food groups adapted to the Algerian school environment: (James et Schofield 1990) (Galmiche 2011) (Bouaoud 2020).

The 1<sup>st</sup> food group: it contains red meat such as beef and mutton, white meat such as chicken and turkey, fish, whole cheeses and yoghurt. By calculating the quantity needed per pupil to acquire the energy essential for the normal growth of the child.

The 2<sup>nd</sup> food group: in the second group we find a variety of plant products such as legumes (chickpeas, lentils, dry beans) we also find some starches such as rice and kousskous. We add to this group the Green Olive. Legumes have many nutritional benefits. They are particularly rich in vegetable proteins, fibers, minerals and vitamins, and low in lipids; which gives them many benefits for our health, to the point that the National Agency for Food, Environmental and Occupational Health and Safety (ANSES) even recommends eating them twice a week. (apivia 2022)

The 3<sup>rd</sup> Food Group: The third group contains high calorie starchy foods such as Pasta, Bread and Potato. They are an essential fuel for our body but on the other hand they are accused of promoting weight gain (docteurbonnebouffe 2021).

The 4<sup>th</sup> food group: the fourth group contains fats and fatty substances, such as butter; oil and semen. Their richness in calories helps to prepare meals balanced in food.

The 5<sup>th</sup> food group: in the fifth group we find the vegetables of the Mediterranean soup (Carrots, Zucchini, Turnip, green salad...). And also, we find local fruits and according to the season like dates, orange and apples.

Out of groups: we add to these five food groups some ingredients essential to Algerian cuisine, where we find the spices of the region (RAS-ELHANOUT, cumin, cinnamon, parsley, coriander powder, spicy or sweet red pepper, etc.), canned tomato and salt.

Note that all food products must be of good quality.

#### **4. Discussion**

##### *4.1 Weekly food plan*

Following the previous data, a weekly food program for canteen meals and school collations has been prepared. For the canteen, we combined the five food groups in order to reach the 600 Kcal for lunch. And in the same way, reach 300 Kcal for each collation of the eight combinations offered. The goal of which is to have 900 Kcal between the two meals (lunch / collation).

The meal of the 1<sup>st</sup> day consists of a varied salad, lentils, two hard-boiled eggs, a seasonal fruit and bread. Which gives us 550 Kcal. On the other hand, for the 2<sup>nd</sup> day there are 640 Kcal, spread over a varied salad, pasta with beef, seasonal fruit and bread. And like the 1<sup>st</sup> day, at 550 Kcal, the meal of the 3<sup>rd</sup> day is composed of a varied salad, TADJINE ZITOUNE (Green olive), chicken, cheese and bread. On the other hand, the energy balance of the 4<sup>th</sup> day exceeded 600 Kcal, where we find 665 Kcal spread over a dish of rice with fish, a varied salad, seasonal fruit and bread. And we end the canteen meal program with the traditional Algerian dish: KOUSKOUS with mutton and Mediterranean vegetables, a varied salad and yogurt. Which gives us 589 Kcal of energy.

This canteen food program tried to respect the energy value for lunch (600 Kcal). And the shortcomings of meals with less than 600 Kcal were compensated by the food program of the collation, where there are eight combinations, their energy values varied between 250 and 382 Kcal. These collations contain basic foods such as bread, butter, jam, boiled eggs, yogurt, cheese. And it also contains foods of higher nutritional quality such as chocolate, dates, nuts (almonds, walnuts, hazelnuts, etc.) and nut biscuits.

##### *4.2 Lunch / collation formulas*

Combinations between the different rations of lunch (600 Kcal) and collation (300 Kcal), and to have an average of 900 Kcal per day, have given the following lunch / collation formulas:

Table 5: LUNCH / COLLATION formulas

Lunch	Energy (Kcal)	Collation	Energy (Kcal)	Total
1 <sup>st</sup> day	550	2 <sup>nd</sup> collation	382	932
		7 <sup>th</sup> collation	320	870
		8 <sup>th</sup> collation	375	925
2 <sup>nd</sup> day	640	1 <sup>st</sup> collation	266	906
		3 <sup>rd</sup> collation	290	930
		4 <sup>th</sup> collation	290	930
		5 <sup>th</sup> collation	250	890
		6 <sup>th</sup> collation	290	930
3 <sup>rd</sup> day	550	2 <sup>nd</sup> collation	382	932
		7 <sup>th</sup> collation	320	870
		8 <sup>th</sup> collation	375	925
4 <sup>th</sup> day	665	1 <sup>st</sup> collation	266	931
		3 <sup>rd</sup> collation	290	955
		4 <sup>th</sup> collation	290	955
		5 <sup>th</sup> collation	250	915
		6 <sup>th</sup> collation	290	955
5 <sup>th</sup> day	589	2 <sup>nd</sup> collation	382	971
		7 <sup>th</sup> collation	320	909
		8 <sup>th</sup> collation	375	964

Source: (synthesis)

## 5. Closing

The need for mainstreaming quality standards in school feeding fact sheets is highlighted by the United Nations Changing Education program guidelines, and the African Union Commission program guidelines on school nutrition. This integration of quality standards has made it possible to develop combinations between the different rations of lunch (600 Kcal) and collation (300 Kcal) to have an average of 900 Kcal per day.

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## Appendices

### 11.1 Appendix N° 01: Recommendations from nutrition specialists



**Dr Taous MERAKEB**

Faculté de médecine, Université Alger 01

Maître assistant

Odontologie conservatrice endodontie

- ❖ Assurer un bon équilibre nutritionnel en privilégiant les glucides complexes et les fibres aux dépens des lipides et des glucides simples ;
- ❖ Pâtes alimentaires de blé entier, riz brun, orge mondé, millet, couscous de blé entier, pain de blé entier et autres produits céréaliers complets, qui sont plus nourrissants que les blancs et qui sont aussi économiques ;
- ❖ Supprimer (ou limiter au maximum) les friandises collantes (caramel) ;
- ❖ Préférer les associations bénéfiques pain + fromage + fruit pour les collations ;
- ❖ Choisir préférentiellement les jus de fruits « sans sucres ajoutés » réservés aux collations ;
- ❖ L'eau est la seule boisson au déjeuner ;
- ❖ Minimiser le sucre dans les aliments ;
- ❖ Ordre d'ingestion des aliments (ordre du service des aliments) et les préférences pour préserver la santé bucco-dentaire :
  - Au cours d'un repas, le dernier aliment ingéré a une grande importance sur la durée de l'acidification post-prandiale de la plaque dentaire ;
  - Ainsi, le fromage consommé après un dessert sucré diminue la production d'acides à partir des glucides. La caséine et les autres protéines lactières des fromages protègent la dent en diminuant sa déminéralisation.



## 7. ANNEXES

D<sup>r</sup> OUMD HANNOU ALI

- ① - Apport énergétique  
 Jusqu'à 15 Ans 1800 - 2200 kcal/j  
 plus de 15 ans 1800 - 2500 kcal/j
- ② - Tenir compte de Pathologie  
 - Maladie Cœliaque (intolérance au gluten)  
 - Diabète Insulinodépendant  
 - Allergie Alimentaire  
 - obésité
- ③ - J'ajoute dans le menu P.V.L.



## 7. ANNEXES

D<sup>r</sup> Loufa. Benyettou.

- Je recommande une alimentation saine sans sucre industriel.
- Le sucre naturel est présent dans les fruits.
-

## 11.2 Appendix N° 02: WEEKLY FOOD PROGRAM (Canteen)

1<sup>st</sup> day (Summary)

Food group		Quantity	Energy (Kcal)	Observation
1 <sup>st</sup> GROUP	Egg	02	160	
2 <sup>nd</sup> GROUP	Lentil	100 g	120	
3 <sup>rd</sup> GROUP	Bread	1/3 baguette	80	
4 <sup>th</sup> GROUP	Oil	07 g	60	
	Black olive	15 g	30	
5 <sup>th</sup> GROUP	Carrots	20 g	08	
	Onion	10 g	05	
	Garlic	02 g	03	
	Mixed salad	50 g	20	
	Seasonal fruits	01	60	
OUT OF GROUPS	Canned tomato	10 g	02	
	Salt	02 g	00	
	Spices	0.50 g	02	
		<b>Total</b>	550	600

2<sup>nd</sup> day (Summary)

Food group		Quantity	Energy (Kcal)	Observation
1 <sup>st</sup> GROUP	Beef	20 g	50	
2 <sup>nd</sup> GROUP	Pasta	100 g	125	
3 <sup>rd</sup> GROUP	Bread	1/4 baguette	60	
4 <sup>th</sup> GROUP	Oil	07 g	60	
	Black olive	15 g	30	
5 <sup>th</sup> GROUP	Carrots	20 g	08	
	Onion	10 g	05	
	Garlic	02 g	03	
	Mixed salad	50 g	20	
	Seasonal fruits	01	275	Datte
OUT OF GROUPS	Canned tomato	10 g	02	
	Salt	02 g	00	
	Spices	0.50 g	02	
		<b>Total</b>	640	600

3<sup>rd</sup> day (Summary)

Food group		Quantity	Energy (Kcal)	Observation
1 <sup>st</sup> GROUP	Chicken meat	40 g	60	
	Triangular white cheese	03 portion	100	
2 <sup>nd</sup> GROUP	Green olive	100 g	120	
3 <sup>rd</sup> GROUP	Bread	1/3 baguette	80	
4 <sup>th</sup> GROUP	Huile Oil	07 g	60	
	Black olive	15 g	30	
5 <sup>th</sup> GROUP	Carrots	20 g	08	
	Onion	10 g	05	
	Garlic	02 g	03	
	Mixed salad	50 g	20	
	Seasonal fruits	01	60	
OUT OF GROUPS	Canned tomato	10 g	02	
	Salt	02 g	00	
	Spices	0.50 g	02	

		<b>Total</b>	550	600
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**4<sup>th</sup> day (Summary)**

Food group	Quantity	Energy (Kcal)	Observation
<b>1<sup>st</sup> GROUP</b>	Fish	40 g	60
<b>2<sup>nd</sup> GROUP</b>	Rice	100 g	355
<b>3<sup>rd</sup> GROUP</b>	Bread	1/4 baguette	60
<b>4<sup>th</sup> GROUP</b>	Oil	07 g	60
	Black olive	15 g	30
<b>5<sup>th</sup> GROUP</b>	Carrots	20 g	08
	Onion	10 g	05
	Garlic	02 g	03
	Mixed salad	50 g	20
	Seasonal fruits	01	60
<b>OUT OF GROUPS</b>	Canned tomato	10 g	02
	Salt	02 g	00
	Spices	0.50 g	02
	<b>Total</b>	665	600

**5<sup>th</sup> day (Summary)**

Food group	Quantity	Energy (Kcal)	Observation
<b>1<sup>st</sup> GROUP</b>	Mutton	20 g	50
<b>2<sup>nd</sup> GROUP</b>	Kouskous	100 g	120
	Chickpeas	10 g	70
<b>3<sup>rd</sup> GROUP</b>	Bread	1/4 baguette	60
	Potato	50 g	40
<b>4<sup>th</sup> GROUP</b>	Oil	07 g	60
	S'men	05 g	35
	Black olive	15 g	30
<b>5<sup>th</sup> GROUP</b>	Carrots	20 g	08
	Zucchini	20 g	03
	Turnip	20 g	06
	Onion	10 g	05
	Garlic	02 g	03
	Mixed salad	50 g	20
	Yogurt	01	75
<b>OUT OF GROUPS</b>	Canned tomato	10 g	02
	Salt	02 g	00
	Spices	0.50 g	02
	<b>Total</b>	589	600

**11.3 Appendix N° 03: WEEKLY FOOD PROGRAM (Collation)**❖ **1<sup>st</sup> Collation (Summary)**

Food	Quantity	Energy (Kcal)	Observation
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Bread	1/5 baguette	40	
Jam	20 g	56	
Butter	10 g	70	
Milk (plain/ strawberry/ chocolate)	Small model (200 ml)	100	
	<b>Total</b>	266	300

❖ 2<sup>nd</sup> Collation (Summary)

Food	Quantity	Energy (Kcal)	Observation
Bread	1/5 baguette	40	
Chocolate	03 servings	342	
	<b>Total</b>	382	300

❖ 3<sup>rd</sup> Collation (Summary)

Food	Quantity	Energy (Kcal)	Observation
Biscuits with (almonds, walnuts, hazelnuts...)	A small ration model	200	
Fruit juice "no added sugar"	Small model (200 ml)	90	
	<b>Total</b>	290	300

❖ 4<sup>th</sup> Collation (Summary)

Food	Quantity	Energy (Kcal)	Observation
Nuts (almonds, walnuts, hazelnuts)	30 g	200	
Fruit juice "no added sugar"	Small model (200 ml)	90	
	<b>Total</b>	290	300

❖ 5<sup>th</sup> Collation (Summary)

Food	Quantity	Energy (Kcal)	Observation
Bread	1/5 baguette	40	
Hard-boiled egg	02	120	
Fruit juice "no added sugar"	Petite model (200 ml)	90	
	<b>Total</b>	250	300

❖ 6<sup>th</sup> Collation (Summary)

Food	Quantity	Energy (Kcal)	Observation
Bread	1/5 baguette	40	
Whole triangular cheese	03	100	
Fruit	01	60	
Fruit juice "no added sugar"	Small model (200 ml)	90	
	<b>Total</b>	290	300

❖ 7<sup>th</sup> Collation (Summary)

Food	Quantity	Energy (Kcal)	Observation
Yogurt	01	60	
Fruit	01	60	
Galette / Biscuits with (almonds, walnuts, hazelnuts)	A small ration model	200	
	<b>Total</b>	320	300

❖ 8<sup>th</sup> Collation (Summary)

Food	Quantity	Energy (Kcal)	Observation
Date	07 dates (50 g)	275	
Milk (plain)	A small model (250 ml)	100	
	<b>Total</b>	375	300



# The Relationship Between Anaerobic Power, Back Strength and Balance in Elite Wrestlers

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## Abstract

The aim of this study is to examine the relationships between anaerobic power, back strength and dynamic balance, which play an important role in wrestler performance. 14 male freestyle elite wrestlers (age =  $19.07 \pm 0.99$  years, height =  $1.70 \pm 0.04$  m, body weight =  $74.67 \pm 8.48$  kg, BMI =  $25.57 \pm 2.31$  kg/m<sup>2</sup>) voluntarily participated in the study. Anaerobic power, back strength and dynamic balance measurements of the participants were taken. Pearson Correlation test was performed to determine the relationship between these features. A statistically significant positive correlation was found between anaerobic power and back strength, between back strength and right and left leg balance, between left leg balance and right leg balance. As a result, it can be said that back strength is effective on dynamic balance in wrestlers and anaerobic power affects back strength.

**Keywords:** Wrestling, Anaerobic Power, Balance, Strength

## 1. Introduction

Wrestling is a sport in which physical fitness elements such as speed, strength, flexibility, balance, muscular and cardiovascular endurance, coordination are effective on performance (Kilinc & Ozen, 2015). Anaerobic power is very important for wrestlers, as wrestling requires sudden and explosive movements in short periods of time. Anaerobic power can help differentiate between successful and less successful wrestlers (Yoon, 2002). In order for the techniques to be applied easily during the wrestling match, a high level of muscular strength is required as well as anaerobic power (Bulgay and Polat, 2017). In evaluations based on body weight, wrestlers are shown among the strongest athletes, and strength is necessary for wrestlers both in defense, attack and counter-attack (Cicioglu et al., 2007).

On the other hand, wrestlers have to maintain their static and dynamic postures throughout the match, because the techniques in this sport are based on constant displacement, pushing, pulling and disrupting the balance of the opponent (Perrot et al., 1998). Balance is a sensorimotor process aimed at maintaining, achieving or restoring a state of stability during activity. Balance; it includes harmony between the proprioceptive, somatosensory, vestibular, visual and neuromuscular systems (Tao et al., 2020). For this reason, the development of an athlete's

balance feature allows the whole body to move simultaneously (Erdogan et al., 2017). Studies show the importance and contribution of trunk stability in the generation, transfer and control of force in integrated kinetic chain activities while producing effective trunk and limb movements in human movements (Okada et al., 2011). In a current study, muscular activation in whole body movements was examined and it was observed that some trunk stabilizers (ie, transversus abdominus, multifidus, rectus abdominus, internal and external obliques) are continuously activated before any limb movement (Hodges and Richardson, 1997). These findings support that the control and stability of movement progresses from the core to the limb and from head to tail (Okada et al., 2011). The core muscles, located in the center of the body, such as the back, pelvic and abdominal muscles, are the muscle groups that produce all the strength and mobility of the human body (Yoon et al. 2015). Anaerobic power in wrestling is related to the ability of the athlete to attack and resist the attacks of his opponent. Athletes who do not have a high degree of lower body muscle strength or explosiveness may need to adjust their wrestling style to compensate (Callan, 2000). A good sports performance occurs when the athlete uses the complex structure of the body effectively against the conditions he will encounter during the competition. This is an issue that necessitates the maximum use of the athlete's motor functions, that all the factors affecting the sport branch are in harmony with each other and that should be emphasized during the preparation period of the athlete (Sterkowicz & Starosta, 2005).

It is seen that studies examining the relationships between factors such as balance, anaerobic power and strength that affect the performance of athletes in wrestling are limited. It is thought that these characteristics develop in parallel with each other and are influenced by each other in wrestlers. In the light of this information, the aim of the present study is to examine the relationships between anaerobic power, back strength and dynamic balance, which play an important role in wrestler performance.

## **2. Method**

### *2.1 Participants*

14 male freestyle elite wrestlers (age =  $19.07 \pm 0.99$  years, height =  $1.70 \pm 0.04$  m, body weight =  $74.67 \pm 8.48$  kg, BMI =  $25.57 \pm 2.31$  kg/m<sup>2</sup>) voluntarily participated in the study. It was paid attention that the participants did not take a break from the training in the last 6 months due to injury, etc. In addition, they were asked not to consume beverages containing alcohol, caffeine, etc. in the last 24 hours before the tests. The volunteer consent form prepared according to the Declaration of Helsinki was signed by the participants, after informing them about the tests and study protocols. Ethics committee approval was obtained for the study from the Clinical Research Ethics Committee of the University of Health Sciences Bursa Yuksek İhtisas Training and Research Hospital (Decision No: 2011-KAEK-25 2022/11-01, Date: 30.11.2022).

### *2.2 Measurements*

The tests were carried out between 14:00 and 18:00 on the hardwood floor in the gym. Athletes did not do any strenuous physical activity in the last 24 hours before the tests and did not consume any food or drink other than water in the last 3 hours. All tests and measurements were made on the same day, and 15 minutes of warm-up and stretching were done before the tests.

#### *2.2.1 Height Weight and Leg Length*

The body weights of the participants were measured using a scale with an accuracy of 0.1 kg, with bare feet and wrestling jerseys, and their heights were measured with a metallic tape measure with an accuracy of 0.1 cm fixed to the scale. Leg lengths are; it was measured with a tape measure from above the iliac bone (spina iliaca anterior superior) to the heel level (medial malleolus) while the participant was standing (Uygur et al., 2013).

#### *2.2.2 Anaerobic Power*

The vertical jump performances of the wrestlers were measured with the 0.1 cm precision “Sport Expert TM, MPS-501” (Tumer Elektronik LTD) device. Knees bent approximately 90 degrees, hands fixed on hips, and maximum jump without spring action at the beginning. The test was repeated 2 times with an interval of 2 minutes and the best value was recorded. Vertical jump performances were converted into anaerobic power using the Lewis Formula.

$$\text{Anaerobic Power} = \sqrt{4.9 \times \text{body weight (kg)} \times \text{vertical jump distance (m)}}$$

### 2.2.3 Back Strength

Back strength was measured with Takkei Back and Leg Dynamometer. Participants pulled the dynamometer stick upwards with knees and arms stretched, back straight, and body bent slightly forward. The test was repeated 2 times with an interval of 2 minutes and the best value was recorded as kg.

### 2.2.4 Dynamic Balance

Dynamic balance was measured with the Y Balance test. Before the test, 3 trials were made from the anterior, posterolateral and posteromedial directions for the right and left legs, and then 2 measurements were taken, and the longest reach distance was recorded. To determine the balance score, the sum of the 3 access directions was multiplied by 100 and divided by 3 times the leg length (cm) (Plisky et al., 2006).

### 2.3 Statistical Analyses

Data were analyzed with the statistical program SPSS for Windows 23.0 (SPSS Inc, Chicago, USA). Pearson Correlation test was performed to determine the relationship between anaerobic power, back strength and balance. For statistical significance level,  $p < 0.05$  was accepted.

## 3. Results

The anaerobic power, back strength and left-right leg dynamic balance average and standard deviation values of the wrestlers participating in the study are given in Table 1. The statistical relationships between the measurements are given in Table 2.

Table 1: Descriptive statistics (N=14)

	Mean	Std. Deviation
Anaerobic Power (kg/m/sec)	107.78	16.89
Back Strength (kg)	141.93	27.12
Left Leg Balance	101.76	3.63
Right Leg Balance	99.67	3.63

According to Table 1; The average anaerobic power of the participants was  $107.78 \pm 16.89$  kg/m/sec, back strength was  $141.93 \pm 27.12$  kg, left foot balance score was  $101.76 \pm 3.63$  and right foot balance score was  $99.67 \pm 3.63$ .

Table 2: The relationship between anaerobic power, back strength and dynamic balance

		Anaerobic Power	Back Strength	Left Leg Balance
Back Strength	r	.795*		
	p	.001		
Left Leg Balance	r	.413	.671*	

	p	.142	.009	
	r	.419	.568*	.889*
Right Leg Balance	p	.136	.034	.000

\*. Correlation is significant:  $p < 0.05$

According to Table 2; no significant relationship was found between anaerobic power and left leg balance ( $p=0.142 > 0.05$ ) and right leg balance ( $p=0.136 > 0.05$ ). Between anaerobic power and back strength ( $p=0.001 < 0.05$ ), between back strength and left leg balance ( $p=0.009 < 0.05$ ) and right leg balance ( $p=0.034 < 0.05$ ), between left leg balance and right leg balance ( $p=0.000 < 0.05$ ) statistically significant positive correlation was found.

#### 4. Discussion

In the current study, when the BMI values of the athletes were examined (25.57), it was seen that they were in the overweight class according to the World Health Organization (WHO) BMI table. However, BMI norms in athletes differ according to fat, bone and muscle mass values. Therefore, BMI values of athletes and non-athletes are not evaluated in the same class (Garrido-Chamorro et al., 2009). In a study similar to our study, it was observed that the BMI values of young elite wrestlers with an average age of 19.53 were 25.29 (Uzun et al., 2010). In another study, the BMI values of elite wrestlers were found to be 23.75 (Koyunlu et al., 2020). The current study is similar to the studies in the literature in terms of BMI values.

As a result of the findings obtained in the study; It was determined that there is a statistically positive relationship between anaerobic power and back strength and between back strength and balance. When the studies in the literature were examined, Senel et al. (2009) found that there is a positive relationship between isometric leg-back strength and anaerobic power parameters of wrestlers in their study. In another study, it was reported that upper extremity strength parameters of wrestlers had a positive effect on balance parameters (Alper and Kolayis, 2020). While Erkilic and Senel (2019) found a relationship between the body composition of wrestlers and their anaerobic performance in their study, they did not find any relationship between balance values and other variables. In another study, it was stated that strength and balance performances of elite freestyle wrestlers were positively related to each other (Bulgay & Polat, 2017). Again, the findings in a study showed that anaerobic performance plays a decisive role on balance (Aydın, 2020). In another study, when the pre-test and post-test values of the freestyle and greco-roman style wrestlers were compared as a result of the strength training program, it was determined that the left foot vertical jump and leg strength post-test values of the greco-roman wrestlers were higher than the freestyle wrestlers (Cura, 2020). Studies in the literature mostly support the current study.

In the present study, a significant positive correlation was found between right and left leg dynamic balance scores. In a previous study, it was reported that there was a significant positive correlation between the dominant and nondominant leg dynamic balance scores of 35 participants from different sports branches (Erkmen et al., 2007). This study supports the current study.

As a result, when the findings obtained from the research and the literature are examined, it can be said that back strength is effective on balance in wrestlers and anaerobic strength affects back strength. On the other hand, disruption of balance can not only affect performance but also increase the risk of injury. We think that strength and balance training should be managed well during the preparation period of the wrestlers. Thus, in addition to the positive effect on the performance of the athlete, injuries can also be prevented. It should be kept in mind that anaerobic power, strength and balance characteristics are related to each other and a disorder in one can negatively affect the other.

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# Social Studies Teachers' Digital Literacy Levels

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## Abstract

In this study, which was conducted to determine the digital literacy levels of social studies teachers, explanatory sequential design, which is one of the mixed pattern methods, was used. 543 Social Studies teachers working in secondary schools across Turkey participated in the study in the 2019-2020 academic year. 543 social studies teachers participated in the quantitative part of the study and 32 social studies teachers participated in the qualitative part. The sample of the study was chosen as an easy and accessible sample. The data of the study were collected through the personal information form developed by the researcher, the interview form and the digital literacy scale developed by Sulak, (2019). Quantitative data obtained in the study were analyzed with a statistical program. As a result of the research, it was determined that the digital literacy levels of social studies teachers were at the "I agree" level. Significant differences were found between the digital literacy levels of teachers and the variables of gender, use of technology in the lesson, and in-service training. With the data obtained as a result of the interviews, it was revealed that the teachers themselves have a perception that their digital literacy skill level is below the digital literacy level of today's Z generation. As a result of the findings, suggestions were made to carry out various studies to increase the digital literacy level of social studies teachers and to gain digital literacy skills through in-service/pre-service training.

**Keywords:** Digital Literacy, Technology, Social Studies, Social Studies Teacher

## 1. Introduction

With the "globalization" that took place in the 21st century, in which the information age is lived, the need for individuals who can use information, not only use it correctly, but also produce information and solve their own problems has increased. Therefore, with the change of people's priorities, there have been changes in state policies. The concept of digital literacy has become more and more important for states (Koca, 2014). In addition to the high-level skill required to use digital tools, digital literacy is the correct use and analysis of resources, the ability to obtain new information based on the information obtained, and the ability to act more confidently in the digital world (Martin, 2008). The world of the generation, called the Z generation and born into technology, unlike the Y generation, passes almost entirely within the digital platforms. This situation has increased the use of technology in education and made it necessary to integrate technology into education. Selber and Stuart (2004) stated that it



is not possible for students who do not have digital literacy skills to fully adapt to today's technology. When the teaching profession is considered from this point of view, it is seen that teachers who will train the Z generation have important duties and that teachers should have digital skills related to their own work areas (Çelik, 2020). It is very important for teachers to educate their students as individuals who use technology in accordance with the requirements of the modern age. In this context, the Ministry of National Education has sought to increase the technological equipment and opportunities of schools with the "Movement to Increase Opportunities and Improve Technology (FATİH)" project in Turkey. The main components of the Fatih project determined by the Ministry of National Education are as follows (MoNE, 2020).

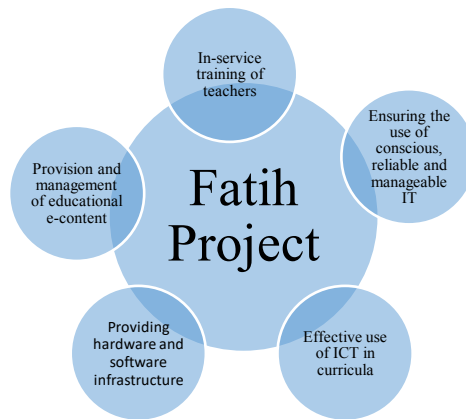


Figure 1: Main Components of Fatih Project (MoNE, 2020).

When the main components of the Fatih project are examined, it is seen that teachers have important duties. Students' using computer technologies as needed depends on the presence of teachers who can use digital technologies, analyze them correctly and adapt them to the classroom environment. Education-related developments are closely related to teachers who take on important duties in the educational environment. In particular, there is a need for teachers who follow new developments, research and actively apply them in their classrooms (Ay, Aydoğdu, 2016). The Ministry of National Education, in its article on teacher qualifications, mentions that a rapidly changing world will be dominated by a cyber-physical and internet-based change (MoNE, 2017). In this context, it is very important to include the concept of "digital literacy" in the professional competencies of teachers so that the younger generations can keep up with the mentioned change.

One of the most important aims of the social studies course is to raise "competent citizens". The concept of competent citizen is understood as individuals who are curious about social developments in the world and who can find and analyze correct information from within the globalizing information network. In addition to all these, it can be said that technology can help teachers in gaining the skills of critical thinking and space perception included in the social studies curriculum and the values in the same curriculum (Kaya, 2008; MoNE, 2018). Digital literacy skills were added to the social studies curriculum in 2017, and the course was aimed to provide students with digital literacy skills. Science technology and society learning area are explained as "It should be ensured that students acquire skills such as self-control and digital literacy, as well as values such as honesty, industriousness and science ethics. In this learning area, students are expected to know that innovative, critical and scientific thinking is the basis of developments in science and technology. In addition, they are expected to gain the ability to use technology to reach information by understanding the development process of science and technology and its effects on social life. On the other hand, while learning to what extent technologies are related to daily life, he discusses the harms of some technological products to nature. He takes into account the principles of academic honesty, realizing that scientific works are protected by law" (MoNE, 2018). It is seen that the learning area described above is directly related to digital literacy skills. In this context, it is seen that social studies teachers should have this skill. Looking at the results of the study conducted by Tepe (2019) to determine the digital literacy skills of pre-service teachers and the results of the study by Yaman (2019) with pre-service teachers, it is seen that

the digital literacy skills of pre-service teachers are not at a sufficient level. Considering the results obtained, it is seen that it is important to determine the digital literacy skills of social studies teachers.

In the study, it was aimed to evaluate the digital literacy levels of social studies teachers in terms of various variables. For this purpose, answers to the following questions have been sought.

1. What is the digital literacy level of social studies teachers?
2. Do the digital literacy levels of social studies teachers differ according to the gender variable?
3. Do social studies teachers' digital literacy levels differ according to the variable of using educational technologies in the lesson?
4. Do the digital literacy levels of social studies teachers differ according to the variable of receiving in-service training?
5. What are the social studies teachers' views on the concept of digital literacy?

## 2. Method

The research was designed with a mixed method in which quantitative and qualitative findings will be used together. First, the quantitative aspect of the research was carried out. Then, based on the quantitative data, the qualitative aspect of the research was carried out. 543 social studies teachers participated in the quantitative part of our research, and 32 social studies teachers participated in the qualitative part. While creating the sample of the research, the easily accessible/convenient sampling method was chosen. Easily accessible or convenient sampling is based entirely on items that are available, quick and easy to reach (Malhotra, 2004: 321).

The reason for choosing the mixed method in this research is to deal with the problems that are the subject of the research in a multidimensional and comprehensive way. Because the events and phenomena we encounter may not be simple enough to be considered singularly (Yıldırım & Şimşek, 2016). In addition to the quantitative data since it will be supported by the views of social studies teachers on digital literacy, the explanatory sequential design, which is one of the mixed method types, was used in the research. The exploratory design is a mixed-method design in which the researcher begins by conducting a quantitative phase and seeks specific results with a second phase. The second stage, the qualitative stage, is carried out to explain the related results more deeply (Morgan, 1998 cited in: Creswell, Clark, p.89).

### 2.1 Study Group

The sample of the research will be 543 social studies teachers working in public and private institutions. 543 social studies teachers participated in the quantitative part of our research and 32 social studies teachers participated in the qualitative part. In the research, "Digital Literacy Scale" developed by Sulak (2019) and semi-structured interview form created by the researcher were used as data collection tools.

Table 1: Distribution of Participants

<b>Gender</b>	<b>f</b>	<b>%</b>
<b>Men</b>	317	58,37
<b>Women</b>	226	41,62
<b>Professional Seniority</b>	<b>f</b>	<b>%</b>
<b>0-9</b>	331	60,96
<b>10-19</b>	152	27,99
<b>20 and above</b>	60	11,05

### 2.2 Data collection tool

#### Personal information form

The personal information form was prepared and used to determine the demographic characteristics of the teachers participating in the research, such as gender and seniority.

#### Digital Literacy Scale

The digital literacy scale was developed by Sulak (2019). The digital literacy scale consists of three factors: instructional technologies, information and communication, and technique. All of the items of the scale, which consists of 44 items in total, are positive statements, and there is no reverse coded item in the scale.

The items of the scale are 5-point Likert type and they are in the form of very good, good, medium, poor and bad. It was observed that the first factor included a total of 18 items and the factor loads of these items were between 0.367 and 0.803, the second factor included a total of 15 items and the factor loads of these items were between 0.482 and 0.675, and the third factor had a total of 11 items and the factor loads of these items varied between 0.509 and 0.742. The Cronbach's Alpha coefficient in the first factor was 0.92; the second factor is 0.90; the third factor was determined as 0.91 and a high internal consistency was obtained (Sulak, 2019). Distribution of the items in the scale according to the factors: Instructional Technologies: Between 1 and 18, Information Communication: Between 19-33, Technique: Between 34-44.

#### Interview form

A semi-structured interview form was used in the qualitative aspect of the research. During the interview process, the questions should be prepared by the researcher. In addition to the questions prepared during the interview, the researcher has the freedom to ask different questions in order to obtain more detailed information (Yıldırım & Şimşek, 2013). While preparing the form, firstly the literature was scanned and then the item pool was created. The interview form was formed in the form of 12 questions. While preparing the form, the opinions of 3 experts were taken and various changes were made on the questions. The number of questions in the interview form has been reduced to 10. It was applied to 32 social studies teachers on a voluntary basis and then analyzed by transcribing.

#### 2.3 Analysis of Data

In the study, in the analysis of quantitative data, it was examined whether the data showed a normal distribution by using more than one technique in order to make objective decisions about the normal distribution. As a result of the analysis, parametric tests were performed on the data determined to have normal distribution. The t-test was used to compare quantitative continuous data between two independent groups, and the One-way Anova test was used to compare quantitative continuous data between more than two independent groups. Content analysis was carried out on the qualitative data obtained within the scope of the research. The data transferred to the text in the computer environment has been printed out. The data were read at least twice before starting to encode. Then the data was coded. During the coding process, the answers given for each question were read line by line, and the pieces of information that were in the nature of answering the research questions were given a label and coded. The codes obtained after the coding process were classified and themes were created. The themes obtained were presented to expert opinion. In line with expert opinions, after necessary corrections were made on the themes, the data were presented in tables. The interviews with the teachers were expressed using code names. In the last stage, the findings presented in tables were interpreted.

### 3. Findings

In this part of the research, which examines the digital literacy levels of social studies teachers, the findings and comments obtained as a result of the analyzes of the sub-problems are included.

In the first sub-problem of the study, the answer to the question "How are the scores of social studies teachers from the digital literacy scale and its sub-dimensions distributed?" has been sought. The mean scores and standard deviations that determine the digital literacy levels of teachers are given in Table 2.

Table 2: Analysis Results of Social Studies Teachers' General Scale and Sub-Aspects

	$\bar{X}$	SS	Min.	Max.
<b>Instructional Technologies</b>	2.77	.69	1.11	5.00
<b>Information Communication</b>	4.36	.59	2.33	5.0
<b>Technique</b>	4.28	.84	1.64	5.0

<b>Overall Scale Total</b>	3.69	.59	1.86	5.0
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When the average scores given in Table 2 are examined, it is seen that the total average scores of the teachers' digital literacy scale are ( $X = 3.69$ ). According to the result, it is seen that the digital literacy of the teachers is at the level of "I agree", that is, at the medium level. In terms of sub-aspects, while teachers' Instructional Technologies ( $X = 2.77$ ) describe themselves as "undecided", in the Information Communication ( $X = 4.36$ ) aspect and in the Technical ( $X = 4.28$ ) aspect, "totally agree" level result has emerged.

In the second sub-problem of the study, an answer to the question "Do the scores of social studies teachers from the digital literacy scale and its sub-aspects differ significantly according to the gender variable?" has been sought. T-test results for independent samples made to determine whether the digital literacy levels of teachers differ according to the gender variable are given in Table 3.

Table 3: Digital Literacy Scale Aspects and Evaluation of the Overall Scale by Gender Variable

Aspects	Gender	N	$\bar{X}$	SS	sd	t	p	$n^2$
<b>Instructional Technologies</b>	Women	226	2.62	.84	541	-3,40	.00*	-0,29
	Men	317	2.87	.82				
<b>Information Communication</b>	Women	226	4.35	.56	541	-,25	.00*	-0,02
	Men	317	4.37	.61				
<b>Technique</b>	Women	226	4.19	.72	541	-2.59	.00*	-0,41
	Men	317	4.35	.66				
<b>Overall Scale</b>	Women	226	3.61	.59	541	-2,79	.01	-0,61
	Men	317	3.75	.59				

\* $p < .05$

The results of the analysis in terms of the gender of the teachers are given in Table 3. When the mean scores of the scale are examined, it is seen that the mean score of male teachers ( $\bar{X} = 3.75$ ) is higher than the average score of female teachers ( $\bar{X} = 3.61$ ). The difference between the group averages was found statistically significant as a result of the t-test, which was conducted to determine whether the digital literacy levels of the teachers participating in the study differed significantly in the overall scale and in its sub-aspects, according to the gender variable. ( $p < 0.05$ ) In other words, the digital literacy levels of social studies teachers differ according to gender.

In the third sub-problem of the study, an answer was sought for the question "Do the scores of social studies teachers' digital literacy scale and sub-aspects differ significantly according to the variable of using educational technologies in the course?" T-test results for independent samples made to determine whether the digital literacy levels of teachers differ according to the variable of using educational technologies in the course are given in Table 4.

Table 4: Evaluation of Digital Literacy Scale Aspects and Overall Scale According to the Variable of Use of Educational Technologies in the Course

Aspects	Use of Technology in the Lesson	N	$\bar{X}$	SS	sd	t	P	$n^2$
<b>Instructional Technologies</b>	Yes	377	2.94	.81	541	7.71	.00	0,71
	No	166	2.37	.75				
<b>Information Communication</b>	Yes	377	4.40	.57	541	2.50	.01	0,23
	No	166	3.42	.62				
<b>Technique</b>	Yes	377	4.34	.66	541	3.01	.00	0,28
	No	166	3.15	.73				
<b>Overall Scale</b>	Yes	377	3.79	.59	541	6.12	.00	0,57

No	166	3.46	.59
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The results of the analysis in terms of the variable of teachers' use of educational technologies in the lesson are given in Table 4. When the mean scores of the overall scale are examined, it is seen that the mean score of the teachers who answered yes ( $\bar{X}=3.79$ ) is higher than the mean score of the teachers who answered no ( $\bar{X}=3.46$ ). The difference between the group averages was found statistically significant as a result of the t-test, which was conducted to determine whether the average scores of the digital literacy levels of the teachers participating in the study in the overall scale and in its sub-aspects, according to the variable of using educational technologies in the lesson. In other words the digital literacy levels of social studies teachers differ according to their use of educational technologies in the course.

In the fourth sub-problem of the study, an answer was sought for the question "Do the scores of social studies teachers' digital literacy scale and sub-aspects differ significantly according to the variable of receiving in-service training?". T-test results for independent samples made to determine whether the digital literacy levels of teachers differ according to the variable of receiving in-service training are given in Table 5.

Table 5: The Aspects of the Digital Literacy Scale and the Evaluation of the Scale in General According to the Variable of Receiving In-Service Training on Educational Technologies

Aspects	In-service Training	N	$\bar{X}$	SS	sd	t	p	n <sup>2</sup>
<b>Instructional Technologies</b>	Yes	153	3.26	.82	541	9.18	.00	0,87
	No	390	2.57	.76				
<b>Information Communication</b>	Yes	153	4.42	.56	541	1.45	.14	0,13
	No	390	4.34	.59				
<b>Technique</b>	Yes	153	4.39	.60	541	2.20	.02	0,20
	No	390	4.24	.72				
<b>Overall Scale</b>	Yes	153	3.94	.56	541	6.27	.00	0,59
	No	390	3.59	.58				

The results of the analysis in terms of teachers' in-service training variable are given in Table 5. When the mean scores of the overall scale are examined, it is seen that the mean score of the teachers who answered yes ( $\bar{X}=3.94$ ) is higher than the mean score of the teachers who answered no ( $\bar{X}=3.59$ ). The difference between the group averages was found statistically significant as a result of the t-test conducted to determine whether the average scores of the digital literacy levels of the teachers participating in the study in the overall scale and in the instructional technologies and technical sub-dimensions according to the variable of receiving in-service training. ( $p<0.05$ ) In the information communication sub-dimension, the difference between the group averages was not statistically significant. ( $p>0.05$ )

Social Studies teachers' views on the concept of digital literacy are given in Table 6.

Table 6: Social Studies teachers' views on the concept of digital literacy

<b>Access to Information</b>	Reproducing knowledge
	Access to information
	Distinguishing true information from false information
<b>Effective use of technology</b>	Effective use of IT tools
	Reflecting the developments in technology to education
	Importance in terms of 21st century skills
<b>Academic Contribution</b>	Concretizing the lesson
	Ease of handling gains

As seen in Table 6, the views of social studies teachers on the concept of digital literacy are grouped under three themes: access to information, effective use of technology, and academic contribution.

Teachers expressed their views under the theme of access to information as reproducing information, reaching information and distinguishing true information from false information. The opinions of some of the participants are given below.

*“Digital literacy is to research, question, criticize, analyze and produce new information by using information technologies effectively. There is a connection between education and this concept. Education is important in terms of permanent learning change and knowledge generation of the individual. Therefore, digital literacy plays an important role in accessing and reproducing information in today's education process.”*

*“It is accessing information via phone, tablet, computer and sharing information in these environments. In this way, students, teachers and parents can easily access information and use technology in education.”*

Teachers expressed their views under the theme of effective use of technology as using information tools and equipment effectively, reflecting the developments in technology to education, and importance in terms of 21st century skills. The opinions of some of the participants are given below.

*“Digital literacy can be defined as learning and transferring information with information tools. I think that increasing the resources in the education process and following the developments are beneficial in terms of providing a critical view. It is important for teachers to be digitally literate in any educational activity that needs updating. Evaluation of issues from different perspectives and accessibility to partners can be considered as other positive aspects.”*

*“Digital Literacy” is one of the basic skills of the social studies curriculum. In recent years, depending on the developments in digital technology, new situations related to citizenship rights and responsibilities (digital citizenship, e-Government, virtual commerce, social media, etc.) and some problems (digital division, identity theft, privacy of personal information, cyber fraud, cyber bullying, etc.) appeared. It is a concept that finds its spirit in the program in order to improve students' digital citizenship competencies.”*

Teachers expressed their views under the theme of academic contribution as convenience in concretizing the lesson and handling the achievements. The opinions of some of the participants are given below.

*“Digital literacy plays an important role in today's education process in terms of accessing information, reproducing information and concretizing the lesson”.*

*“It refers to the ability to find, understand, analyze, produce and share information through network devices such as smartphones, tablets, laptops and desktop computers.”*

The views of Social Studies teachers on digital literacy self-efficacy are given in Table 7.

Table 7: Opinions and Rationales of Social Studies Teachers on Digital Literacy Self-Efficacy

<b>Bottom</b>	Need for help.
	Failure to catch up with Generation Z.
	I don't think it is enough.
	We cannot keep up with the next generation.
	Being behind technology skills of the X generation.
	Generation Y is more active.
<b>Middle</b>	The speed of technological developments.
	Being the Y generation.
	Being digitally literate inevitably with the spread of technology.
<b>Top</b>	Not being as digitally literate as generation Z.
	Getting to know technology early.
	Having more digitally literate individuals in the social environment.
	Active use as the Y generation.
	Education on educational technologies.

As seen in Table 7, the views of social studies teachers on digital literacy self-efficacy are grouped under three themes: bottom, middle and top.

The teachers have stated their opinions under the bottom theme as needing help, not being able to catch up with the Z generation, I do not find it sufficient, we cannot keep up with the new generation, being behind the technology as the X generation, the Y generation being more active, and the speed of technological developments. The opinions of some of the participants are given below.

*“I don't see enough. Today, information changes quickly. It is getting harder and harder to catch up with the younger generation. New, young teachers are needed in this regard. For this, in-service training should be provided. It should be taught as a lesson in schools. Digital literacy skills can be taught to students.”*

Teachers expressed their views under the middle theme as being the Y generation, becoming digitally literate inevitably with the widespread use of technology, and not being digitally literate as much as the Z generation. The opinions of some of the participants are given below.

*“After the widespread use of smart phones and the internet, and thus the rapid access to information, I think that we are digitally literate individuals. But in order to use it in education, we need to receive training.”*

Teachers stated their views under the top theme as meeting technology early, being more digitally literate individuals in the social environment, using it actively as the Y generation, and training on educational technologies. The opinions of some of the participants are given below.

*“My branch is Social Studies, but I also work as an Information Technologies Counselor (Formerly a formatter teacher). In other words, I think I am sufficient in digital literacy.”*

Opinions of Social Studies Teachers on Using Digital Tools and Contents in Classes are given in Table 8.

Table 8: Opinions of Social Studies Teachers on Using Digital Tools and Contents in Classes

<b>Purposes of using digital tools and contents</b>	Concretizing the lesson Ease of handling gains
<b>Technological hardware and digital content used</b>	Smart board Interactive educational software (EBA, Morpa, Campus, Vitamin, Web 2.0 Tools, Storyjumper, Kahoot, Artsteps, Prezi, Canva, Google Eearth, Google Maps, Clamavalbee, PowerPoint, Word) Projection soundrecording Computer
<b>Achievements handled using digital tools/contents</b>	SB.5.3.5. Explains the effects of natural disasters on social life with examples. SB.6.4.3. Conducts research using scientific research steps. SB.7.2.2. Analyzes the conquest policy of the Ottoman state through examples S.B. 6.3.2 6th grade social studies course examines Turkey's basic physical geography features, landforms, climatic features and vegetation on the relevant maps. SB.5.2.1. Realizes the important contributions of Anatolian and Mesopotamian civilizations to the history of humanity, based on their concrete remains. SB.7.3.3. Discusses the causes and consequences of migration through case studies.

As can be seen in Table 8, the views of social studies teachers on the purposes of using digital tools and contents in lessons are grouped under 3 themes: the purposes of using digital tools and contents, the technological equipment and digital contents used, and the achievements handled by using digital tools/contents.

Teachers expressed their views under the theme of the purpose of using digital tools and contents in lessons as concretization of the lesson and ease of handling the achievements. The opinions of some of the participants are given below.

*“For presentation: prezi, powerpoint, for infographic: powerpoint, canva, for worksheet: word, powerpoint, for mapping: google earth, google maps, for game: clam, kahoot, for student opinion: google form, for concept maps: bubble.us site for optical testing practice: the use of evalbee apps increase permanent learning and concretization.”*

*“Because there are history and geography subjects in our lesson, and the history lesson is boring for many students, it is much more interesting to watch a video, an animation or do an interactive activity on the interactive board instead of explaining the lesson in a monotonous way. In particular, concretization provides great convenience for gains. It enhances student learning.”*

Teachers' opinions under the theme of technological hardware and digital content used are smart boards, interactive educational software (EBA, Morpa, Campus, Vitamin, Web 2.0 Tools, Storyjumper, Kahoot, Artsteps, Prezi, Canva, Google Eart, Google Maps, Clamavalbee, PowerPoint, Word). ), projection, sound recording, computer. The opinions of some of the participants are given below.

*“I am using the smart board. With the smart board, learning information can become more concrete. Audio, video, image and other application-based activities are included in the learning process. But because the curriculum is too intense, sometimes it does not catch up.”*

*“I used the computer and the projector. Because there are no other technological tools in the institution.”*

Teachers' opinions under the theme of technological equipment and digital contents used and achievements handled by using digital tools/contents are as follows: SB.5.3.5. Explains the effects of natural disasters on social life with examples, SB.6.4.3. Conducts research using scientific research steps, SB.7.2.2. Analyzes the conquest policy of the Ottoman state through examples, S.B. 6.3.2 6th grade social studies course examines Turkey's basic physical geography features, landforms, climatic features and vegetation on the relevant maps, SB.5.2.1. Realizes the important contributions of Anatolian and Mesopotamian civilizations to the history of humanity, based on their concrete remains, SB.7.3.3. Discusses the causes and consequences of migration through case studies. The opinions of some of the participants are given below.

*“Folk dances can be used in the 5th grade 1st learning area, and the Civilizations in the 2nd learning area, natural disasters in the 3rd learning area”.*

*“6. Classroom Social Studies course can be used for the acquisition of “Turkey's basic physical geography features, landforms, climatic features and vegetation on the relevant maps. (S.B. 6.3.2)”*

The Opinions of Social Studies Teachers on the Status of Receiving Digital Tools Usage In-Service Training are given in Table 9.

Table 9: Opinions on the Status of Receiving In-Service Training in Using Digital Tools

<b>Type of In-Service Training</b>	MEB in-service training
	MEB infrastructure works
<b>Purpose of In-Service Training</b>	Increasing the permanence of lessons
	Ease of use in the relevant field
	Active use of technology in the lesson
	Fatih Project

As can be seen in Table 9, the opinions of social studies teachers regarding the use of digital tools and the status of receiving in-service training are grouped under two themes: the type of in-service training and the purpose of in-service training.



Teachers expressed their views under the theme of the type of in-service training as MEB in-service training and MEB infrastructure studies. The opinions of some of the participants are given below.

*“Yes, I received a training on the FATİH Project given by the ministry. I have acquired important skills in using smart boards. In this way, I actively use the smart board in every lesson while carrying out my educational activities. I think it would be better if face-to-face trainings increased”.*

*“Yes, I received in-service training. It made the understanding and permanence of the course easier, especially in distance education, but I personally would prefer the training to be practical”.*

The teachers stated their views under the theme of the purpose of in-service training as increasing the permanence of the lessons, ease of use in the relevant field, active use of technology in the lesson, and the Fatih project. The opinions of some of the participants are given below.

*“I received a training on the FATİH Project. I have acquired important skills in using smart boards. In this way, I actively use the smart board in every lesson while carrying out my educational activities”.*

*“The technological infrastructure of our school is quite good. In this way, I can use technology. Our internet speed is sufficient, we have smart boards in every classroom and teachers' room, and we also have a computer lab.”*

#### **4. Conclusion Discussion and Suggestions**

According to the findings of the study, it has been seen that the digital literacy total score averages of social studies teachers ( $X=3.69$ ) were at a moderate level. The findings are in line with the results obtained by Buzkurt (2021), Arslan (2019). In the qualitative part of the study, contrary to the findings obtained in the quantitative part, it was seen that the teachers who saw themselves as low and middle level were more than the teachers who described themselves as high. Teachers who find themselves competent state that they use technology effectively and correctly in their lessons and in their normal lives, while teachers who find themselves insufficient in digital literacy have the opinion that "teachers with high seniority have difficulties in this regard, we have difficulty in reaching the new generation".

According to the research findings, the digital literacy levels of social studies teachers differ in favor of men when it comes to gender. This result is similar to some research results (Kıyıcı, 2008; Çetin, 2016). In addition, there are studies in the literature in which there is no significant difference in the context of the gender variable (Öçal, 2017; Kaya & Yazıcı, 2019). The reason why female teachers have a lower level of technological skills than male teachers can be shown that technology is seen as a field for men in the past and today. The fact that more men are active in the business areas that can be associated with technology and therefore the perception of inadequacy in women may have led to such a result (Savcı, 1999).

As a result of the analysis, a significant difference was found between the use of technology in the lesson and digital literacy of social studies teachers. This difference was in favor of the teachers who use technology in their lessons. However, the majority of the teachers interviewed in the qualitative aspect of the study stated that they were unfamiliar with the knowledge level of Z generation students, the applications and games they used, and sometimes they could not catch up with them in the lessons. It has been observed that teachers who say they use technology in the lesson generally prefer to use it in the learning areas of Culture and Heritage, People, Places and Environments, and Science, Technology and Society. Likewise, Karamustafaoğlu (2006) reached a similar conclusion in his study called Science and Technology teachers' level of use of teaching materials.

As a result of the analysis, a significant difference has been observed in favor of the teachers who received in-service training in the variable of social studies teachers' in-service training on educational technologies. In the study conducted by Kaya (2019), it has been concluded that the teachers who received information technology education had high self-efficacy in using smart boards. In the thesis study conducted by Korkmaz (2020), it was concluded that the digital literacy levels of classroom teachers who received technology education were high. In the study, it was stated that as the number of technological tools used by teachers increased, their digital literacy also increased. In the qualitative aspect of the research, it has been shown that in-service training is effective in the effective use of technology in the lessons of teachers' education and in ensuring permanence.

In line with the results obtained in the research, the following suggestions have been developed:

1. Explaining the content of concepts such as digital literacy and digitalization to teachers in detail by the Ministry of National Education will help to increase the digital literacy level of teachers.
2. In the in-service training given to social studies teachers, putting the training into practice as well as theoretical knowledge will increase the digital literacy of the teachers.
3. The increase in digital content courses such as Web 2.0 given to social studies teachers will help increase the permanence and efficiency of the social studies course.
4. Correcting the problems such as infrastructure inadequacies of schools, lack of digital materials, lack of technical knowledge will increase the use of technology in education.

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# The Ecology of Early Development: Fathers' Home Involvement and Child's Later Educational Outcomes

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## Abstract

This study examined the relationship between young children's cognitive development and fathers' engagement in early childhood. The study examined fathers' home engagement patterns based on literacy, play, and caregiving activities when their children were 9-month-old and these patterns of engagement in 9-month-old were related to children's cognitive development in preschool. Latent class analysis (LCA) procedure was used to create subgroups/classes of fathers based on their actual engagement. The study employed multiple data sources from Early Childhood Longitudinal Study-Birth Cohort (ECLS-B). The data sources include a self-administered resident father survey, direct child assessment, and parent interviews. The results of the study suggested that there were five distinct classes of fathers based on their actual engagement. A total of 6.200 fathers were included in the analysis to create father classes. In the regression analysis, a total of 4.800 children were included. Although father classes were mostly similar, there were two distinct father classes with different actual engagement patterns based on child's gender. Although, the class of fathers with the highest likelihood of engaging their infant girls had a negative effect on girls' literacy and mathematics scale score in preschool, the results regarding children's later educational outcomes were mixed.

**Keywords:** Cognitive Development, ECLS-B, Father Involvement, Latent Class Analysis, Young Children

## 1. Introduction

During the past few decades, the roles of fathers and mothers within families have changed significantly. Starting in the 20<sup>th</sup> century, as increasing numbers of women entered the workforce, fathers had to assume more of the caretaking responsibilities (Warin, Solomon, Lewis, & Langford, 1999; Olavarri'a, 2003). Such developments altered the traditional breadwinning and caregiving roles between mothers and fathers by creating an environment where both parents assume parenting roles more equally (Carlson & Magnuson, 2011; Barbeta & Cano, 2017). Thus, the focus of father involvement has shifted from that of an indirect "breadwinning" role to the emerging concept of direct fatherhood and a fathering role.

Findings from both parental and paternal involvement research suggested that active parent involvement and a strong partnership between the home and school contribute to the healthy development of young children in early

childhood (Connors & Epstein, 1995; Powell, 1993). Such findings, in turn, helped shape our understanding of how fathers' roles contribute to the healthy development of young children.

The related literature measuring father involvement in terms of the time that fathers spend with their children could be too simplistic. While the earlier studies of father engagement measured the effects of total time fathers spend with their children (Lamb et al., 1987; Pleck & Pleck, 1997), more recent studies have chosen a different approach (Cabrera, 2020; Diniz et al., 2021; Palkovitz, 2019). This was most probably because simply focusing on the time factor limited researchers' ability to make assumptions about different types of fathering styles. Gradually, as more father involvement studies were conducted and reported, the general conceptualization of father engagement was refined.

Fathers' engagement is now described as the fathers' presence with three dimensions: responsibility, availability, and engagement (Lamb et al., 1987). Although these dimensions overlap each other to a certain degree, the majority of studies (Del Bono et al., 2016; Fomby & Musick, 2017) have generally found positive correlations between fathers' engagement and children's cognitive development and others found none (Milkie et al., 2015). It seems that fathers can engage their children through numerous activities such as playing games, preparing a meal, or reading a book and these activities could be related to positive child outcomes. The cognitive effort a child put through these activities usually helps them practice their thought process and increase their brain development (Takeuchi, et al., 2015). In and of itself, such activities can be beneficial and rewarding for children. Yet, it is the relationship between father involvement and children's cognitive development that is most noteworthy, and of particular interest to educators and researchers. In sum, father involvement and father engagement do matter, and children's cognitive development seems to benefit when their fathers consistently engage in caregiving, play, and literacy activities (Cowan, Cowan, Pruett, Pruett, & Wong, 2009; Futris & Schoppe-Sullivan, 2007). When father engage in a structured and educational activities, children seem to benefit most (Hsin & Felfe, 2014).

Despite an increasing interest in paternal involvement, few studies have examined fathers' direct roles and their effects on children's cognitive development in early childhood. Most studies (e.g., Raver, Gershoff, & Aber, 2007; Volling & Belsky, 1991) adopted a narrow approach by focusing on fathers' financial contributions and marital conflict. Typically, father involvement was examined without considering the quality of fathers' interaction with their children. Researchers associated fathers' lack of interest with old-fashioned conceptions of fatherhood, complications of working with fathers, and limited availability of data related to fathers (Lamb, 2010). The availability of large secondary data and wide ranging of information on fathers, their roles in the family, and family characteristics make it feasible to study the effects of father involvement on their children's cognitive development.

Our study is grounded in Bronfenbrenners' ecological theory of cognitive development. Bronfenbrenner's ecological model considers experience as the building blocks of human development (Bronfenbrenner & Morris, 200). Through experience, factors affecting the development and feelings attached to these factors become unique for every individual. Unique experiences of past determine the direction of human development later in life (Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris 1998).

For healthy growth and development, children need a stable environment where they are exposed to "progressively more complex reciprocal activity, on a regular basis over extended period of time" (Bronfenbrenner & Morris, 2007). Significant others play an important role in these processes by utilizing these reciprocal activities. Parents mostly assume these responsibilities, and the level of their determination and commitment ultimately shapes their children's development.

Research in psychology and education suggest that intervention is the most beneficial at early ages (Futris & Schoppe-Sullivan, 2007). It follows that economic investment in educational provision may be most fruitful in early childhood (Shonkoff & Phillips, 2000). While investing in direct educational services in early childhood will most likely be beneficial, such investments will probably prove optimal for children's cognitive development when

the whole family system is included. To this end, studying the effects of father involvement within the family system could be rewarding. This is because the majority of fathers' child-rearing activities are shaped by important factors within the complex and dynamic family system (Lamb, 2010). Positive child outcomes are most likely the products of interactions among various factors (e.g. father-mother relation, siblings, and positive atmosphere in the family).

This study aims to contribute to existing literature on fatherhood by examining father involvement in depth based on advancements in science and availability of large data. The study was guided by the following research questions:

Research Question 1: How often do fathers engage their infants and toddlers through child-bearing activities?

Research Question 2: How does fathers' home engagement with their infant children influence children's cognitive development later in early childhood?

Research Question 3: Is there evidence of significant gain in children's cognitive development in early childhood related to levels and quality of fathers' direct engagement after controlling for SES, sex, and race?

## 2. Method

### 2.1 Research Design

The study had two main goals. The first was to examine fathers' engagement patterns and to determine the nature, amount, and frequency of resident fathers' interaction and engagement with their children in early childhood. Thus, fathers' interaction and engagement were examined in a systematic manner using latent class analysis (LCA). Second, the effects of fathers' direct engagement in 9-month on children's academic achievement were examined longitudinally. The study employed a correlational study design. Correlational design helps researchers answer questions when the effects of independent variables on a dependent variable(s) are of interest (Russo, 2011; Leedy & Ormrod, 2001) among subgroups of population with different level of exposure to the same conditions. The nature and design of the ECLS-B study (NCES, 2010) allow researchers to explore prevalent conditions among groups, and help them determine if the differences in these conditions produce the observed difference in selected outcome variables.

### 2.2 Data

The research examined the developmental status of children who were part of a nationally representative sample of approximately 14,000 born in 2001. The sample employed in the current study included approximately 11,000 children and 8,392 resident fathers from different racial/ethnic and socioeconomic backgrounds. Only children with both parents residing in the same household were selected for the study. Sample students were selected with unequal probabilities and therefore sampling weights were used to obtain unbiased population estimates in all of the analyses. Furthermore, because of the multi-level nature of the data, the sample selection was adjusted by a design effect, resulting in more conservative tests of significance.

Children's IRT-based standardized scale scores, father's home interaction and engagement, children's age at the assessment, gender, ethnicity, mother's home involvement, and socioeconomic status variables were included in the analyses. Children with a resident father in their household were included in the cross-sectional analyses. Cases with missing outcome variables (cognitive assessment or missing cognitive assessment component) were excluded from the analyses.

A total of 11 observed variables related to three dimensions of father involvement: (1) engagement in caregiving, (2) engagement in play and (3) engagement in literacy activities, were considered in LCA to create father engagement latent classes. There were six engagement in caregiving and 5 engagement in play and literacy activities. These activities were

1. Change your child's diaper

2. Prepare meals or bottles for your child (9-month only)
3. Feed your child or give your child a bottle (9-month only)
4. Put your child to sleep
5. Wash or bathe your child
6. Dress your child
7. Read books to your child
8. Tell stories to your child
9. Play peek-a-boo with your child (9-month only)
10. Take your child outside for a walk or to play in the yard, a park, or a playground
11. Tickle the child

These variables indicating fathers' actual engagement were used in LCA. They were recoded as dichotomous variables to examine patterns of overall engagement. These categories were based on related literature. A dichotomous variable indicating high and low involvement was created for each item. The best model was chosen based on the  $G^2$  statistic (likelihood ratio), Bayesian Information Criterion (BIC), and Akaike's Information Criterion (AIC). LCA estimates two sets of parameters: class membership probabilities ( $\gamma$ 's) and item-response probabilities ( $\rho$ 's). Class membership probabilities are used to identify which latent class each subject most likely belongs and this is accomplished through item-response probabilities. There were significant differences in item response probabilities for boys and girls, two different LCA analysis were performed based on two genders.

### 2.3 Procedure

The first step of the analysis was to determine direct and bivariate associations. Fathering practices were investigated and fathering profiles were created based on those practices using LCA. LCA is useful when identifying characteristics of different class membership based on covariates (Collins & Lanza, 2010). Observed categorical variables were used to create these latent classes of fathering profiles. For each of 9-month, and preschool data collection points, a baseline model was developed. These baseline models were evaluated by examining likelihood ratio<sup>2</sup>. LCA estimated following parameters: "The item-response probabilities ( $\rho$ 's) and the latent class prevalences ( $\gamma$ 's)" (Collins & Lanza, 2010, p.154).

In the longitudinal part of the study, the effects of fathering profiles on children's cognitive development in preschool were examined. Father involvement profiles helped the current study identify whether or not fathers' high level of home engagement and interaction influenced children's cognitive development over time. Initial models only included the outcome, fathers' classes, age-adjusted previous score, and chronological age. In the next model, controlling variables were included. Children's literacy and mathematics performance in preschool were examined in relation to father interaction and engagement level. Ordinary least square (OLS) regression models were used to analyze the relationship between fathers' direct engagement patterns and children's cognitive development. Eight models were developed for measuring fathers' engagement patterns in 9 months and 24 months on girls' and boys' literacy and mathematics performance.

### 2.4 Analytic Strategy

LCA is appropriate for the proposed study because its fundamental principles allow researchers to examine complex relations of underlying factors present in survey designs (Curran & Hussong, 2002). These models are quite useful for researchers who wish to examine latent trajectories contributing to the observed measures. Observed categorical variables were used to create these latent classes of fathering profiles. For each of 9-month, 2-years, and preschool data collection points, a baseline model was developed. These baseline models were evaluated by examining likelihood ratio  $X^2$ . LCA estimated following parameters: "the item-response probabilities ( $\rho$ 's) and the latent class prevalences ( $\gamma$ 's)" (Collins & Lanza, 2010, p. 154). The following baseline model was used for each data collection point:

"Let  $y = (r_1, \dots, r_j)$  represent the vector of a particular subject's responses to the J variables. Let L represent the latent variable with  $c = 1, \dots, C$  latent classes. Finally,  $I(y_j = r_j)$  is an indicator function

that equals 1 when the response to variable  $j = r_j$ , and equals 0 otherwise and  $\Upsilon_c(X)$  is a standard baseline-category multinomial logistic model (e.g., Agresti, 1990).

$$P(Y = y|X = x) = \sum_{c=1}^C \Upsilon_c(X) \prod_{j=1}^J \prod_{r_j=1}^{R_j} p_{j,r_j|c}^{I(y_j=r_j)}$$

(Collins & Lanza, 2010, p. 153).

Once probabilities for fathering profiles were calculated based on Bayes' theorem (Lanza et al. 2007), each case was assigned to a latent group and a categorical variable was created using these probabilities.

The second part of the analysis examined the development of the association between fathering profiles and children's cognitive development. The analysis was conducted to explore two latent variables: (1) fathering profile and (2) children's reading and mathematics performance test scores in preschool. The nature and level of father involvement tend to change as children develop and transition through childhood. Evaluating the complex relationship between two outcomes longitudinally (Fieuws & Verbeke, 2004) becomes feasible with the multivariate model. In the current study, we examined changes in young children's cognitive development associated with fathering profiles with consideration of socio-demographic variables. Appropriate weight were used in the analysis to minimize the effects of having unequal probabilities of being included in the survey.

The effects of fathering profiles on children's cognitive skills were analyzed using ordinary least squares (OLS) regression, because the outcome measure of interest is a continuous measure. The effects of these fathering profiles were then evaluated across ethnic groups. Children literacy and mathematics performance in preschool were examined in relation to father interaction and engagement level. Ordinary least square (OLS) regression models were used to analyze the relationship between fathers' direct engagement patterns and children cognitive development. Four models were developed for measuring fathers' engagement patterns in 9 months on girls' and boys' literacy and mathematics performance.

For the preschool year

$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{Father Classes}) + \beta_{2j}(\text{Previous Score}) + \beta_{3j}(\text{Assessment Age}) + \beta_{4j}(\text{Special Education}) + \beta_{5j}(\text{Black}) + \beta_{6j}(\text{Asian}) + \beta_{7j}(\text{Hispanic}) + \beta_{8j}(\text{Multirace}) + \beta_{9j}(\text{Other}) + \beta_{10j}(\text{Region}) + \beta_{11j}(\text{SES}) + \beta_{12j}(\text{Relationship Happiness}) + \beta_{13j}(\text{Mother Inv. Index}) + \beta_{14j}(\text{Children under 18}) + \beta_{15j}(\text{Mother Work Status}) + \beta_{16j}(\text{Father's Age}) + r_{0i}$$

$\beta_{0j}$  is the predicted preschool mathematics or reading scale score for White girls (or White boys) with LIF fathers, with no special education status, from Northeast region, with happy parent reported relationship status, with mothers who work more than 35 hours.

$\beta_{1j}$  (Father Classes) is the slope used to compare each of four classes of fathers versus LIF fathers on preschool mathematics or literacy performance after controlling for race, socioeconomic status, mental score in 9-month or 2-year, assessment age, mother involvement, special education status, relationship happiness, children in the household under 18 years old, mother's work status, and father's age.

$\beta_{2j}$  (Previous Score) is the effect of age-adjusted previous mental score (9 month or 2 year) on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{3j}$  (Assessment Age) is the effect of assessment age in months on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{4j}$  (Special Education) is the slope used to compare children with reported special education status versus children with no reported special education status on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).



$\beta_{5j}$  (Black) is the slope used to compare Black children versus White children on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{6j}$  (Asian) is the slope used to compare Asian children versus White children on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{7j}$  (Hispanic) is the slope used to compare Hispanic children versus White children on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{8j}$  (Multirace) is the slope used to compare children with multiracial race versus White children on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{9j}$  (Other) is the slope used to compare children in other race group versus White children on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{10j}$  (Region) is the slope used to compare each of three regions versus Northeast region on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{11j}$  (SES) is the slope used to compare each of four remaining SES quintiles versus SES quintile on preschool mathematics or literacy performance after after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{12j}$  (Relationship Happiness) is the slope used to compare no-relationship happiness versus yes-relationship happiness on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{13j}$  (Mother Inv. Index) is the effect of mother's involvement index on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{14j}$  (Children under 18) is the effect of children under 18 years old in the household on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{15j}$  (Mother Work Status) is the slope used to compare each of three remaining mother work status versus mothers who work more than 35 hours on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$\beta_{16j}$  (Father's Age) is the effect of father's age on preschool mathematics or literacy performance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

$r_{0i}$  is the unexplained residual variance after controlling variables listed in  $\beta_{1j}$  (Father Classes).

### 3. Results

LCA analysis results based on  $G^2$  statistic, AIC, and BIC values confirmed the model five classes as the best fit. The current study found differences in fathers' actual engagement based on child's gender when infants are around 9-month-old. Item response probabilities for fathers' likelihood of engaging in activities for girls and boys are displayed in Table 1 and Table 2, respectively. Although the majority of father classes were similar for boys and girls, there were two distinct groups of fathers who exhibited different engagement patterns for boys and girls. None of the father classes were likely to engage in literacy activities with their infant daughters while one group of fathers was highly likely to perform literacy activities with their infant sons.

Some fathers were highly engaged in caregiving activities, some only engaged their infants through play activities and others engaged their infants through combination of caregiving, play and literacy activities. Additionally, some fathers engaged in less-occurring caregiving and play activities. Analyses also revealed that a group of fathers simply avoided engaging their infants through these activities.

An overview of father classes are shown in Table 4. First father group named as daily playful caregiver (DPC) as they were involved in most caregiving activities and play with the child sometimes but avoid literacy activities. Second group, primary playful caregiver (PPC), performed all caregiving activities and play with the child but avoided literacy activities. Third group was “occasional caregiver” (OC) and this group of fathers performed less-occurring caregiving activities, played games like tickle the child and take the child for outside play, and avoided literacy activities.

### *3.1 Father Profiles*

Separate LCA analysis for infant girls and boys were conducted. The results of the analysis are further discussed below for each group.

#### *3.1.1 Fathering profiles for girls at 9-months.*

In the 9-Month LCA sample, there were 3.000 girls with biological resident fathers. More than half of the fathers were White (60.7 %), 8.21 % were Black, and 12.43 % were Asian and 16.97% were Hispanic. The first class of fathers (22.84%) had high probabilities of involving in four caregiving activities, the highest probabilities of reading books and telling stories, and likely to take child outside to play and tickle the child. These fathers highly valued literacy activities and were named as “daily playful caregivers” (DPC). The second group of fathers (21.88%) highly valued caregiving activities and play activities, but less likely to read books and tell stories, and were named as “primary playful caregivers” (PPC). The third class of fathers (21.39%) were likely to engage in some caregiving activities and some play activities, and were named as “occasional caregivers (OC)”. The fourth class of fathers (7.3%) were named as “average playful” (AP) fathers as they had high probability of engaging their child only in three play activities. AP fathers were an exclusive class of fathers for girls. The last group of fathers was the least likely to be involved in any of the activities except for tickling the child and was named as “low involving” (LI) fathers. This group of fathers was used as base group in OLS regression analysis. A brief summary of all father classes for girls is shown in Table 2.

#### *3.1.2 Fathering profiles for boys at 9-months.*

In the 9-month LCA sample there were 3.000 boys with biological resident fathers. More than half of fathers were White (56.4 %), 7.8 % were Black, and 14.5 % were Asian and 15.8 % were Hispanic. The model with five latent class had the best fit for the data. Out of five fathers classes four classes of fathers were showed similar characteristics to those of girls. These classes of fathers were DPC fathers (19.52%), PPC fathers (27.41%), LI fathers (28.47%), and OC fathers (20.12%). The fifth class of fathers were exclusive for boys and showed distinct characteristics as they were highly likely to be involved in all 12 activities and was named as “highly engaged caregiver” (HEC). This group of fathers represented 4.47% percent of all fathers in the analysis. A brief summary of all father classes is shown in Table 2.

### *3.2 Father Profiles and Children’s Preschool Literacy Performances*

The results of regression analyses for literacy scores are shown in Table 5. In the first model, father profiles were regressed on girls’ literacy scores without control variables and then, the analysis proceeded with the second model that included control variables. In the third model, father profiles were regressed on boys’ literacy scores and father profiles on boys’ literacy scores with control variables included. Father profiles with lowest involvement patterns (LI fathers) were used as the reference class in all four models. Due to the differences in the nature of father profiles in 9-month, the results were presented based on gender and a comparison between boys and girls were discussed in the following section.

In Model 1, the effects of fathering profiles on girls' literacy scores were examined after controlling only for age adjusted 9-month mental score and assessment age when literacy test was administered. The results indicated that the initial model explained 8.1% of the variance ( $R^2=0.08$ ,  $F(6,84)=26.53$ ,  $p<.01$ ). With the LI fathers as the reference group, DC father class was significantly related to the children's literacy performance at 9-months. Interestingly, three father classes had negative effects on girls' literacy scores in preschool years. Girls with DC fathers scored 9% less than girls with LI fathers and girls with AP fathers also scored 6.5% less than those with LI fathers. OC and PP fathers were not significantly related to the outcome. Both age-adjusted 9-month mental score and assessment age in preschool data wave were significantly related to literacy score.

In the next model, control variables; age-adjusted 9-month mental score, child's age at preschool assessment, child's race, special education at 9-month, family characteristics and father characteristics; were included. The initial model explained 33% of the variance ( $R^2=0.33$ ,  $F(26,64)=41.86$ ,  $p<.01$ ). Two of the father classes, DC and AP, were still significantly related to girls' literacy scores. Girls with DC fathers scored 6.3% less and those with AP fathers scored 5.5% less than those in the reference group. The remaining two father groups were not significantly related to the outcome. Among the child characteristics, special education status was not significant but assessment age in preschool and age adjusted 9-month score were significantly related to girls' literacy scores. There were some differences among race groups; Asian girls scored 4.2% higher than those girls in the reference group. Additionally, girls in the West region scored 10% lower compared to the reference group. Socioeconomic status of the family was significantly related to the girls' literacy scores; each increase in SES level was significantly and gradually related to the outcome. Relationship happiness was not significantly related to girls' literacy scores. Mother involvement index was significant and the girls whose mothers were involved more scored better. The number of children under 18-years old in the household was also related to the outcome and as the number of children increased, the girls' literacy score was affected negatively. Mothers' work status was not significantly related to girls' literacy scores in 9-month. Lastly, girls with older fathers scored better on literacy assessment.

In Model 2, father profiles were, first, regressed on boys' literacy scores with assessment age in preschool and age-adjusted 9-month mental score and then, proceeded with the model in which children, family, and father characteristics for literacy scores were included. The same convention was followed with Model 2. Again, fathers with lowest involvement pattern (LI fathers) were assigned as the reference group in all four models. In the initial model, 8% of variance was explained ( $R^2=0.08$ ,  $F(6,84)=41.86$ ,  $p<.01$ ). Boys with PP fathers scored about 0.07% less than the reference group. Remaining father groups were not significantly related to boys' literacy scores in preschool. Age-adjusted 9-month mental score was significant and it meant boys who had higher previous scores performed better on preschool literacy assessment. Children's age during the assessment in preschool also contributed to their literacy scores; older children simply performed better.

In the model with father profiles, child characteristics, family characteristics, and father characteristics included, PPC fathers were no more related to the outcome. In this model, 34% of the variance was explained ( $R^2=0.33$ ,  $F(26,64)=41.86$ ,  $p<.01$ ) As expected, age-adjusted previous score and assessment age in preschool were positively related to boys' literacy score in preschool. Special education status was not related to the outcome. Black boys scored 6.2% more, and Hispanic boys scored 11% less than those White boys in the reference group. A close examination of family characteristics in Model 2 revealed that relationship happiness at 9-months was not related to boys' literacy scores in preschool. Boys in the South and West regions scored 8.4% and 6.7% less than those in the reference group. SES findings were similar to the previous model; each level of increase in the SES quintile was associated with better literacy scores in a gradual fashion with the exception of the second SES quintile. Mother index, as it was with girls' literacy and mathematics model, was also related to boys' success in literacy; higher mother involvement yielded better literacy scores for boys. The number of children under 18 years old in the household was again significant and as the number of children increased in the house, boys' literacy scores suffered. Mothers' work status was significantly related to the boys' literacy performances. Father's age, interestingly, was not related to the children's literacy score in the preschool assessment.

Using the adjusted Wald test, father classes were also compared to each other. In the girls' literacy models, none of the father classes were significantly different than each other. In the literacy model for boys, DC and PP fathers were significantly different than each other. In the next part, regression results of 9-month father profiles on boys' and girls' mathematics scores in preschool were discussed.

### 3.3 Father Profiles and Preschool Mathematics Performance

Table 6 displays regression analysis results for girls' father profiles on mathematics score including only adjusted 9-month mental score and assessment in preschool. This model explained 12% variance ( $R^2=0.12$ ,  $F(6,84)=26.94$ ,  $p<.01$ ). Girls with DP fathers scored 2.17 points less and girls with PP fathers scored 2.74 points less on mathematics assessment compared to those in the reference group with LI fathers. OC fathers and AP fathers were not significantly related to girls' mathematics scores. Age adjusted 9-month mental score and assessment age in preschool were significantly and positively related to girls' mathematics scores in preschool.

The full model included child characteristics, family characteristics, and father characteristics; and explained 30% variance ( $R^2=0.30$ ,  $F(26,64)=42.54$ ,  $p<.01$ ). Unlike the results from the regression analysis for literacy scores, two father classes, DP and PP fathers, were significantly related to girls' mathematics scores. Girls with DP fathers and girls with PP fathers scored 1.67 points and 1.9 points less, respectively than those in the reference group. OC fathers and AP fathers were not related to the outcome. Girls with better age-adjusted previous mental scores had better mathematics scores in preschool. Also, age at assessment was significantly and positively related to the outcome, simply stated: older girls scored higher. Special education status in 9-month was not related to girls' mathematics scores in preschool. Asian girls were significantly different from the reference group. Asian girls scored 2.6 more than White girls in the reference group.

There were some regional differences among girls' performance; the Northeast region was assigned as the reference group and girls in the remaining three groups, Midwest, South and West, scored 1.7, 1.4 and 1.66 points less than those in Northeast region, respectively. SES level, again, was significantly related to girls' mathematics scores and there was a significant score increase associated with quintiles. The coefficient for relationship happiness was also not related to the outcome in this model. Mother involvement index at 9-month was related to better mathematics scores for girls in preschool years, while the number of children under 18 years old in the household had a negative effect on girls' mathematics scores. Interestingly, the mothers' work status at 9-month was not related to better mathematics score for girls in preschool. Lastly, as fathers' age increased, their daughters seemed to get better scores on the mathematics assessment in preschool years.

In Model 4, father profiles were regressed on boys' mathematics scores only controlling for age-adjusted 9-month mental score and assessment age in the preschool wave, and about 11% variance was explained ( $R^2=0.11$ ,  $F(6,84)=18.60$ ,  $p<.01$ ). Consistent with the findings in the previous reading model, PP fathers had a negative influence on boy's mathematics scores, and these boys scored 1.86 points less than those in the reference class with LI fathers. Higher age-adjusted mental scores and maturity both signified higher scores in preschool mathematics assessment.

In Model 4, once control variables were in the model, 31% of variance was explained ( $R^2=0.31$ ,  $F(26,64)=38.77$ ,  $p<.01$ ). Father class PP lost its significance and they were no more related to the outcome. Age-adjusted 9-month mental score and assessment age in preschool were both significantly and positively related to the outcome, as in Model 3. Special education status was not related to the outcome consistent with previous models for both girls and boys. There were some differences among race groups. Asian boys scored 2.56 points more, while Hispanic boys scored 1.76 points less than White boys in the reference group. Additionally, there were not any significant differences between Black and White boys. Unlike previous models, there were no regional differences among boys' mathematics scores at 0.5 significance level in the full model. Second SES quintile was not related to the outcome, which was inconsistent with previous models. However, remaining quintiles signified a gradual score increase on boys' mathematics score in preschool.

Consistent with the previous models, parents' relationship happiness did not impose any effects on the outcome. Mother involvement index again signaled a positive impact on boys' performance and the inverse relationship of number of children under 18 years-old in the household persisted. Although fathers' maturity was a significant player for girls and their performance on reading and mathematics, it was not significant for boys' performance on mathematics in preschool, consistent with the boys' reading model. The adjusted Wald test did not reveal any differences among father classes in 9-month mathematics model for girls and boys.

#### **4. Discussion**

The current study found that differences in fathers' actual engagement based on children's gender when infants are around 9-month old. Fathers' engagement behavior may differ based on children's gender and this is consistent with the findings from other research (Furstenberg & Weiss, 2000). Although the majority of father classes were similar for boys and girls, there were two distinct groups of fathers who exhibited different engagement patterns for boys and girls. None of the father classes were likely to engage in literacy activities with their infant daughters while one group of fathers was highly likely to perform literacy activities with their infant sons. One possible reason for this finding could be that some fathers could place more value on raising their infant-son and therefore engage in more caregiving, play and literacy activities with their sons (Amato, 1994).

Some fathers were highly engaged in caregiving activities, some only engaged their infants through play activities and others engaged their infants through combination of caregiving, play and literacy activities. Additionally, some fathers engaged in less-occurring caregiving activities and play activities. Analyses also revealed that a group of fathers simply avoided engaging their infants through these activities. The differences in father engagement patterns could be explained by cultural differences. For example, a specific culture may value fatherhood more than others do and encourage fathers' engagement as much as possible (Chen, Liu, & Li, 2000). Another possible explanation could be that fathers' beliefs and attitudes toward child-rearing could affect their actual engagement. Clearly, providing a definitive explanation for such findings is beyond the scope of this study; therefore further research is recommended.

Surprisingly, DPC fathers who had the highest likelihood of engaging their infant children had generally negative effects on girls' literacy and mathematics scale scores in preschool. This finding did not hold true for boys. One possible explanation for this effect may be that fathers actually engage their infants significantly more because their mothers were unable to do so for some reason. Considering the importance of infants' emotional attachment to their mothers (Freeman, Newland, & Coyle, 2010), lacking mothers' attention might be taking a toll on their cognitive development throughout early childhood. It is obvious that there are differences in boys' literacy and mathematics performances, and boys' somehow avoid this negative effect in terms of their mathematics performances in preschool. This may be associated with the differences in the nature of learning reading and mathematics. Young children are quite capable learners and they may be able to construct their own knowledge and mathematical concepts such as quantity and symbols naturally may make sense to them (NAEYC, 2010).

#### **5. Recommendations for Future Research**

Children's cognitive development is only one dimension of early experience. Studying the effects of fathers' actual involvement on children's social and emotional development is also necessary, as these dimensions contribute to the healthy development of children throughout their lives. For future studies, we believe more qualitative studies should investigate the nature of emotional attachment between a father and a child. Once there are data available on this issue, researchers should be able to more precisely identify and measure the effects of fathers on their children.

Considering the benefit of early cognitive development on children's later academic achievement, researchers continue to investigate the nature of fatherhood and its connection to the children's development. Further research are needed to investigate the effects of fatherhood over time. Thus far, there are some studies that have measured

this effect in early childhood. Far fewer studies have measured these effects across and individual's lifespan. While such studies could be challenging for researchers they could yield interesting findings. For example, in a recent study, researchers found that fathers' early involvement had effects on children's emotional development and social adjustment in early adulthood (NICHD, 2004; Carpendale & Lewis, 2006). More studies similar to the aforementioned one are needed to determine how these early factors affect later development, and how society benefits from these positive effects.

Table 1: Model comparison for infant girls and infant boys

Number of Classes	Girls				Boys			
	Degrees of Freedom	Likelihood Ratio G <sup>2</sup>	AIC	BIC	Degrees of Freedom	Likelihood Ratio G <sup>2</sup>	AIC	BIC
2	2024.00	3372.64	3418.64	3556.91	2024.00	3046.86	3092.86	3232.46
3	2012.00	2643.96	2713.96	2924.37	2012.00	2440.40	2510.40	2722.84
4	2000.00	2139.39	2233.39	2515.94	2000.00	1881.38	1975.38	2260.65
5	<b>1988.00</b>	<b>2014.04</b>	<b>2132.04</b>	<b>2486.73</b>	<b>1988.00</b>	<b>1690.78</b>	<b>1808.78</b>	<b>2166.89</b>
6	1976.00	1937.04	2079.04	2505.87	1976.00	1611.42	1753.42	2184.37

Table 2: Item response probabilities for girls at 9-month

Item	DPC Fathers 22.84%	PPC Fathers 21.88%	OC Fathers 21.39%	AP Fathers 7.3%	LI Fathers 26.76%
Changing Diaper	<b>0.746</b>	<b>0.945</b>	0.436	0.038	0.062
Preparing Bottles	<b>0.935</b>	<b>0.977</b>	0.165	0.002	0.029
Feeding the Child	<b>0.948</b>	<b>0.976</b>	0.132	0.120	0.011
Putting to Sleep	<b>0.712</b>	<b>0.977</b>	<b>0.648</b>	0.378	0.183
Washing the Child	0.441	<b>0.981</b>	<b>0.772</b>	0.164	0.173
Dressing the Child	0.472	<b>0.920</b>	<b>0.520</b>	0.008	0.031
Reading Book	0.050	0.177	0.140	0.101	0.000
Telling Stories	0.060	0.237	0.134	0.206	0.005
Playing Peek a Boo	0.399	<b>0.658</b>	0.297	<b>0.579</b>	0.031
Tickling the Child	<b>0.940</b>	<b>0.934</b>	<b>0.910</b>	<b>0.892</b>	<b>0.593</b>
Outside Play	<b>0.512</b>	<b>0.952</b>	<b>0.755</b>	<b>0.541</b>	0.323

Table 3: Item response probabilities for boys at 9-month

Item	DPC Fathers % 19.52	PPC Fathers % 27.41	HEC Fathers % 4.47	LI Fathers % 28.47	OC Fathers % 20.12
Changing Diaper	<b>0.746</b>	<b>0.942</b>	<b>0.927</b>	0.079	0.338
Preparing Bottles	<b>0.916</b>	<b>0.941</b>	<b>0.851</b>	0.032	0.072
Feeding the Child	<b>0.810</b>	<b>0.989</b>	<b>0.970</b>	0.020	0.138
Putting to Sleep	<b>0.669</b>	<b>0.962</b>	<b>0.874</b>	0.198	<b>0.656</b>
Washing the Child	<b>0.526</b>	<b>0.942</b>	<b>0.875</b>	0.176	<b>0.710</b>
Dressing the Child	0.394	<b>0.958</b>	<b>0.929</b>	0.035	0.477
Reading Book	0.020	0.028	<b>0.856</b>	0.012	0.118
Telling Stories	0.056	0.086	<b>0.729</b>	0.040	0.109

Playing Peek a Boo	0.268	<b>0.619</b>	<b>0.719</b>	0.097	0.358
Tickling the Child	<b>0.882</b>	<b>0.979</b>	<b>0.926</b>	<b>0.661</b>	<b>0.857</b>
Outside Play	<b>0.528</b>	<b>0.843</b>	<b>0.937</b>	0.387	<b>0.812</b>

Table 4: Overview of father classes

Father Classes	Characteristics
Daily Playful Caregiver (DPC):	<ul style="list-style-type: none"> <li>■ Involve in most caregiving activities</li> <li>■ Play with the child sometimes but avoid literacy activities</li> </ul>
Primary Playful Caregiver (PPC):	<ul style="list-style-type: none"> <li>■ Perform all caregiving activities</li> <li>■ Play with the child but avoid literacy</li> </ul>
Occasional Caregiver (OC):	<ul style="list-style-type: none"> <li>■ Performs less-occurring caregiving activities</li> <li>■ Tickle the child and take the child outside for play.</li> <li>■ Avoid literacy activities</li> </ul>
Average Playful (AP): Girls Only	<ul style="list-style-type: none"> <li>■ No caregiving activities</li> <li>■ No literacy activities</li> <li>■ Perform all play activities</li> </ul>
Low Involving (LI):	<ul style="list-style-type: none"> <li>■ Likely to avoid all caregiving, play, and literacy activities</li> <li>■ Only little play</li> </ul>
Highly Engaged Caregiver (HEC): Boys Only	<ul style="list-style-type: none"> <li>■ Perform all caregiving activities</li> <li>■ Substantial play with the child</li> <li>■ Only class of fathers who likely perform literacy activities</li> </ul>

Table 5: Regression results for 9-month on preschool literacy

Variables	Literacy – Girls				Literacy – Boys			
	Model 1				Model 2			
	B	se	b	Se	B	Se	b	Se
DPC fathers	-0.082*	0.03	-0.06*	0.03	0.03	0.05	0.07	0.04
PPC fathers	-0.07	0.04	-0.03	0.03	-0.06*	0.03	-0.01	0.03
OC fathers	-0.02	0.03	-0.03	0.03				
HEC fathers					0.06	0.05	0.07	0.04
AP fathers	-0.08*	0.04	-0.07*	0.04	0.03	0.03	0.03	0.04
<b>Child</b>								
Previous Score	0.04**	0.01	0.022*	0.01	0.04***	0.01	0.02**	0.01
Assessment age	0.02***	0.00	0.03***	0.00	0.02***	0.00	0.03***	0.00
Special ed. (YES)			0.07	0.12			0.04	0.05
Multirace			0.04	0.05			-0.02	0.05
Asian			0.09**	0.03			0.08	0.04

Hispanic			-0.12	0.06			-0.11***	0.03
Black			0.03	0.04			0.10*	0.04
Other			-0.07	0.04			-0.11	0.11
<b>Family</b>								
Region – Midwest			-0.04	0.03			-0.05	0.03
Region – South			-0.03	0.03			-0.07*	0.03
Region – West			-0.09**	0.03			-0.06*	0.03
SES 2			0.11**	0.03			0.08	0.04
SES 3			0.21***	0.04			0.17***	0.04
SES 4			0.28***	0.05			0.26***	0.04
SES 5			0.39***	0.04			0.40***	0.04
Rel happiness (NO)			-0.01	0.07			-0.06	0.06
Mother inv. Index			0.02***	0.01			0.03**	0.01
Children under 18			-0.06***	0.01			-0.05***	0.01
Mother work status								
Less than 35 hrs			0.01	0.02			0.05	0.04
Looking for work			0.00	0.05			0.00	0.04
Not in the labor force			0.03	0.02			0.03	0.03
Father's age			0.01***	0.00			0.00	0.00
_cons	2.08***	0.24	1.36***	0.14	1.906***	0.18	1.43***	0.16
r2	0.08		0.33		0.08		0.34	
N	2350.00†		2350.00 †		2450.00 †		2450.00 †	
F	26.53		41.86		20.52		40.35	

Note. \*p < .05. \*\*p < .01. \*\*\*p < .001

Note. † Sample sizes were rounded to nearest 50 as required by NCES

Table 6: Regression results for 9-month on preschool mathematics

Variables	Girls Model 3				Boys Model 4			
	b	Se	B	Se	B	Se	B	Se
DPC fathers	-2.17***	0.59	-1.67**	0.52	-0.444	0.84	0.38	0.75
PPC fathers	-2.74***	0.62	-1.89**	0.6	-1.86*	0.83	-0.59	0.64
OC fathers	-0.88	0.87	-1.11	0.66				
HEC fathers					-0.55	1.49	-0.08	1.31
AP fathers	-1.309	0.86	-1.02	0.77	0.48	0.9	0.47	0.83
<b>Child</b>								
Previous Score	0.97**	0.33	0.62**	0.22	1.07***	0.25	0.71**	0.22
Assessment age	0.72***	0.1	0.85***	0.05	0.75***	0.1	0.84***	0.07
Special ed. (YES)			2.42	2.45			0.41	1.62
Multirace			-0.32	1.14			-1.65	0.99
Asian			2.78***	0.72			2.55*	1.03
Hispanic			-2.00	1.26			-1.65*	0.67
Black			0.54	1.12			0.59	1.03
Other			-1.91	1.27			-3.81	2.56
<b>Family</b>								
Region – Midwest			-1.61	0.89			-0.36	0.66



Region – South			-1.30	0.77			-0.93	0.67
Region – West			-1.57*	0.75			-0.45	0.7
SES 2			1.84	1.17			1.48	1.22
SES 3			4.08**	1.46			4.10***	1.02
SES 4			5.88***	1.37			6.78***	1.06
SES 5			8.71***	1.2			9.99***	1.39
Rel happiness (NO)			-0.67	3.35			-0.21	1.19
Mother inv. index			0.45*	0.18			0.39	0.21
Children under 18			-1.16***	0.23			-0.81***	0.17
Mother work status								
Less than 35 hrs			-0.19	0.6			0.70	1
Looking for work			-0.73	1.11			-0.63	1
Not in the labor force			0.02	0.56			0.08	0.63
Father's age			0.09*	0.05			0.04	0.03
_cons	-5.02	5.45	-19.83***	3.01	-8.40	5.06	-20.05***	4.22
r2	0.118		0.305		0.111		0.312	
N	2350 †		2350 †		2450 †		2450 †	
F	26.937		42.538		18.602		38.768	

Note. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$

† Sample sizes were rounded to nearest 50 as required by NCES

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**Notes**

Note 1. This study is based on author's previously published doctoral thesis.



# Investigating Reading Comprehension Questions and Student-Generated Questions in Language Lessons in terms of Level\*

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## Abstract

Reading comprehension questions scaffold deeper comprehension, help students to analyze texts, improve students' thinking skills, and help them realize permanent and meaningful learning. By comparing reading comprehension questions used in Turkish lessons with student-generated comprehension questions in terms of level, this study aimed to determine question resources' capacity to affect students' questions. Using a multiple-case study research method, this study examined Turkish textbooks' reading comprehension questions, teachers' questions generated during lessons and teachers' questions produced for the text provided, and student-generated questions. Data were collected using the Demographic Information Form, Teacher In-Term Question Collection Form, Teacher Questions Collection Form, and Student Question Collection Form. In addition, textbooks were used as another data source. The data were analyzed using content analysis. The results revealed that the textbook questions were mainly of a low level require remembering and understanding information. Similar results were obtained for those teachers' questions. However, it was determined that the teachers' questions produced based on the texts were at a higher level than those produced during the lessons. Comparatively, it was also revealed that the rate of low-level questions produced by students was higher than those in textbooks and teacher questions. Furthermore, high-level critical questions were found to be limited in all resources. When students' questions and questions produced by other resources were compared, the closest relationship was found between the students' questions and questions produced by teachers during lessons.

**Keywords:** Student Questions, Teacher Questions, Textbook Questions, Question Levels

## 1. Introduction

One of the primary purposes of language education is to improve students' reading skills and enhance their understanding levels (Beerwinkle & McKeown, 2021; Blything et al., 2020). It is therefore essential, particularly as a necessity of today's global economic system, to provide students with the means to use their high-level thinking skills, such as reasoning, making inferences, questioning, synthesizing information obtained, and critical,

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\* This article is based on the master's thesis completed by first author under the supervision of second author.

creative, and reflective thinking (Ezberci Çevik, 2021; Stevens et al., 2020). Questions are one of the most effective and practical tools by which teachers can help students attain these goals. Questions have been used in classrooms for different purposes, such as attracting attention, raising curiosity, encouraging student participation, providing students with an active learning experience, identifying barriers to student learning, facilitating teacher–student interaction, and creating climates in which discussions can take place (Bowker, 2010; Cotton, 1988; Dillon, 1981). Many studies in the literature concerning reading education focus on using questions to deepen understanding, improve higher-order thinking skills, and enrich the reading experience among students from the preschool level to the university level (Blything et al., 2020; Brown et al., 2016; Martin & Kim, 2022; Massey et al., 2008; Spencer et al., 2019; Yüceer et al., 2022). Moreover, questioning and generating questions as a strategy (Harvey & Goudvis, 2007) is used in many teaching methods, and is employed as a particular approach to reading education, such as in dialogical reading within reading education (Deshmukh et al., 2019; Yüceer et al., 2022; Zibulsky et al., 2018), reciprocal teaching (Palinscar & Brown, 1984; Stevens et al., 2020), and guided reading (Blything et al., 2020; Martin & Kim, 2022).

Many studies show a significant relationship between posing questions, reading comprehension, and high-level thinking skills (Ateş et al., 2016; Dillon, 1981; Eyüp, 2012; Taboada & Guthrie, 2006). These studies have found that generating high-level questions or answering them before, during, or after reading is effective in deepening comprehension (Blything et al., 2020; Degener & Berne, 2016), thereby improving metacognitive observation skills (Griffith & Ruan, 2005; McKeown & Beck, 2009; Otero, 2009; Otero & Graesser, 2001; Palinscar & Brown, 1984), and increasing teacher–student interaction time (Magnusson, 2022). Furthermore, high-level questions were found to have a higher relationship with reading comprehension than low-level questions (Cano et al., 2014). Based on the effectiveness of questions in in-class activities, recent researchers have investigated questions in readings made with families in terms of different perspectives. These studies reported that questions used in readings made with families shape interaction and sharing within the reading processes (Gómez et al., 2021; Zibulsky et al., 2019).

Educational settings are a leading environment in which questions are used effectively. Questions used in reading activities undertaken in classrooms vary in terms of type (text-dependent vs. non-text-dependent) and also vary in terms of resources. It is convenient to assert here that there are three different resources that generate most questions, with students and teachers generating the leading resources. Furthermore, even though teaching activities change from one country to another, textbooks designed to systematically carry out educational activities are included in these resources since they include questions prepared for reading texts. Regardless of the source, every qualified question contributes to the development of understanding. Furthermore, good readers are expected to answer questions posed and generate questions themselves to improve their own understanding (Griffith & Ruan, 2005; Palinscar & Brown, 1984). Students reading texts in light of questions they pose themselves is effective in deepening their understanding (Cameron, et al., 2017; Cano et al., 2014; Otero & Graesser, 2001; Ness, 2016; Taboada & Guthrie, 2006), which furthermore supports the reading process in a metacognitive way (Ishiwa et al., 2013). Student-generated questions, whereby students are supported to develop appropriate examples, are more effective than those posed in the literature almost four decades ago (Singer, 1978; Nolte & Singer, 1985). However, other studies have determined that, in the classroom, students produce fewer questions than teachers do (Almeida, 2011; Arslan, 2006), that these questions are primarily low-level questions (Çakıcı et al., 2012; Keray & Güden, 2013; Yılmaz & Keray, 2013), and that students need educational support in developing quality questions (Cameron et al., 2017). However, it is known that in many schools, and even in the educational system of many countries, education generates high-quality questions read by students. In these circumstances, students are expected to produce questions independently when they encounter a problem in reading and/or comprehension, and when generating such questions in line with a particular purpose (Ishiwa et al., 2013). In the classroom, these student-generated questions are thought to be similar in terms of the respective student’s level; in other words, the question relates to the individual student’s level in each incidence.

Teacher-generated questions come first among the questions that students encounter in the classroom. Since ancient times, researchers have focused on teacher-generated questions (Stevens, 1912). It was determined that these questions constitute a considerable part of those used in the classroom (Almeida, 2011; Arslan, 2006; Udi et al., 2013). Posing students with well-prepared questions by teachers positively affects students’ reading

motivation, helping them to make sense of the text, and activates high-level thinking skills (Sezgin & Özilhan, 2019). Furthermore, increasing the level of teacher-generated questions enables students to be more efficient (Degener & Berne, 2016). Moreover, as the level of teacher-generated questions increases, the duration of teacher–student interaction increases in parallel (Magnusson, 2022). However, the literature reports different results concerning the levels of questions used by teachers in reading education. Massey et al. (2008) determined that only 32.5% of the questions used in the preschool period cognitively challenge students. Magnusson (2022) reports that only a small portion of the questions used by teachers in Norway were questions about remembering and obtaining surface meaning; a significant portion of these were inference questions. The same study also stated that critical questions had a very low rate of occurrence (Magnusson, 2022). Comparatively, some researchers found that teacher-generated questions for understanding the text could not reach the desired level. More importantly, teachers generally followed textbook questions instead of generating questions themselves (Akyol et al., 2013; Ateş, 2011). However, teachers do not only help students understand a certain text through the questions they pose but also serve as a model for their students in both asking questions and in regard to how they work with the texts themselves (Magnusson, 2022; Singer, 1978). Teachers’ modeling becomes much more valuable, especially when students are not provided question-based education.

Textbooks are another example of a resource that can affect students in classrooms in terms of students’ generating and/or answering questions. As previously mentioned, students are expected to answer and generate high-level questions. Lee (2015) emphasizes that to achieve this, the quality of questions in materials used in reading education, especially in textbooks, should be of a level that will help students develop high-level and high-level thinking skills. However, studies in the literature mostly report that questions in the textbooks are not qualified to improve students’ comprehension and higher-order thinking skills (Benzer, 2019; Barutçu & Açıık, 2018). Beerwinkle and McKeown (2021) recently reviewed English textbooks used in Kenya, and found that the rate of recognition/remembering questions comprised approximately 58% and 49% among those questions posed by fifth- and fourth-grade textbooks, respectively. They reported that the rate of questions that corresponded to levels 2a and 2b, per the levels used in their study, was around 46% for both grade levels. Furthermore, questions requiring criticism and evaluation were not included in the taxonomy of the researchers in the aforementioned study and were not reported in the examples outside of that taxonomy (Beerwinkle & McKeown, 2021). Lee (2015) reported that the rates of the lower-level questions in the two textbooks in their study were almost around 57% and 46% for each textbook. Benzer (2019) examined 5th–8th-grade textbooks in Turkey according to PISA evaluation levels and determined that over 80% of the questions in the four textbooks belonged to levels one and two within the six-stage structure. It is clear that unqualified questions in textbooks, which are the primary source within the educational process, will negatively affect teachers and students. It can even be proposed that the skills of those students who have experienced long-term education through the use of pertinent textbooks regarding such questions remain limited.

Based on the evaluations made so far, it can be said that the students who are expected to produce their own questions have difficulty producing questions themselves and that the questions they produce are generally of lower-cognitive levels, according to their findings and remembering current information. The same situation seems to hold true for teacher questions and those questions presented in textbooks. These results are obtained from studies that address each source individually. However, it is clear that the literature is lacking in terms of those studies wherein questions produced by all resources for reading comprehension are examined together. Such studies are needed in order to better determine those question resources that can potentially affect students in a more beneficial way than is currently the case; this is especially significant in regard to providing students with education that encourages them to pose questions within the scope of their understanding, something that is not currently widely provided. Due to this lack in the literature, the present study aimed to examine and compare all reading comprehension questions and student-generated questions used in the classroom in terms of students’ understanding concerning the generating and answering of such questions. For this purpose, two international exam frameworks, the Programme for International Student Assessment [PISA] (OECD, 2019) and the Progress in International Reading Literacy Study [PIRLS] (IEA, 2021), were investigated in terms of question levels. These frameworks were also used to create a three-level classification: (1) questions whose answers are evidently stated in the text, (2) questions that require inference and interpretation, and (3) criticism and evaluation questions. The second level is separated into two sub-levels: (2a) simple inference and interpretation, and (2b) higher-level

inference and interpretation (Appendix 1). Using this classification, the present study investigated the following: reading-comprehension questions of seventh-grade Turkish textbooks; teacher-generated questions posed in those classrooms in which the aforementioned textbooks were used; and, student-generated questions that concerned the same texts provided in the aforementioned classrooms. As teachers mostly adhere to textbook questions, teachers in the present study were asked to prepare their own questions for their students. As a result of applying this procedure, an answer was sought to the following research questions:

- 1) What is the distribution of comprehension questions among seventh-grade textbooks according to level?
- 2) What is the distribution of the teacher-generated questions during lessons according to level?
- 3) What is the distribution of the comprehension questions that the teachers produce for a text given according to level?
- 4) What is the distribution of the student-generated questions during lessons according to level?
- 5) What is the level of similarity among student questions, textbook questions, and teacher questions?

## 2. Method

### 2.1 Study Model

This study that aimed to investigate the reading comprehension questions used in classrooms and student-generated questions in terms of level was designed as a multiple-case study using a qualitative research design (Creswell, 2012). The textbook investigated in this study, teacher questions, and student questions can be considered as separate cases; specific common results will be obtained from the analysis of the aforementioned cases, which indicates that the multiple-case study design is appropriate for the present study (Fraenkel et al., 2012).

### 2.2 Participant (Subject) Characteristics

The study group comprised 17 teachers, from 10 different middle schools, and 197 seventh-grade students; all students were pupils of the aforementioned teachers. The teachers and students who participated in the lesson were selected using the maximum variation sampling method—a purposeful sampling technique used in qualitative studies. Accordingly, particular attention was paid regarding the selection of students from different reading levels and socioeconomic statuses, and in selecting teachers with different professional experiences. Some information regarding the teachers and students is given below.

Of the teachers who participated in the study, nine were female, and eight were male. The teachers' professional experience ranged between one and 15 years and displayed a balanced distribution. All of the teachers graduated from a faculty of education, of which three worked in schools with low socioeconomic conditions, seven in schools with mid-socioeconomic conditions, and seven in high schools with high socioeconomic conditions. Four teachers indicated that they taught students with low reading skills, eight indicated that they taught students with mid-reading levels, and five indicated that they taught students with high reading skills.

Of the students who participated in the study, 100 were female, and 97 were male. Accordingly, a balance was achieved between participants in terms of gender. Students' reading performance levels were not determined using a measurement tool, but rather by using forms distributed by the researcher to the participating students. Based on the information obtained from the teachers, it was concluded that 24 of the students displayed low-level reading skills, 135 mid-level reading skills, and 38 high-level reading skills.

### 2.3 Textbooks Examined

Overall, 338 reading comprehension questions from 64 reading texts used by participating schools during the data-collection period were investigated in this study. All three reading texts were taken from the three textbooks, two of which were published by the Ministry of National Education and one of which was published by a private publisher. In the study, the questions prepared for the listening texts were excluded from the analysis because they did not aim to improve reading skills.

## 2.4 Data Collection Tools

This study used a single data collection tool to collect data from participating students. This tool included a text used in an international exam; students were asked to write reading comprehension questions on this text. Three different data collection tools were used to collect data from the teachers. The first tool included questions on teachers' demographics, classroom sizes, the school's general socioeconomic status, and students' general reading skills. The second tool was an in-term question record form, which was used by the teachers to record all the questions the teachers had produced themselves and that they had posed to students over the course of six months. Some participating teachers indicated that they only posed those questions included in the textbooks. Therefore, the text given to all participating students was also given to all participating teachers; the teachers were then asked to generate questions they might use while teaching the aforementioned text. Some study data were obtained by investigating those questions posed in the previously mentioned textbooks. Table 1 presents the data collection tools distributed to the participants and the intended purpose of each tool.

Table 1: Data collection tools and their intended purposes

Data Collection Tool	Intended Purpose
Teacher Data Collection Form	To obtain information regarding teachers' demographics such as age, gender, socioeconomic status, the school in which they work, and the general characteristics of their students.
Teacher In-Term Question Record Form	To collect the reading comprehension questions the teachers asked their students between December 2020 and May 2021.
Teacher Text-Based Question Collection Form	To collect information regarding teachers' competency in generating questions they formed based on the text provided by the researchers.
Student Question Collection Form	To collect information regarding the students' competency in generating questions they formed based on the text given to them by the researchers.

## 2.1 Data Analysis

Content analysis was used to analyze the study data. The question levels were determined by the researcher based on two international exam frameworks (PISA, PIRLS) were accepted as themes. Qualities that questions should possess at given level were thereby identified for each theme. Subsequently, all questions were examined and codes were created according to the definitions of the related levels; the appropriate codes were produced for the previously determined themes during the data analysis. Themes, codes, and exemplary questions, which show the classification used in the study, are presented in Appendix 1.

To ensure validity and reliability, the coding process was carried out by the researcher and by another field expert. The results of the researcher's coding process and the results of the field expert's coding were subsequently compared. Different coding results were found for very few questions. The researcher and the field expert then exchanged ideas regarding the aforementioned questions and their justifications for each disparity were investigated accordingly. Consequently, the coders reached an agreement on these questions through collective evaluation.

## 3. Results

### 3.1 Findings on Questions in Turkish Textbooks

Within the scope of the study, a total of 338 questions from three different textbooks were investigated in terms of the levels determined in the previous section. The results are presented in Table 2.



Table 2: Distribution of textbook questions according to level

Level	Expected Cognitive Process	<i>f</i>	%
1 (Low Level)	Recognizing and remembering information	214	55.15
2a (Mid-Level)	Understanding based on simple inference	30	7.73
2b (Mid-Level)	Understanding based on high-level inference and interpretation	129	33.24
3 (High Level)	Evaluation, criticism, and deeper thinking	15	3.86
Total		388	100

As seen in Table 2, of 338 comprehension questions investigated, 214 (55.15%) were at the low level: recognizing and remembering information. At this level, students are expected to recall and find information that is evidently stated in the text and select the relevant information accordingly. A total of 30 (7.73%) questions were at the level of understanding based on simple inference; at this level, students are expected to make reasonable predictions comparing their prior knowledge with the information provided in a limited part of the text, put forward cause-and-effect relationships that require inference, and identify the traits of the characters in the text through one of the the supporting ideas or the inference of emotions. The mid-level second stage includes questions requiring high-level inferences and interpretation. With these questions, students are expected to have a solid understanding of the text in general, think more complicatedly and more profoundly than at other levels, build hypotheses, interpret the text by relating it to their daily lives, and generate meanings from the text through inferences. Of the questions investigated, 129 (33.24%) were found to be at the higher level; this high number is thought to stem from the fact that certain question types were constantly repeated for the questions of each text. Evaluation, criticism, and deeper thinking questions, which are of the highest level, require students to move beyond the comprehension of the text itself. Questions at this level make it necessary for students to comprehend the text completely, to analyze and evaluate the presentation style and order of information given in the text, the wording, purpose and perspective of the author, to make a criticism, and to make judgments. Of the questions investigated, only 15 (3.86%) were at this level. Therefore, the least number of questions was encountered at this level.

### 3.2 Findings on Questions Generated by Teachers During Lessons

The distribution according to the level of 73 reading comprehension questions that the teachers used in classrooms are presented in Table 3.

Table 3: Distribution of questions generated by teachers during lessons according to level

Level	Expected Cognitive Process	<i>f</i>	%
1 (Low Level)	Recognizing and remembering information	41	56.16
2a (Mid-Level)	Understanding based on simple inference	8	10.95
2b (Mid-Level)	Understanding based on high-level inference and interpretation	23	31.50
3 (High Level)	Evaluation, criticism, and deeper thinking	1	1.36
Total		73	100

As seen in Table 3, of the 73 questions that the teachers generated and used during the lessons, 41(56.16%) were at the low level. Notably, more than half of the questions are at this level; this is because teachers tend to employ questions of a low cognitive level. A total of 8 (10.95%) questions were at the understanding based on simple inferences level. Comparatively, 23 (31.50%) were of an understanding based on the high-level inference and interpretation level. The cause of this finding might be attributable to the fact that teachers repeated certain question types, as was the case for the textbook questions; alternatively, the finding might stem from the fact that teachers were affected by the textbook as part of the teaching processes. Only one (1.36%) of the teacher-generated questions was of the highest level. Based on this table, it can be concluded that either the comprehension education delivered to the students was limited or that the teachers did not effectively use questions in the comprehension education.

### 3.3 Findings on Questions Generated by Teachers for the Text Provided

The distribution of the 85 questions, which were also given to the students, generated for the texts previously used in international exams according to level is presented in Table 4.

Table 4: Distribution of questions generated by teachers for the text provided according to level

Level	Expected Cognitive Process	<i>f</i>	%
1 (Low Level)	Recognizing and remembering information	34	40.00
2a (Mid-Level)	Understanding based on simple inference	17	20.00
2b (Mid-Level)	Understanding based on high-level inference and interpretation	33	38.83
3 (High Level)	Evaluation, criticism, and deeper thinking	1	1.17
Total		85	100

As can be seen from Table 4, of the 85 reading comprehension questions that the teachers generated based on the text, 34 (40%) were at the low level: recognizing and remembering. Concerning the mid-level, 17 of the questions concerned understanding based on simple inference, while 33 (38.83%) concerned understanding based on high-level inference and interpretation. Among those text-based questions generated by teachers, only one question (1.17%) was of the highest level: evaluation, criticism, and deeper thinking. This finding underlines an important problem for teachers: it is possible that teachers unintentionally ignore the questions of the highest level during the natural flow of a lesson. However, it is thought-provoking in that they did not include high-level questions concerning a text that was given to them. In this case, it can be suggested that students and teachers require education in generating and using questions in order to deepen their understanding. In fact, it is possible to read this as teachers being unable to generate questions at the aforementioned level; moreover, teachers were expected to create questions of the highest level when trying to focus on creating questions rather than teaching.

### 3.4 Findings on Questions Generated by Students for the Text Provided

The distribution, according to level, of the 985 questions generated by students for a text previously used in an international exam is presented in Table 5.

Table 5: Distribution of questions generated by students for the text provided according to level

Level	Expected Cognitive Process	<i>f</i>	%
1 (Low Level)	Recognizing and remembering information	654	66.39
2a (Mid-Level)	Understanding based on simple inference	121	12.28
2b (Mid-Level)	Understanding based on high-level inference and interpretation	204	20.71
3 (High Level)	Evaluation, criticism, and deeper thinking	6	0.60
Total		985	100

As seen in Table 5, of the 985 reading comprehension questions generated by the students based on the text, 654 (66.39%) were at the low level: recognizing an understanding of information evidently stated in the text. In addition, it was seen that most of the student-generated questions were worded in such a way that they demanded short answers such as “What”, “Where”, “When”, or “Who” Furthermore, the greatest ratio of questions at the low level was obtained among student-generated questions. The number of student-generated questions that required simple inference was 121 (12.28%). Another common level, with 204 questions (20.71%), was the level of understanding based on high-level inference and interpretation. Only six questions (0.60%) were of the highest level: evaluation, criticism, and deeper thinking. This ratio was the lowest among all the resources.

### 3.5 Findings on Comparison of Questions

Ratios were used in this comparison since the number of questions obtained in the study was not sufficient to make a direct comparison. The distribution ratio of the questions according to the levels of all resources of questions is depicted in Figure 1.

As seen in Figure 1, the greatest ratio regarding all question resources was found at the low level, while the lowest ratio was at the highest level. Furthermore, it can be said that this finding reflects the greatest similarity and coherence in terms of levels among the student-generated questions, the questions in the textbooks, and those questions generated by teachers during the lessons. Here, the two question resources that students constantly dealt with during the educational process were those of teachers and textbooks. For this reason, the aforementioned question resources can be considered to be related to the students' capacity to generate questions.

No variation was observed for those questions that teachers generated for a text given accepting questions of the highest level. The questions that the teachers prepared were different from those they created during the lessons and those provided by the textbooks and the students. Comparatively, a variation was observed at the highest level for those questions prepared by teachers for a given text; these questions differed from both the questions the teachers produced during the lessons and from those questions from the textbook.

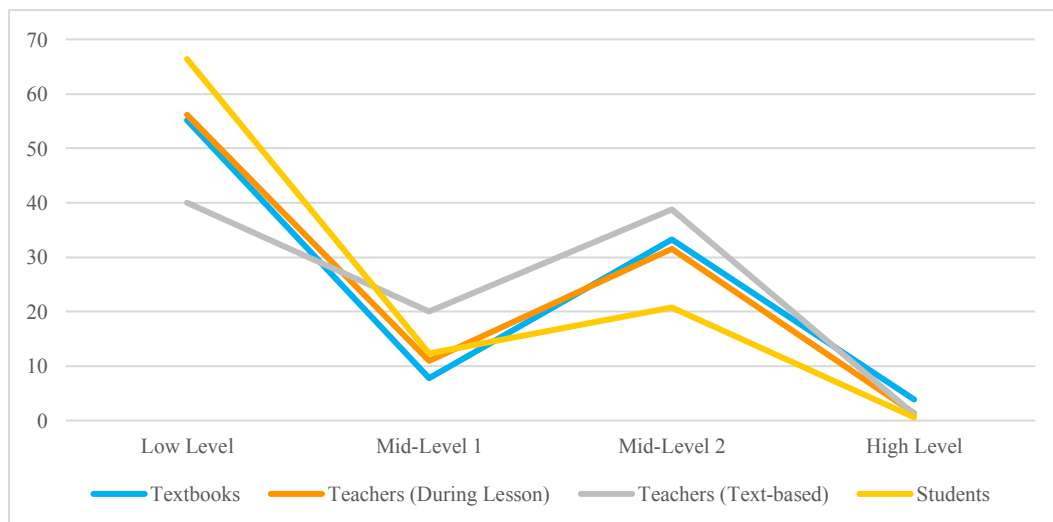


Figure 1: Comparison of the questions ratios in terms of levels

Source: İşir (2022)

When the question rates were addressed separately for each level and compared with the student questions, it was found that student-generated questions of a low level (66.39%) were most common, followed by the questions that teachers produced during lessons (56.16%), textbook questions (55.15%), and those questions that teachers prepared for a text (40%). Concerning those questions that require simple inference, the teachers' in-class questions (10.95%) and the student questions (12.28%) had similar rates of occurrence, which, however, differed from the questions in textbooks (7.73%), and those questions the teachers prepared for a text (20%). Concerning those questions that require higher-level inference and interpretation, the rate of questions that teachers produced in classrooms (31.50%) was, again, the closest to that of student-generated questions (20.71%). The rate of questions in textbooks (33.24%) was also found to be quite close to that of teachers' in-class questions. At this level, the rate farthest from that of student-generated questions was found to be that of text-based teacher-prepared questions (38.83%). Concerning questions of the highest level, student questions (0.60%), teachers' in-class questions (1.36%), and questions based on a text (1.17%) were found to have very similar rates; textbook questions were found to be similar (3.86%). In light of these findings, it can be said that the questions that were closest to the student-generated questions in terms of level were those questions that the teachers generated in classrooms. Comparatively, those questions most disparate from these findings were those questions that the teachers produced based on a text.

A calculation was made to determine whether or not the difference between these rates is significant and, thereby, to determine the resource with the greatest chance of affecting students' questions. Through the calculation of  $Z$  and  $p$  values, the rates of the student questions and the rates of the questions from different resources were compared; the results obtained from these calculations are as follows:

At the low level, the difference between the rates of the student-generated questions and the questions that the teachers used in the classroom were not found to be statistically significant ( $Z = 1.77; p > .05$ ). The difference between the student-generated questions and the textbook questions ( $Z = 3.88; p < .05$ ) and the difference between the student-generated questions and the questions that the teachers prepared for a text given ( $Z = 4.87; p < .05$ ) was found to be statistically significant. This result corroborates the notion that there is a close relationship between the questions that teachers produce and use in classrooms and student-generated questions; accordingly, it can be inferred that the most impactful resource affecting students' skills to ask questions stems from those questions teachers produce and use in the classroom.

The situation concerning the level requiring simple inference is similar to that of the previous levels. The difference between the rates of the student-generated questions and the questions that the teachers used in the classroom were not found to be statistically significant ( $Z = .33; p > .05$ ). However, the difference between the rates of the student-generated questions ( $Z = 2.42; p < .05$ ) and the questions that the teachers prepared for a text ( $Z = -2.03; p < .05$ ) was found to be statistically significant. Therefore, the most powerful resource affecting students' skills to ask questions was, again, found to be those questions that the teachers produced and used in the classroom.

For those questions that require higher-level inference and interpretation, the relationship between the student-generated questions and those questions from all other resources was found to be statistically significant (textbooks [ $Z = -4.88; p < .05$ ], teachers' in-class questions [ $Z = -2.17; p < .05$ ], and teachers' text-based questions [ $Z = -3.86; p < .05$ ]). In light of this result, it can be said that both the teachers and textbooks were insufficient in affecting students at this level and that they could not contribute to students' development in regard to making higher-level inferences, interpreting the text, and producing such questions. Potentially, this result stems from the fact that those questions that require higher-level inference and interpretation are not included in lessons as regularly. Additionally, insufficient question variation and the use of a certain type of question might be another reason for students using a certain type of answer for such questions, rather than constantly thinking, using higher-level skills, and improving the aforementioned skills.

Concerning the highest level, the difference between the textbook questions and student-generated questions was found to be statistically significant ( $Z = -4.43; p < .05$ ). Therefore, inferring a relationship between textbook questions and the student-generated questions would not be convenient. Comparatively, the relationship between those questions that teachers produced in classrooms ( $Z = .77; p > .05$ ), those prepared based on a text ( $Z = -.62; p > .05$ ), and student-generated questions, was not found to be statistically significant. In light of this result, teachers can be considered the most powerful source affecting students' question-answering skills.

#### 4. Discussion

A review of the literature revealed that the cognitive level of questions used in classrooms is separately focused and that the separation of that focus depends on the resource of the individual question. No study could be found in the literature that investigates textbook questions and questions generated by teachers and students, and thereby compares these in terms of level. Therefore, while evaluating the findings, whether these findings support those of similar studies and the relationship between the sources were examined from a holistic perspective.

This study determined that reading comprehension questions are mainly at the low level in regard to finding and remembering information evidently stated in the analyzed Turkish textbooks. Similar results are determined in different and related studies in the literature; however, in these examples, different taxonomies and classifications were used for determining question levels. Eroğlu (2019), who use the revised Bloom Taxonomy to analyze reading comprehension questions and activities in books used in 2015 and 2018, determined that 93.70% of

questions and activities are prepared for low-level cognitive skills. Similarly, Akıncı (2020) and Durukan and Demir (2017) indicate that activities and questions are mainly at the low level among those studies that investigated activities in Turkish textbooks. Sezgin and Özilhan (2019) analyzed questions posed beneath texts in Turkish textbooks that referred to the Barrett Taxonomy and determined that a considerable percentage of these questions (66.8%) were of the basic comprehension level. Altun (2021) investigated the theme of ‘assessment questions’ in Turkish textbooks according to the PISA Reading Skills Assessment Frame; they determined that, essentially, the questions assessed represent low-level skills. Similar results were also obtained in other studies that applied or adhered to PISA levels, which thereby highlighted that questions on metacognitive skills are limited (Benzer, 2019; Diker Coşkun, 2013). All these research results are corroborated by those of the present study. Crucially, corroborating results are not limited to research in Turkey. Lee (2015) and Beerwinkle and McKeown (2021) found similar results at the low and criticizing evaluation question levels.

Another significant result of the present study is that the questions teachers ask in the classroom are part of the basic level that addresses low cognitive skills, just as the textbooks address low cognitive skills in terms of the same question levels. However, when teachers are asked to prepare text-based questions, it is seen that they are able to produce a greater number of high-level questions. A similar result was obtained in the study by Ayvacı and Şahin (2009), which states that teachers usually ask questions at a low cognitive level in lessons but ask higher-level questions in written exams. In addition, Güftâ and Zorbaz (2008) investigated teacher’s written exam questions and Doğan Kahtalı (2021) investigated reading comprehension questions on the lesson plans of teacher candidates; these studies determined that those questions they assessed were, mainly, of a low level. Further studies determined that text-based questions teachers produce are mainly of a low or mid-level. Teachers have difficulty asking high-level questions (Akyol et al., 2013; Arap, 2015; Baysen, 2006; Samur & Soydan, 2013; Şahin, 2015). In research studies carried out in various other countries, it can be seen that results differ for low and mid-level questions, but not preparing high-level questions; the results of Magnusson’s (2022) study, carried out in Norway, present an example. Magnusson’s study reported that teachers in Norway attain the highest rates on inference and interpretation questions but also maintain low rates on criticizing evaluation questions (Magnusson, 2022).

Overall, it can be concluded that rates pertaining to high-level criticizing and evaluation questions are very low, regardless of the place in which a study is conducted. The situation facing teachers regarding higher-level questions can be explained by teachers’ habits, according to the results put forward by Reflianto et al. (2022). However, the results of experimental studies, those that include training on asking questions, provided to teachers and even families (Hattie, 2009; Zibulsky et al., 2019), show that training can raise awareness, thereby facilitating the solving of questions and potentially improving question-answering skills.

Another result of the present study was that most of the student-generated questions (66.39%) were of the low level. However, few questions were generated at the higher level (0.60%). Similar results were also reported in different studies (Aydemir & Çiftçi, 2008; Çakıcı et al., 2012; Keray & Güden, 2013; Koray et al., 2005). These studies underlined that student-generated questions could be affected by teacher questions; these findings also corroborate the results of the present study. In conclusion, results obtained from other studies in the literature are similar to those revealed in the present study.

The most noteworthy contribution of the present study to the literature is that it provided evidence that students are mostly affected by their teachers in a classroom in which no specific education is provided in regard to asking questions. According to the results obtained herein, no significant relationship was found between the level distribution rates of student questions as compared to those generated and used by teachers in the classroom. This finding, which has been presented in context in the literature, is of critical importance: it empirically proves the view that teachers’ questions serve as a model for students in regard to asking questions and working with texts (Magnusson, 2022; Singer, 1978).

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## Appendix A

## Level Classification of Questions: Theme, Codes, and Question Examples

Theme	Code	Example Question
Remembering Information (Low Level)	Student answers questions such as “What”, “How”, “Why”, “When”, “Where”, and “Who”, which question the information that is evidently stated regarding the event, place, time, and characters in the text.	Why does the character in the story cry? Why did Tom’s father ask him to do to make sure Jeremy behaved well?
	Student determines the order of events given in the text and orders them according to a purpose.	How do the respective events of the story take place? Explain.
	Student finds a word or phrase whose definition is provided in the text.	What is the traditional improvised theatre?
	Student selects relevant information to accomplish a task (completing a table or answering a question).	What are the physical characteristics of the main character of the text?
	Student identifies the main idea/feeling that is evidently stated in the text.	What is the main feeling of the poem?
	Student identifies the topic that is evidently stated in the text.	What is the main topic of the text? What is narrated in the text?
	Student determines the hero’s personal traits, purpose or intentions, all of which are evidently stated in the text.	What did Tom’s father aim to achieve by making the cake well?
Understanding Based on Simple Inferences (Mid-Level 1)	Student finds the supporting idea/feeling through inference based on a specific part of the text.	What does the author want to tell us with this text?
	Student determines the instant feelings and thoughts of the characters through inference based on their reactions and behaviors.	What could Kaoru have felt after discovering the comet?
	Student explains the primary cause-and-effect relationships through inference based on a particular part of the text.	Why did Mustafa’s mother come home sad?
	Student explains the meaning of words and phrases gained from the text using the context.	What do you understand from Tom’s sentence “I lost my best enemy”?
	Student makes simple inferences by ordering, comparing, and classifying the information given in a limited part of the text.	What are the characteristics of the “ <i>Düşman Pastası</i> ”(Enemy Pie)?
	Student compares the information given in a limited part of the text with prior knowledge or makes inferences based on that information.	What do you think the village where the character lives look like?
	Student explains the similarities and differences between the characters in the text.	What are the common characteristics of Jeremy and Tom? What are the differences between the behaviors of bees and humans?
Student makes reasonable predictions based on a limited part of the text.	If the taste of the <i>Düşman Pastası</i> was bad, how would the events of the text have taken place?	
Student makes inferences about individuals, or their personality traits, based on one or more sentences in the text.	What clues are given by Tom’s father about his thoughts on friendship when making a delicious cake?	
Student suggests alternatives to the behaviors of the characters that are dominant in the text.	If you were Tom’s father, what would you do to end the hostility?	

	Student draws conclusions from the text, finds the main idea, and makes generalizations by combining and relating in-text and out-of-text information.	What do you think is the main point of the text?
Understanding Based on Higher-level Inference and Interpretation (Mid-Level 2)	Student determines the similarities and differences between the thoughts in the text and their own thoughts and explains them with justifications.	If you put a title to this text, what would it be?
	Student gives examples, makes inferences, or make interpretations about a topic or event that takes place in the text based on their own experiences and prior knowledge.	•What problems do you think may arise from cultural differences?
	Student produces original solution(s) to the problem(s) addressed by the text using a relationship drawn from daily life/the real world.	If you were <i>Sığirtmaç</i> (Herdsman) <i>Mustafa</i> , what would you talk about with Atatürk?
	Student makes inferences about the personal traits purposes and intentions of the characters based on the text.	According to his thoughts about Jeremy, what kind of personality does our hero Tom possess?
	Student makes inferences or interpretations based on the information presented in the text.	What would you like to see when you look through <i>Çiçek Dürbünü</i> (kaleidoscope)? Why?
Evaluation, Criticism, and Deeper Thinking (High Level)	Student analyzes, evaluates, and criticizes the purpose, intentions, thoughts, and perspectives of the author.	In your opinion, which feelings did the poet write about in this poem? How did you find the author's perspective on reading? Explain.
	Student compares, criticizes, and evaluates the text being read and the other texts in terms of characters, topics, themes, and main ideas.	Compare the poem <i>Türkiye'm, Anayurdum, Sebeğim, Çarem</i> (My Turkey, My Homeland, My Reason, My Remedy) with the poem you previously read, <i>Vatan Destanı</i> (Homeland Epic), in terms of the messages they give.
	Student evaluates the presentation style and order of the information in the text (text structure, organization) and suggests alternatives with a critical perspective.	Which part of the poem do you like most? Why?
	Student evaluates and criticizes the use of language in the text and the contribution of the words and phrases to the narration.	How did you find the wording of the author?
	Student evaluates and criticizes the message of the text by relating it daily life and experiences.	In your opinion, is it possible to create a World as depicted by the text? How?
	Student makes a critical evaluation of the message of the text considering multiple perspectives and criteria.	Does it make sense to try so hard to make a cake for your enemies?



# The Relationship Between Pre-Service Teachers' Online Self-Regulation Skills and Cognitive Emotion Regulation Skills

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## Abstract

The purpose of this research is to determine the relationship between online self-regulatory learning skills and cognitive skills of regulating emotions. It has been examined that if there is a difference in the gender variable between online self-regulatory learning skills and cognitive emotion regulation skills of pre-service teachers and a meaningful relationship between the online self-regulatory learning skills and cognitive emotion regulation skills in terms of this purpose. It is a descriptive relational research. The sample this research is 434 pre-service teachers studying in the faculty of education. In this research, Online Self-Regulatory Learning Scale and Cognitive Emotion Regulating Scale has been used as a data collection tool. As a result of this research, it is seen that there is a significant difference in favor of female pre-service teacher on gender variable within the scope of online self-regulatory skills. When the sub-dimensions are searched it has seen that there is a significant difference in "environment structuring", "task strategies", "time management" sub-dimensions. When the cognitive emotion regulation skills of pre-service teachers have been examined according to the gender variable it is stated that there is a significant difference in favor of female pre-service teachers in "putting into perspective" sub-dimension. According to this result, it was determined that female pre-service teachers thought that "everything could have been worse, others had experienced worse events, their last experience was not as bad as the previous ones, and there were worse things in life" than male pre-service teachers.

**Keywords:** Pre-Service Teacher, Online Self-Regulation Skills, Cognitive Emotion Regulation

## 1. Introduction

### 1.1 Introduce the Problem

The expectations that 21st century in the fields of science and technology is far more developed than 20th century and effecting the societies positively on economy, health and security thanks to the globalization have been interrupted with the pandemic. Both the developing technology and globalization has affected economy and fundamental components of societies, especially individual's security, health and economical powers. With especially the global Covid-19 pandemic that has emerged in this era, worldwide it has caused dramatic changes and transformations in every field of societies.

Global pandemic period has caused the technology to influence deeply into education. Technology has been an important part of education system in the global pandemic period (Varışlı, 2021). However, 21st century skills in the period before the global pandemic is listed in the four categories as followed:

1. Main areas and 21st century themes (language, arts and crafts, math, science, global awareness, financial literacy, etc.),
2. Learning and discovery skills (creativity, critical thinking and problem-solving skills, etc.)
3. Information, media and technology skills,
4. Life and occupational skills (initiative and self-governance, etc.) (Slavin, 2013), but together with the changing situations, technology skills have moved forward and a transformation in education has started.

Because of the constant changing life, occupation and education condition in the 21st century, it is important to raise the students according to adjust these changes. For this reason, one of the important aims of the education process should be to prepare students as life-long learners against changing life conditions. In order to achieve this goal, students must have self-regulation skills, that is, knowledge, motivation to learn, and the will to provide the skills and desire to ensure independent and effective learning (Woolfolk, 2015).

### 1.2 Self Regulation

According to Bandura, one purpose of teaching is that students continue to learn independently throughout their lives, without the need for teachers. In order to continue life-long learning independently, individuals need to have self-regulation. Zimmerman defines self-regulation as a process in which individuals constantly organize and manage their environment by activating their thoughts, behaviors and emotions to achieve their goals (Ramdass, & Zimmerman, 2011, Zimmerman, 2000). Bandura (2007) summarizes self-regulation as setting goals and employing the necessary effort and resources to achieve these goals (Woolfolk, 2015). Pintrich (2000) defines self-regulation as an active and constructive process in which students set goals for their learning and then try to monitor, regulate and control their cognitive processes, motivations and behaviors. Theoretically, self-regulation is a proactive process in which individuals constantly organize and manage their thoughts, feelings, behaviors and environments in order to achieve academic goals (Boekaerts & Corno, 2005; Zimmerman, 2000). They self-regulate by monitoring their performance and constantly reflecting on their learning outcomes (Zimmerman, 2008).

In short, self-regulation refers to self-generated thoughts, feelings, and actions that are planned and cyclically adapted to achieve personal goals (Zimmerman, 2000). Self-regulation is a cyclical process (Schunk, 2011). Zimmerman talks about 3 cycle stages. *Forethought* includes setting goals, planning, self-efficacy, and motivation. It comes before the actual performance. *Taking action* includes self-control, and self-monitoring. It covers the processes at the moment of learning. It affects attention and behavior. *Reflection* is repetition of forethinking and planning, self-evaluation and adaptation skills (Zimmerman, 2000; Schunk, 2011). For example, students who self-regulate create goals for a learning activity, choose study methods that are likely to help achieve their goals, monitor their progress towards the goal, and change their study method when necessary (Ormrod, 2013). Zimmerman describes self-regulation as cyclical because feedback from previous performance is used to make adjustments during current efforts. Such adjustments are necessary as personal, behavioral and environmental factors are constantly changing during learning and performance (Zimmerman, 2000).

Winne and Hadwin, on the other hand, talk about a four-stage model. These stages are analyzing the task, setting goals and creating plans, using tactics and strategies to accomplish the task, and to organize learning. The self-regulated learning cycle is emphasized in both Zimmerman's and Winnie and Hadwin's models. Each step prepares the next step and the cycle continues until the student encounters new difficulties while learning (Woolfolk, 2015). Zimmerman (2000) expresses self-regulation as a concept related to the degree to which students actively participate in their own learning processes in terms of metacognition, motivation and behavior. Such students learn by their own efforts and use certain strategies to achieve certain goals (Açıkgöz, 2003).

### 1.3 Online Self Regulation

It is known that information and communication technologies have been used in schools both in academic and administrative fields for the last 20 years and a digital transformation has been experienced throughout the world. Distance education, which started with the letter education model in the 1700s, has turned into compulsory online education both in Turkey and around the world with the Covid-19 pandemic.

Online learning environments require a self-discipline-oriented learning process with the opportunity for students to exchange ideas with others and facilitate their self-regulated learning (Hwang, Wang & Lai, 2021). Because of the reasons that teacher control in online learning environments over the learning process and student behaviors is weaker than traditional classroom environments and besides the lack of a social environment that can motivate the student and support the learning process; the individual motivations of the students, the awareness towards the learning processes and the learning strategies being used has gained more importance (Tülübaş, 2022). It is stated that in the online learning environment, it is more important for students to take their own learning responsibilities, to organize their own learning, and to motivate themselves while doing all of these, compared to traditional classrooms. (Artino, 2008; Broadbent, 2017; Fontana et al. 2015, Hwang and Wang, 2021; Wong et al., 2019).

In order to achieve effective learning in an online environment and increase students' self-regulation skills, online lessons need to be redesigned. Based on the experiences of students and lecturers with the Covid-19 global epidemic period, the main factors that prevent students from being both effective and self-regulated learners are; Curriculum that are not suitable for online learning can be expressed as lack of opportunities for working order, less communication with students, therefore less feedback and interaction. For this reason, the training of pre-service teachers as teachers who know how to learn online self-regulation will enable them to train their students as individuals who can easily adapt to the online learning process and have developed self-regulation skills in similar situations in the future.

Effective self-regulation requires goals and motivation. Students have to regulate their behaviors and important conditions of their success, beliefs, tendencies and emotions (Schunk, 2011). For this reason, emotion regulation skills are as important as self-regulation skills in students' learning.

#### *1.4 Cognitive Emotion Regulation*

Emotion regulation is defined as all of the internal and external processes that enable individuals to consciously evaluate and control their temporary and intense emotions and their reactions to these emotions while reaching their goals. Emotion regulation includes processes related to monitoring, evaluating and changing our emotional experiences (Thompson, 1994); Thompson, 2006). Emotion regulation involves changing or stopping emotional responses, as well as creating and developing new emotional responses (Ochsner & Gross, 2005).

The capacity to manage emotion is based on the growth of self-regulatory capacities in the early years. It is also influenced by situational demands, influences from other people, and the individual's goals of emotion regulation in a particular setting (Thomson & Calkins, 1996). Emotion regulation skills are a universal innate process. People encounter different emotional stimuli throughout their lives, have to cope with these emotions, and the development of these skills takes place over time. Emotion regulation skills, which begin in infancy, show rapid development during childhood and adolescence.

It is seen that the process of emotion regulation helps the individual to make his life easier. Emotion regulation is not only goal-oriented, but it also plays an active role in determining goals (Tuncali, 2022). The regulation of emotions through cognitions is inextricably linked to human life. Cognitions or cognitive processes; for example, during or after threatening or stressful events, can help us manage or regulate our emotions or feelings and gain control over our emotions and/or not be overwhelmed by them (Garnefski, Kraaij, & Spinhoven, 2001).

Garnefski, Kraaij, and Spinhoven (2001) created the concept of cognitive regulating emotion by considering only the cognitive aspect of the emotion regulation process. It is defined as overcoming the emotions that cause problems and distress the individual through spiritual ways (cognitive strategies). Garnefski, Kraaij, and Spinhoven (2001) identified 9 cognitive emotion regulation strategies that people tend to use after negative life events. These are self-blame, blaming others, focusing on thought, catastrophizing, positive refocusing, refocusing

on the plan, reconsidering, putting into perspective, and accepting. For this reason, while some of the cognitive strategies cause positive results in certain situations, they can also cause negative situations in other situations. While some of the cognitive emotion regulation strategies are functional, some are not. Functional ones are reassessment, problem solving; dysfunctional are thought focusing and suppression. The use of dysfunctional strategies has been found to be more associated with psychopathologies such as depression, anxiety disorders and eating disorders (Ercan, 2015). From the perspective presented, emotions and our regulation of them are directly related to self-regulation and therefore should play a more important role in current research and theory regarding the nature of goal-directed, lifelong, self-regulated learning (Schutz & Daviz, 2000). Therefore, more research is needed related to these two areas.

In this study, it was aimed to determine the relationship between pre-service teachers' online self-regulatory learning skills and cognitive emotion regulation skills. For this purpose, following questions have been sought in this study conducted with prospective teachers.

1. Do online self-regulation skills and cognitive emotion regulation skills differ according to gender?
2. Is there a significant relationship between online self-regulation skills and cognitive emotion regulation skills?

## 2. Method

### 2.1 Research Model

This study is descriptive relational research. It is conducted with the aim of describing, establishing relationships and comparing. Relational (correlational) research is research in which the relationship between two or more variables is examined without intervening in any way (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2021). So, the relationship between pre-service teachers' online self-regulatory learning skills and cognitive emotion regulation skills has examined.

### 2.2 Study Group

The study group consists of 434 pre-service teachers studying at the education faculties of three universities in Turkey. The data of the study has been collected online. Due to the global epidemic, these pre-service teachers mostly attended online courses, it is thought that pre-service teachers studying at different universities and departments might have different self-regulation skills and cognitive emotion regulation skills, and a sample is selected in that direction. The frequency of the study group by gender is given in Table 1.

Table 1: Personal Informations of Pre-service Teachers

Gender	n	%
Female	309	71.2
Male	125	28.8
TOTAL	434	100

### 2.3 Data Collection Tools

Two scales have been used as data collection tools in the study.

*Online Self-Regulatory Learning Scale;* It was developed by Barnard et al. (2009) to examine students' self-regulation skills and was adapted into Turkish by Samsa and Yetik (2011). The scale is five-point Likert type. The scale consists of 24 items prepared to measure the self-regulation skills of undergraduate students in online environments and six subscales: Goal Setting, Environment Structuring, Task Strategies, Time Management, Searching for Help, Self-Assessment. The internal consistency coefficients of the subscales range from 0.64 to 0.77. The internal consistency coefficient of the whole scale is 0.89.

*Cognitive Emotion Regulation Scale;* It was developed by Garnefski, Kraaij, and Spinhoven (2001) in order to measure the emotion regulation skills of university students. It is adapted into Turkish by Onat and Otur (2010). It is a five-point Likert type that goes from "not at all suitable for me" to "completely suitable for me". The scale

consists of 36 items in total. The Cronbach's alpha value of the scale ranges from 0.67 to 0.81. Total score is not calculated in the scale. The scale includes nine sub-dimensions. These sub-dimensions are;

1. Self-blame: Self-blaming thoughts for what have been experienced
2. Acceptance: Thoughts of accepting what have been experienced
3. Focusing on thought (Rumination)/ Deep thinking: Constantly thinking about feelings and thoughts in relation to negative events
4. Positive refocusing: Thinking about topics that bring satisfaction instead of the real event
5. Refocus on planning: Thinking about what steps to take to deal with the event
6. Positive reappraisal: Attributing a positive meaning to the event in terms of personal development
7. Putting into perspective: Thoughts that play a role in alleviating the weight of the event compared to other events
8. Catastrophizing: Thoughts that clearly emphasize the horror of events
9. Blaming others: Thoughts that blame others for the experiences

Table 2: Online Self-Regulatory Learning Scale and Cognitive Emotion Regulation Scale and their sub-dimensions and item numbers

Online Self-Regulatory Learning Scale		Cognitive Emotion Regulation Scale	
Sub-dimensions	Item numbers	Sub-dimensions	Item numbers
1. Goal Setting	5	1. Self-blame	4
2. Environment Structuring	4	2. Acceptance	4
3. Task Strategies	4	3. Rumination	4
4. Time Management	3	4. Positive refocusing	4
5. Searching for Help	4	5. Refocus on planning	4
6. Self-Assessment	4	6. Positive reappraisal	4
		7. Putting into perspective	4
		8. Catastrophizing	4
		9. Blaming others	4
Total	24		36

#### 2.4. Analysis of Data

In this study, the relationship between pre-service teachers' online self-regulation skills and emotion regulation skills has been evaluated. Analysis techniques suitable for the purpose of the research have been used in the analysis of the data. Descriptive statistics (mean and standard deviation) have used to analyze the data collected for the study, T-test to determine the difference according to gender, and ANOVA has been applied for the comparisons between groups due to the normal distribution of the data, and the significance level is accepted as 0.05. The analysis of the data has not carried out on the mean values of the scale items, but on the total scores of the sub-dimensions of the scales and the total scores of the scales. In addition, the correlation coefficient between the variables has been calculated. Regarding the correlation coefficient, 0.01 and 0.05 significance levels are determined. The correlation coefficients are determined as 0-0.3 weak correlation, 0.3-0.7 moderate correlation, and low correlation between 0.7 and 1.0 (Büyüköztürk, 2019).

### 3. Findings

In this section, the data obtained as a result of the research conducted to evaluate the relationship between pre-service teachers' online self-regulation skills and cognitive emotion regulation skills and the findings obtained in line with these data are included.

#### 3.1. Analysis results of gender and department type variables of online self-regulation and cognitive emotion regulation skills

In order to determine whether the online self-regulatory and cognitive emotion regulation skills of pre-service teacher differ according to gender, the t-test is applied and the findings are shown in Table 3 and Table 4.



Table 3: t-Test Results for Independent Groups on Scores from Online Self-Regulatory Learning Scale by Gender

		n	M	S	sd	t	p
All of the Scale	Female	309	80.8932	15.54042	432	3.138	<b>.002</b>
	Male	125	75.5440	17.34633			

\* $p \leq .05$

When Table 3 is examined, it is seen that there is a significant difference at  $p \leq .05$  in favor of female teacher candidates in the whole scale ( $M=80.89$ ;  $t=3.138$ ) according to the gender variable.

Statistical information on the differences in the cognitive emotion regulation skills of teacher candidates according to the gender variable is given in Table 4.

Table 4: t-Test Results for Independent Groups on Scores from the Cognitive Emotion Regulation Scale by Gender

Sub-dimensions		n	M	S	sd	t	p
Self-blame	Female	309	12.7346	3.44542	432	2.221	.027
	Male	125	11.9440	3.13231			
Acceptance	Female	309	13.6537	3.36036	432	-.526	.599
	Male	125	13.8400	3.28093			
Rumination	Female	309	16.2071	3.18618	432	2.162	.031
	Male	125	15.4560	3.49540			
Positive refocusing	Female	309	12.8220	2.94054	432	-1.253	.211
	Male	125	13.2080	2.81498			
Refocusing on planning	Female	309	16.1036	2.93694	432	-.428	.660
	Male	125	16.2400	3.18109			
Positive reappraisal	Female	309	15.6537	3.46782	432	1.547	.123
	Male	125	15.0800	3.57771			
Putting into perspective	Female	309	14.2751	3.08516	432	2.767	<b>.006</b>
	Male	125	13.3520	3.29774			
Catastrophizing	Female	309	10.3107	4.09473	432	-1.378	.169
	Male	125	10.9120	4.17368			
Blaming others	Female	309	10.7961	3.47447	432	-1.269	.205
	Male	125	11.2640	3.48301			

\* $p \leq .05$

When Table 4 is examined, it is seen that there is a significant difference at  $p \leq .05$  in favor of female teacher candidates in the sub-dimension "Putting into Perspective" ( $M=14.27$ ;  $t=2.767$ ) according to the gender variable. It was observed that the mean scores of the sub-dimensions of self-blame, acceptance, rumination, refocusing on planning, positive refocusing, catastrophizing and blaming others did not differ significantly according to gender variable ( $p \leq .05$ ).

### 3.2. Is there a significant relationship between online self-regulatory learning and cognitive emotion regulation skills?

Correlation analysis is applied to the data of pre-service teachers ( $n=434$ ) participating in the research and the findings are presented in Table 5

Variables	1	2.	3.	4.	5.	6.	7.	8.	9.	10	11	12	13	14	15	16
1. VSLS -Total	1															
2. VSLS -GS	.768**	1														
3. VSLS -ES	.661**	.478**	1													
4. VSLS -TS	.746**	.473**	.344**	1												
5. VSLS -TM	.779**	.613**	.410**	.623**	1											
6. VSLS -SH	.666**	.325**	.326**	.341**	.333**	1										
7. VSLS -SA	.797**	.455**	.389**	.532**	.516**	.600**	1									
8. CERS -SB	.111*	.055	.067	.102*	.073	.025	.163**	1								
9. CERS -A	-.020	-.061	-.091	-.028	-.034	.025	.092	.419**	1							
10. CERS -R	.167**	.097*	.036	.063	.095*	.148**	.283**	.495**	.344**	1						
11. CERS -PREF	.260**	.222**	.124**	.161**	.183**	.236**	.214**	-.117*	.020	-.063	1					
12. CERS -RPL	.390**	.342**	.263**	.192**	.265**	.338**	.310**	-.058	.093	.169**	.369**	1				
13. CERS -PREA	.341**	.266**	.248**	.223**	.185**	.289**	.282**	-.101*	-.010	.076	.419**	.611**	1			
14. CERS - PP	.242**	.167**	.157**	.191**	.115*	.201**	.227**	.201**	.196**	.207**	.326**	.285**	.527**	1		
15. CERS -C	-.089	-.071	-.159**	-.008	-.036	-.078	-.043	.398**	.300**	.328**	-.104*	-.268**	-.371**	-.053	1	
16. CERS -BO	.039	-.014	-.051	.026	-.004	.096*	.111*	.186**	.193**	.294**	-.016	-.049	-.136**	.066	.507**	1

\*\*p<0.01; \* p<0.05 n = 434; VSLS: Online Self-Regulatory Learning Scale, CERS: Cognitive Emotion Regulation Scale

According to the results of the analysis, it has been found to have positive meaningful weak correlations between the total score of the Online Self-Regulatory Learning Scale (VSLS) and self-blame ( $r=.11$ ,  $p<0.05$ ), rumination ( $r=.167$ ,  $p<0.01$ ), positive refocusing ( $r=.260$ ,  $p<0.01$ ), and putting into perspective ( $r=.242$ ,  $p<0.01$ ) sub-dimensions of the Cognitive Emotion Regulation Scale (CERS). There is a moderate positive correlation between refocus on planning ( $r=.390$ ,  $p<0.01$ ) and positive refocusing ( $r=.341$ ,  $p<0.01$ ). When the relationships between refocus on planning sub-dimension of the cognitive emotion regulation scale and the online self-regulatory learning scale has been examined, it is found a moderate positive correlation was determined on the goal setting ( $r=.342$ ,  $p<0.01$ ), searching for help ( $r=.338$ ,  $p<0.01$ ) and self-assessment ( $r=.310$ ,  $p<0.01$ ).

#### 4. Discussion

This research was conducted to determine the relationship between pre-service teachers' online self-regulatory learning skills and cognitive emotion regulation skills. When the findings regarding whether online self-regulatory learning skills differ according to the gender variable, it is seen that there is a significant difference in favor of female pre-service teacher in the whole scale. When the sub-dimensions have been examined, significant differences have also found in the sub-dimensions of "environment structuring", "task strategies" and "time management". According to these results, it has been determined that female pre-service teachers are preferring strategies like being able to work in more comfortable environments, not causing distraction, choosing more productive working environments, reading the teaching material aloud, taking notes, etc. and using more efficient strategies like using time more effectively, and working in a more planned manner than male pre-service teachers. According to these results, it can be argued that female pre-service teachers can make more self-regulation than male teacher candidates, and they tend to be more organized and planned. In the literature, there are studies of different results on self-regulated learning (Zimmerman and Martinez-Pons, 1990; Israel, 2007; Temizsiz and Demiralp, 2012. Güler, 2015). In addition, it is possible to find research related to online self-regulatory learning and supporting the current research. Tülübaş (2022) obtained similar results in his research. In his study, it was found that female pre-service teachers' self-regulated online learning skills were higher than male teacher candidates. Özdemir and Önal (2021), in their study with 353 pre-service teachers, determined that female pre-service teachers' self-regulation skills in online learning are better than male pre-service teachers. Liu et al. (2021), in their study with 400 high school students, found that female students outperformed males in online self-regulated learning. In the study conducted by Artsın et al. (2020), it was found that the self-regulated learning levels of female students in distance education lessons were higher than male students. In the literature, there are also studies with results contrary to the results of the current research. In the study of Kulusaklı (2022), it was determined that there are no significant differences between female and male teacher candidates. In the study conducted by Ercoşkun and Gündoğdu (2020), it is determined that there is a significant difference in favor of

male teacher candidates in terms of self-regulation skills. Zhao et al. (2014) revealed that male students' self-regulated learning skills were higher than female students. In his research, Tümen Akyıldız (2020) determined that male students' self-regulated learning levels are higher than female students in online learning environments. It is important to teach self-regulation strategies so that female and male teacher candidates can benefit more effectively from online learning environments, which have begun to take more place in the learning and teaching process with the Covid-19 global epidemic. They need to have self-regulation skills so that they can adapt to the change in learning environments, especially to the changes in online learning.

When the cognitive emotion regulation skills of the pre-service teachers were examined according to the gender variable, it was determined that there was a significant difference at  $p \leq .05$  in favor of female teacher candidates in the sub-dimension of "Putting in perspective" ( $M=14.27$ ;  $t=2.767$ ). According to this result, it was determined that female pre-service teachers thought "everything could have been worse, others faced worse events, their last experience was not as bad as the other ones, and there were worse things in life" more than male pre-service teachers. There are also studies supporting the current research in the literature. Ataman (2011) found in his study that women use the strategies of rumination and putting into perspective more frequently than men. Zlomke and Hahn (2010), found that men and women frequently used the strategies of positive reappraisal, refocusing on planning, and putting into perspective; and after controlling for participant age and specific life events experienced, it has detected that there was a significant difference between men and women in the use of cognitive emotion regulation strategies. The sub-dimension of putting it into perspective enables the event to be compared with other experienced events, thus reducing the negative emotion. It includes thoughts that worse could happen (Garnefski et al., 2001). Garnefski et al. (2001) defined some of the cognitive emotion regulation strategies as positive and some as negative cognitive emotion regulation strategies. Positive refocusing, refocus on planning, positive reappraisal, putting into perspective, and acceptance are positive cognitive emotion regulation strategies; self-blame, blaming others, rumination, and catastrophizing are mentioned as negative cognitive emotion regulation strategies.

It can be said that female pre-service teachers are in an effort to reduce negative emotions compared to male pre-service teachers. It can be thought that this situation arises from the individual, social, cognitive and affective differences of people and the situation experienced with the Covid 19 global pandemic. This situation can also be attributed to the characteristics of the sample group. For this reason, it is thought that it would be useful to examine both online self-regulatory learning and cognitive emotion regulation on different sample groups. In addition, the reasons why men and women choose different cognitive emotion regulation skills can also be investigated. Cognitive emotion regulation is important for teachers' well-being. For this reason, it is recommended to examine the relationship between various cognitive emotion regulation skills and other teaching-related issues.

The role of emotions in online self-regulatory learning is becoming increasingly important. More research is needed to understand the role of emotions in self-regulation. In this way, it can be better understood how emotions and emotion regulation affect motivation, learning and self-regulation. Emotion regulation attempts help us achieve our goals by influencing the type of emotions and the intensity and timing of emotional experiences. From this point of view, affective regulation should include flexible, situation-sensitive and performance-enhancing strategies. Self-regulation skills enable students to achieve their goals and continue to develop cognitively and personally.

In the current study, when the relationships between refocus on planning sub-dimension of the cognitive emotion regulation scale and the online self-regulatory learning scale were examined, moderate positive correlation was determined between goal setting ( $r=.342$ ,  $p<0.01$ ), searching for help ( $r=.338$ ,  $p<0.01$ ) and self-evaluation ( $r=.310$ ,  $p<0.01$ ). In the studies conducted, "refocusing on planning" was the most frequently reported strategy as a cognitive emotion regulation strategy (Garnefski et al., 2001). Goals are important for discussion of emotions and affective regulation. Goals provide "direction" in self-regulation. It is necessary to determine where the behavior should be directed, where the individual is and where he would like to be. Part of the self-regulation process involves making comparisons between goals and where the individual perceives himself. (Schutz, 1991) These comparisons provide opportunities for emotions and emotional regulation during self-regulation. Strategic planning, assistance and therefore evaluations are needed to achieve goals. Assessments in the activity setting

provide a context for the emergence of emotions, emotional regulation and self-regulation of behavior, and activities.

Self-regulation skills enable students to achieve their goals and continue to develop cognitively and personally. To achieve effective learning in an online environment, increasing students' self-regulation skills is important in designing online education. In particular, students should be provided with preparation before participating in online learning, including regulating their mood and structuring the environment before participating in online classes. The most important exam for a teacher or educator for the success of distance education is the students. In the compulsory digital transformation experienced due to the pandemic, students who have fixed ideas face difficulty in adapting to changes, while students who are open to development and change have quickly adapted to a new learning environment (Pokhrel & Chhetri, 2021).

Effective students who use their self-regulation skills effectively and who are academically successful can self-regulate their learning. These students use cognitive strategies and have high academic self-efficacy and motivation. They can use their metacognitive skills in various academic tasks, but not all students are capable of self-learning. Many students fail to use cognitive strategies, they are unmotivated. In particular, they receive little or no support from their classmates or teachers. In such a case, online / web-based environments can help them learn. Students can access unlimited amount of information at any time thanks to web-based environments. They are free to work at their own pace and can review information that they are curious about and/or find interesting. However, the nature of teaching in many web-based environments involves independent learning that requires a high level of self-regulation by students. Accordingly, students—especially those with less self-regulation—can benefit from directions that promote cognitive strategy use, motivation, and metacognitive processing. It is important in terms of gaining self-regulation skills in the classroom environment from a very young age, to encourage students to set goals, to choose strategies and to use them, to enable them to self-regulate by monitoring their performance and continuously reflecting their learning outcomes over a long period of time. (Zimmerman, 2008). Self-regulation works through three areas of psychological functioning fundamental to learning: cognitive (eg, learning strategies), motivational (eg, self-efficacy, task value), and metacognitive (eg, self-monitoring and self-reflection) (Bandura, 1993; Hong, Peng and Rowell, 2009; Trautwein and Köller, 2003). These three areas of self-regulation work cyclically, where mastery of a task depends on one's beliefs in one's abilities and expectations for success.

Under the assumption that students are innate decision-makers, self-regulated learning can happen anywhere. However, the decisions students make about regulating learning can promote or hinder achievement and other outcomes (Winnie, 2017; Ramdass, & Zimmerman, 2011). He states that self-regulation skills such as time management, setting goals, effort to complete tasks, persistence, and self-monitoring of one's performance are not only important for academic success, but are also key components in the lives of successful professionals (Zimmerman, 1998). Zimmerman (2002); he states that, for all this to happen, teachers should be aware of the importance of self-regulatory skills in learning and from the start, teachers should play an important role in regulating students' learning by setting goals, managing the time they allocate to tasks, and instilling effort and expectations for homework completed in the classroom. He says that teachers should gradually reduce this support as students experience success. He emphasizes that in the absence of the teacher, students will take the responsibility of regulating their own learning and decide where, when, how, why and what to do the assigned homework. Especially including self-regulation skills in curricula and graduation of pre-service teacher by knowing both self-regulation skills and cognitive emotion regulation skills will contribute to their well-being throughout their teaching life and thus to be effective teachers.

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# Latent Learning Disabilities in the Classroom: Interpreting Children's Learning Styles Identified by Memory Recalls

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## Abstract

If a learning disability is not defined, it can be said that primary school children show the features of adaptable students within the learning atmosphere of the classroom. Most of the time, teachers think that they teach and their students learn easily. However, studies on children's memory show that the learning process gets abstract when the number of stimulants in the learning environment increase. Children especially have difficulties when they use more than one sensory memory, like seeing, hearing and touching, at the same time and it gets harder to remember things they learned. In this study, it is aimed to investigate the learning profiles related to the visual, auditory, kinesthetic & tactile and combined (visual+auditory+kinesthetic) memories of primary school children and to define whether learning results related to the combined memory cause a learning disability in terms of remembering. According to the results of the study, it has come out that a considerable amount of children have difficulties while learning with the combined memory. However, their teachers and probably also their parents are not aware of this situation. This result makes teachers consider that they have to help their students out individually in the learning environment in order to make students' learning easier.

**Keywords:** Children's Learning Style, Memory Recall, Learning Disability

## 1. Introduction

If a learning disability is not defined, it can be said that primary school children generally display adaptive learner characteristics in the classroom. In the positive atmosphere of learning in the classroom, teachers often think that they teach and that students learn easily. However, studies on child memory have shown that when the stimuli in the learning environment increase, the learning process becomes abstract. Especially when children use more than one sensory memory such as visual, aural and kinesthetic together, it is difficult for them to remember what they have learned.

According to the Learning Disabilities Association of America (LDA) (2022), "Learning Disabilities is an umbrella term describing a number of other, more specific learning disabilities. A learning disability cannot be cured or fixed; it is a lifelong challenge. However, with appropriate support and intervention, people with learning disabilities can achieve success in school, at work, in relationships, and in the community". Learning disability is a term used to describe a range of learning and thinking differences that can affect the way the brain takes in, uses, stores, and sends out information. There are many reasons why a child may have difficulties



learning. The causes aren't always known, but in many cases children have a parent or relative with the same or similar learning and thinking differences and difficulties (Zubler (2021). A lack of consistency in definition constructs varied interpretations which impact on discussions about how schools identify and make provision for children with difficulties in learning (Rivalland, 2000, 12). Children's academic inadequacy despite their normal mental and emotional skills" is the most striking indicator of learning disability. Identifying learning disabilities is a very complex process, and in this process, many experts such as physiotherapist/occupational therapist, pediatrician, classroom teacher, speech and language therapist, physical education teacher, psychologist (Macintyre & Deponio, 2003, 5) need to work together.

Regardless of the reasons for the learning difficulties of the students, with the professional role of the teacher or expert, the learning in the classroom can evolve into a positive atmosphere for the child. Piere (2021) thinks that social work done with an inclusive approach in the classroom plays an encouraging and facilitating role in the learning of students with learning disabilities, and the results of her research confirm this fact. But wherever you are in the world, it is impossible to come across a team of experts who can work specifically with students with learning disabilities in schools. In fact, from time to time, there may not even be a teacher specialized in special education. In the study, learning disability was defined as remembering disability. It was tried to analyze the relationships between the memory tests and the learning style scores obtained by giving the stimuli separately (visual x auditory x kinesthetic) and together (visual + auditory + kinesthetic = combined). The problem of the research can be explained as "describing the learning difficulties that children have learning styles in the context of learning products".

## 2.Method

The study is an experimental study with an empirical design. The problem of the study dates back to the period when the researcher was preparing his doctoral thesis (Erginer, 2002, Erginer, 2021). While trying to measure the learning styles of elementary school students, the researcher observed that they had some recall difficulties. He finalised his doctoral study and, he redesigned his study by focusing on the learning difficulties of students in a different sample group and focused only on children with recall difficulties. In the study, it was aimed to examine the learning profiles of elementary school children regarding their visual, auditory, tactile and combined (visual+auditory+kinesthetic) memory and to determine whether the learning results related to combined memory cause learning difficulties in terms of retention. The following image shows the steps of the study:

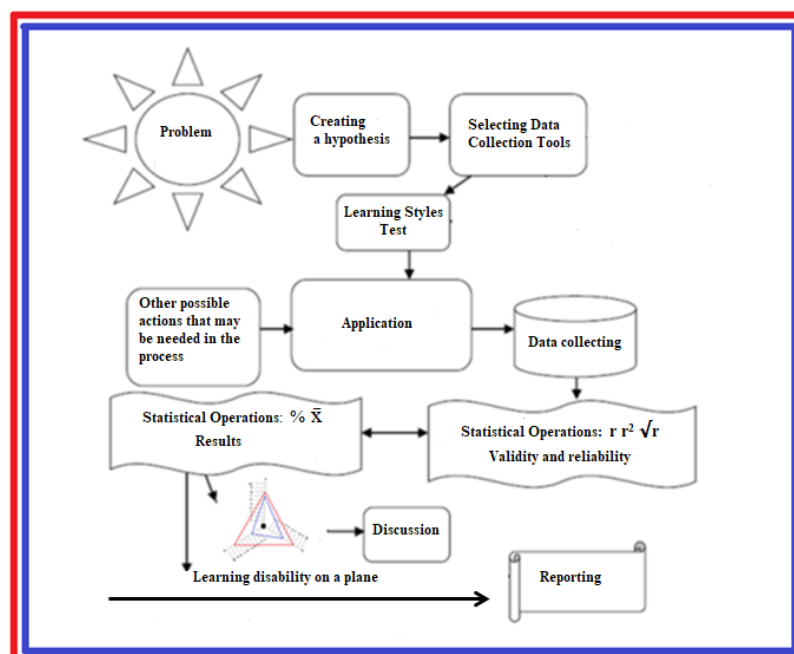


Figure 1: Research Process Steps

On the basis of the results of statistical operations after the application, students' learning disabilities were expressed by drawing on learning planes. The results were reported.

### 2.1. Participation

In the study in which convenience sampling and snowball approach were used to form the study group, the group consisted of first, second and third grade primary school students.

Table 1: Study Group

1st grade		2nd grade		3rd grade	
f	%	%	%	f	%
21	32.8	22	34.4	21	32,8
64 /100					

The study group consisted of 64 primary school first, second and third grade students. A group of 22 and two groups of 21 students were formed and the number of participants in three groups was tried to be equalized.

### 2.2. Measurement Tool and Reliability

The "Learning Styles Test (LST)" developed by Erginer (2002) was used in the study. The origin of this test is based on Vester (2004) and it is constructed with memory modeling.

#### 2.2.1. LST (Learning Styles Test)

The Learning Styles Test consists of five common modules that examine visual, auditory, tactile, reading and combined learning characteristics and a mental operations box module (Erginer, 2002, 194-206). The reading module was not used in this study.

#### 2.2.2. Visual Learning Style Module

In the module, to test the visual learning style, there are 10 pictures that have no semantic relationship with each other and do not evoke each other. After the student has looked at each of the 10 different objects for two seconds, the practitioner removes the pictures and asks the student to answer the questions in the mental processing box within 30 seconds. In the next 20 seconds, he asks the student which pictures he/she remembers. The number of pictures the student remembers constitutes the visual learning style score.

#### 2.2.3. Auditory Learning Style Module

In the module, in order to test the auditory learning style, 10 words that have no semantic relationship with each other and do not evoke each other are placed on an A4 sheet of paper using 14-point size book letters. The practitioner reads the words aloud at two-second intervals. When the reading is over, he asks the student to answer the questions in the mental operations box within 30 seconds. In the next 20 seconds, he asks the student which of the words she/he remembers. The number of words the student remembers constitutes the auditory learning style score.

#### 2.2.4. Kinesthetic Learning Style Module

In the module, there are 10 items that have no semantic relationship with each other and do not evoke each other in order to test the touch learning style. The practitioner gives the blindfolded student an item to touch every two seconds, then asks the student to answer the questions in the mental processing box within 30 seconds. In the next 20 seconds, he asks the student which items she/he remembers. The number of items the student remembers constitutes the tactile learning style score.

### 2.2.5. Combined Learning Style Module

The module set includes pictures of 10 concepts that have no semantic relationship with each other and do not evoke each other, drawing on A4 paper to be seen, written on A4 paper to be heard, and item forms to be touched in order to test visual, auditory, and tactile learning styles together. The practitioner gives the student 10 pictures at two-second intervals and allows the student to see them, reads the 10 words in the pictures at two-second intervals and allows the student to hear them, and allows the student to touch the item forms of the 10 words that the student sees the pictures of and hears at two-second intervals. When the practice is completed, the teacher asks the student to answer the questions in the mental processing box within 30 seconds. In the next 20 seconds, the instructor asks the student what he remembers. The number of pictures/words/items that the student remembers (visual, auditory, tactile) constitutes the combined learning style score.

### 2.2.6. Mind Operations Box Module

In this module, at the end of each learning style practice, there are questions that are asked to the student within 30 seconds. These questions are questions such as the student's name, favorite foods, hobbies, simple mental calculations. When the student answers the questions in the mental operations box, the next learning style module is administered. The reliability calculations of the test are shown in Table 2:

Table 2: Learning Style Test Reliability (n=64)

Learning Styles	r	$\sqrt{r}$	$r^2$	p
Visual	.89*	.95	.81	.00
Auditory	.85*	.92	.77	.00
Kinesthetic	.84*	.92	.71	.00
Combined	.90*	.95	.81	.00

\*p<.01

According to Table 2, the reliability coefficient of each module varies between .77-.81. This indicates that the measurement tool modules are usable for research.

### 2.3. Some Limitations

The study was conducted over a period of three years due to data collection difficulties. The difficulty stems from the fact that a minimum of 30 minutes is needed to measure a student's learning profile. This includes the time spent convincing the child to take the test and the time spent playing games with the student. When the child is distracted, it can take up to an hour, and sometimes the process cannot be continued and the measurement is continued with another student. Especially as the age group gets younger, the work becomes more difficult. Appointment difficulties were also experienced in reaching the students. The possibility of students remembering the tests and telling each other during the implementation led to the necessity of not communicating with each other and resulted in working with fewer students. At times, it was also difficult to find distraction-free environments in schools. In addition, since the study required special parental permission, it was difficult to reach a sufficient number of students.

### 2.4. Operational Definitions

#### 2.4.1. Learning Condition without Learning Disability

The study first defined a learning profile in which memory coordination and coherence were observed during the learning process, i.e. a learning profile without learning disabilities.

#### 2.4.2. Mastery Learning

It is the learning situation with the highest scores for all learning style scores.

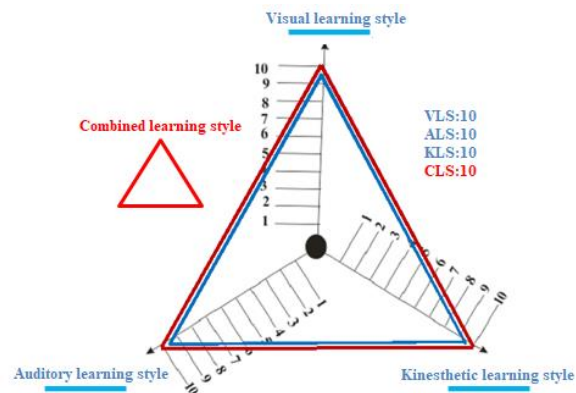


Figure 2: Mastery Learning

#### 2.4.3. Ordinary Learning

In the learning plane, the combined learning style is defined with the highest score compared to other learning style scores and encompasses other memories.

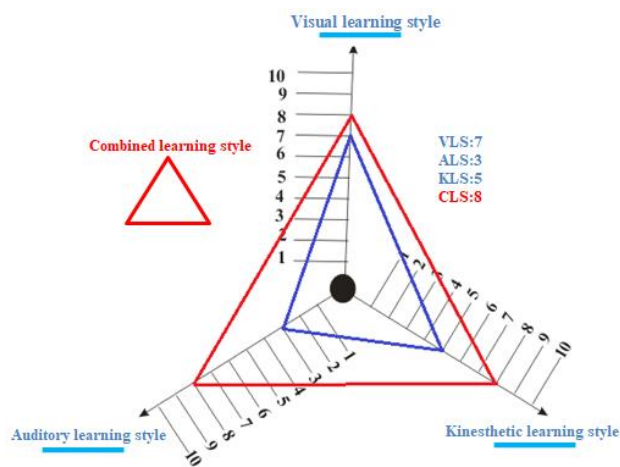


Figure 3: Ordinary Learning

#### 2.4.4. Complete learning disability

This is when any learning style score is higher than the combined learning style score.

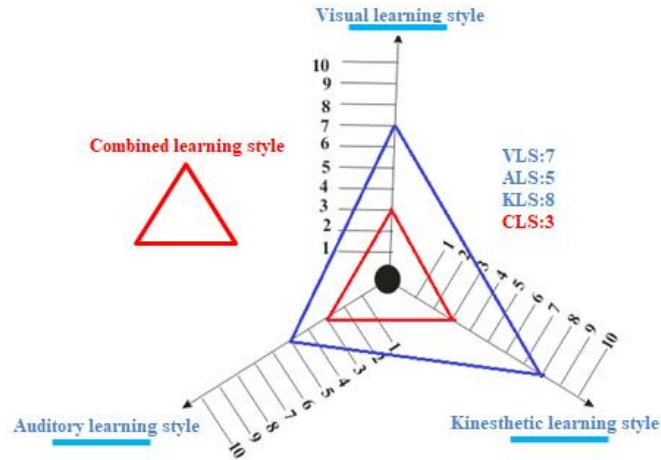


Figure 4: Complete Learning Disability

2.4.5. Ordinary Learning Disability

When any learning style scores are higher than the combined learning style score.

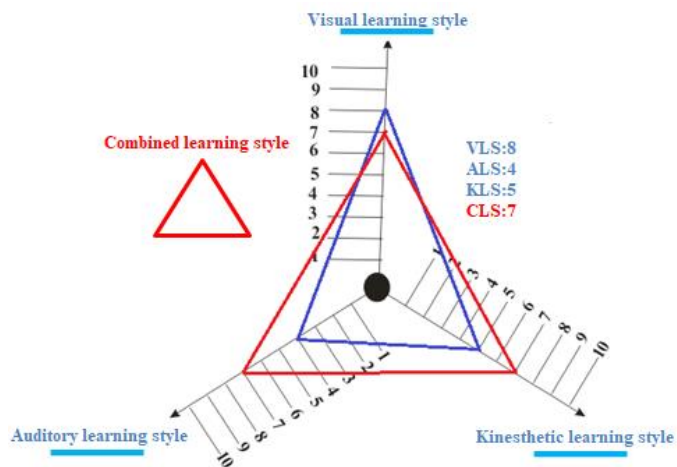


Figure 5: Visual-based Learning Disability

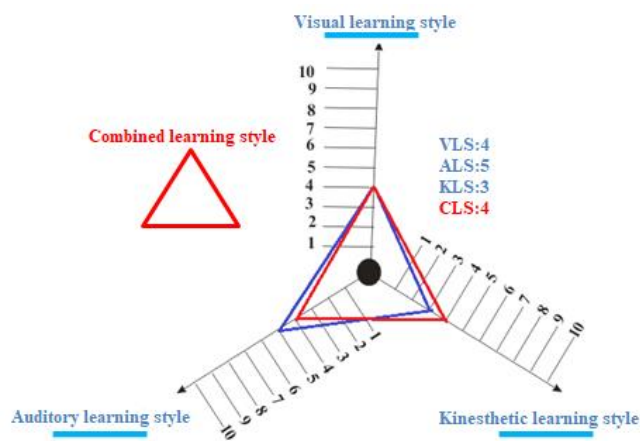


Figure 6: Auditory-based Learning Disability

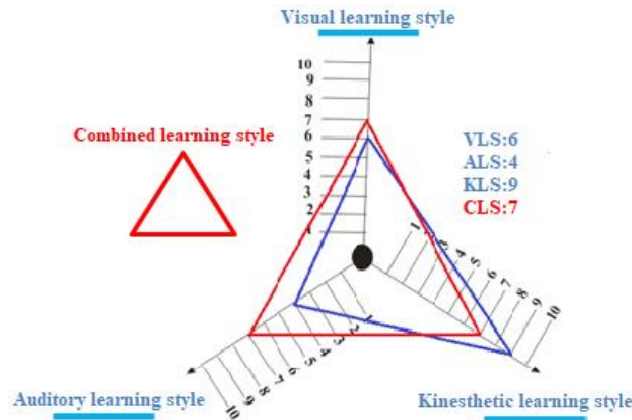


Figure 7: Kinesthetic-based Learning Disability

In the context of the above definitions, it is possible to analyse learning disability according to the type of memory deficit.

**3.Results**

Below are the findings for learning disabilities, which exclude students who do not have learning disabilities.

Table 3: Learning Disability by Grade (n=64)

Grade	Visual	Auditory	Kinesthetic	Combined	Learning Disability	
	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$	f	%
1st grade	5.30	3.00	5.70	5.95	8	12.50
2nd grade	6.05	2,95	6.35	6.90	7*	10.94
3rd grade	6.40	2,85	6.50	6.70	9	14.06
Toplam					24	37.50

\*Auditory memory score of 2 students was 0. It is known that the problem is not complete hearing loss. There does not seem to be a problem in children’s use of combined memory.

When the results are analyzed, it is understood that 37.5% of the children have a learning disability. The results of the research show that a considerable number of children have difficulties in learning with combined memory. However, their teachers and possibly their parents are not aware of this. This result suggests that teachers should provide individual support to their students in the learning environment in order to facilitate their learning. When the situation is evaluated in terms of inclusive classrooms, it can be said that the disadvantaged position of special children (such as having a visual, hearing or orthopedic disability) requires the teacher to make an extra effort for such children.

The researcher is currently conducting two similar studies with different age groups (4th and 5th graders). It is thought that it will be healthier to make generalizations on the results when the sample groups are larger. The results of the study revealed that a considerable number of children had difficulties in learning with combined memory. However, their teachers and possibly their parents are not aware of this. This result suggests that teachers should provide individual support to their students in the learning environment in order to facilitate their learning.

#### 4. Discussion

Children's learning difficulties have attracted the attention of childhood researchers for many years. However, it can also be said that research on children's learning difficulties is very diverse and complicated. This is a challenge for researchers. Although the definition of learning disability is sometimes described in relation to intellectual disability (Mayes & Calhoun, 2005), this perspective is often misleading. Rhodes-Sanders (2020) concluded that it is important to enrich educators' knowledge and understanding of children's working memory and executive function weaknesses. The results of this study, which provides teachers with data on latent learning disabilities in the classroom, can therefore be considered to support this view.

Specific learning disorder is one of the most common neurodevelopmental disorders affecting 3% - 10% of children (Shah, Sagar, Somaiya, & Nagpal, 2019). In the light of the fact that the results of this study provide data about specific learning difficulties, it will be served that children, the most valuable creatures of the world, who can be diagnosed with learning difficulties, can breathe more easily in learning environments. It is the researcher's wish that all children can be happy together in learning environments.

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# Improving Early Childhood Emotional Intelligence Through Traditional "Balogo" Games in Kindergartens

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## Abstract

Emotional intelligence is a determinant of individual success. However, today's emotional intelligence is fading. Early childhood is the foundation for the development of individual potential and intelligence. Thus, the urgency needs to be taken special action. The focus of this research is to improve the emotional intelligence of early childhood through the traditional game "Balogo". This research was conducted at Dharma Bahagia Kindergarten, Samarinda through an experimental design. The average N-Gain result in the experimental class in this study was 76% which was categorized as a high level, and the category of effectiveness level included in the effective or increasing category. This means that the treatment of traditional Balogo games has a fairly effective effect on improving early childhood emotional intelligence. Meanwhile, the average N-Gain result in the experimental class in this study was 16% which was categorized as low level, and the foe category of effectiveness level included in the ineffective/not increasing category. This means that if children are not given any treatment (control) it will not increase emotional intelligence based on the results of the pretest and posttest in early childhood.

**Keywords:** Emotional Intelligence, Balogo, and Traditional Games

## 1. Introduction

Most teaching goals are to create intelligent people, frankly, and deeply develop human identity. School as an instructive school has an ethical obligation to teach children to be intelligent and brilliantly agree with the wishes of their guardians and society. The role of the teacher is very vital in the formation of a child's identity because the teacher's job is not only to teach but also to teach. The teacher's task as a teacher is to help children gather the information that is useful for children and society to have good character and identity the instructive goals, in particular, to create the potential for students to have insight, identity, and commendable morals. (SISDIKNAS Law, 2003).



Current technological developments also affect the activities and types of games that children will choose. Children are more interested in digital-based games such as online games, play stations, and video games. It's not uncommon for us to observe children around us who gather on street corners while playing online games. The presence of these digital games resulted in the erosion of traditional games that used to develop around us.

The reduction of traditional games in the child's environment can affect the child's intelligence. Currently, with smartphones, children are increasingly nurtured with negative behavior. The negative impacts of smartphones include children becoming selfish, arrogant, unstable, pessimistic, and lonely (Aswadi, 2019).

Indonesia has quite a lot of traditional games, as an ancestral heritage that contains a lot of moral values. Has great benefits for the world of children. Children can learn and gain new experiences and train other skills (Widodo et al., 2017). These traditional games are unique so the use of certain games for the learning process is the right thing to do to stimulate children's development (Syamsurrijal, 2020). Through educational traditional games, it will help children develop various aspects of development in a holistic and integrated manner and develop various positive characteristics (Hapidin, 2016).

The position of PAUD is obliged to create all forms of potential related to children's insight in a general sense to plan the ability of children's survive in their current environment and the future. This was confirmed by Langeveld (1980) that in teaching early childhood it is very important to create passionate insights because increasing children's enthusiastic insight is one of the main perspectives that determine the happiness of a child's life path in the future. Goleman (2001) gives the meaning that the teacher's task as a facilitator in early childhood learning is to plan to develop passionate insights in each child.

In essence, to see the achievement of the goals of early childhood education can be seen from the development of children at the age of 5-6 years because at that age it can be a transitional period for students to end early childhood education. and must be prepared to experience driving instruction at the school level. base. Furthermore, children who are in a transitional position should be given the serious emphasis on developing passionate insights.

The term feeling is closely related to sentiment. The true frame of feelings cannot be seen by anyone, including the person who is dealing with the feelings themselves. However, everyone who experiences the sentiment can feel this form of sentiment. Thus, the feeling is an expression of physical development that reflects sentiment from within a person (Mashar, 2011).

Insight is a person's expertise that can be seen from the speed and accuracy in supervising his ability to act (Goleman, 2001). Speed and accuracy are related to a person's ability to deal with a problem that he handles himself and is shown by activities within a period according to his abilities.

According to Mashar (2011), children's emotional intelligence can be in the form of a child's ability to realize, control, and monitor the feelings that occur within him and provide activity through self-attitude to achieve his happiness. Based on this understanding, it can be translated that the introduction of children's enthusiastic insights can determine children's happiness. Experts explain that the basic potential that needs to be instilled in children from an early age is emotional intelligence. Children's emotional intelligence is important in determining how a child's attitude will be when he becomes an adult (Abel and Prihastuti, 2013).

Playing and recreation are synonymous with the world of children. Playing is one of the desires of the child's body. Through this game, children get developmental encounters that are useful for their development and improvement. Besides that, traditional games can develop children's personal and social skills. Traditional games are very important in increasing children's emotional intelligence. Based Traditional is often related to teamwork, self-

management of emotions, the desire to win games, accepting defeat, and social relations with friends and neighbors in traditional games. As well as traditional games are also related to local culture (Mega et al., 2018).

Examples of some traditional games played by children in Indonesia include Five Basic ABC, Sack Race, Fortress, Bekel Ball, Stilts, Engklek, Gobak Sodor, Balogo, and Marbles. Traditional games are closely related to cultural values in Indonesia (Izatil and Pratiwi, 2017). The traditional games in this study are more focused on the Balogo game originating from South Kalimantan which is a type of game that contains cultural values which are essentially ancestral heritage.

Learning media in PAUD is more oriented to the form of game tools. Playing in early childhood is a way for children to learn, playing is a learning tool for early childhood. Through games, children are invited to explore, find, use, and draw conclusions about the objects around them. Sabil means that children learn is closely related to play tools. Based on this, it is necessary to use learning media to educate early childhood through educational game tools. The meaning of the Balogo game is not only fun and can be a cultural heritage, the Balogo game also contains a myth as well as a noble philosophy as a game tradition inherited from the ancestors of the Dayak tribe in South Kalimantan.

Lubis (2018) and Khadijah (2018) provide thoughts on increasing the emotional intelligence of children in Indonesia, especially the Kalimantan people, namely through the application of the traditional Balogo game because the traditional Balogo game is related to teamwork, self-management of emotions, the desire to win the game, acceptance, defeat, as well as social relations with friends and neighbors in carrying out traditional games related to factors in emotional intelligence.

Adriana (2013) also argues that "Games are a very appropriate stimulation for children." Educational games for early childhood are traditional games. Traditional games are inherited from generation to generation to continue the traditions in each of these regions (Bishop & Curtis in Iswinarti, 2010). The nature of traditional games is more emphasized in the process of using nature as a place or media for playing. Spencer in Seefeldt (1996) and Rochmah (2012) argue that playing for children is an outpouring of energy from within the child itself which tends to be seen as excessive. Traditional games can be used as a medium or a place for children to pour out their excess energy with fun actions.

According to the current perception of analysts, it is rare to find children playing traditional recreations as they are dislodged by high-tech entertainment such as gadgets that offer a variety of more outlandish entertainment. In contrast to students at the Dharma Bahagia Kindergarten in Samarinda, in the morning before entering class to start the core activities, students after finishing the morning exercise continue to play traditional games, besides that when they come home from school wait for their parents to come pick them up, they can still see the students who play traditional games in the yard accompanied by picket teachers.

This incident attracted the attention of observers to conduct research related to increasing children's enthusiastic insight and diverting conventional "Balogo". So that in this study, the analysts are centered on thinking about broadening the enthusiastic insights of children aged 5-6 years through the traditional Balogo game at Dharma Bahagia Kindergarten, Samarinda.

The previous research review by Gundana (2016) was a study entitled Improving Early Childhood Emotional Intelligence Through Traditional Games "Kaulinan Barudak" in Kindergarten. The essence of this research is to trace the intelligence of early childhood through the conventional diversion of "kaulinan barudak". This research was conducted at Pembina State Kindergarten and Nurul 'Ilmi Kindergarten, Tasikmalaya City through a quasi-experimental plan. The results showed that there was a fundamental difference between increasing the interest

insights of children aged 5-6 years at TK Negeri Pembina Kota Tasikmalaya and increasing the insights of interests of children aged 5-6 years at TK Nurul 'Ilmi Tasikmalaya Kota with a certainty level of 95%.

Furthermore, previous research by Priono (2022) entitled "Socialization of Increasing Emotional Intelligence and Sports Ability Through Traditional Game Activities for MTs Mulia Private Sei Balai Batu Bara students". This study aims to socialize traditional games to parents of Madrasah Tsanawiyah students to develop Sports to Abilities emotional Intelligence for MTs students. The activity method carried out was providing counseling in the form of face-to-face meetings by complying with health protocols and which were attended every 30 participants consisting of teachers, students, and parents of students. The results of the questionnaire showed that 5% of students had never played traditional games, 65% stated the importance of traditional games to improve emotional intelligence, and 60% of parents and teachers believed that traditional games could improve sports abilities. This study has the conclusion that traditional games based on the perspective of students' parents are still very important to be preserved because they can increase emotional intelligence which will be useful for the future.

### *1.1. Emotional Intelligence Theory*

The Oxford Dictionary reference characterizes feeling or emotion as any movement or variation of contemplation, sentiment, or interest (mental state of being wild or energized). Feelings refer to feelings and their usual considerations, organic and mental states, and dispositions to act (Goleman, 2015: 409).

While Santrock says that feelings or emotions can be in the form of feelings or love that arise when the individual is in a situation or interaction that is considered critical by him which represents comfort or discomfort with the situation or interaction that is being experienced. (Santrock, 2007: 6-7).

The term emotional intelligence was first coined in 1990 by analysts Diminish Solvey of Harvard College and John Mayer of the College of Unused Hampshire to describe the quality of passion that appears to be important for winning. These qualities combine; affection, communication and understanding sentiment, anger control, autonomy, flexibility, speech, interpersonal problem-understanding ability, persistence, solidarity, neighborliness, and respect (Uno, 2012: 102).

Emotional intelligence is full attention to one's feelings and the feelings of others, sympathy, and compassion rive driven by the ability to respond appropriately to happy and pitiful situations (Yusuf and Nurishan, 2014: 242). The enthusiastic insight perspective in this thought is divided into 5 categories, namely: Self-awareness, controlling feelings, encouraging oneself, sympathizing, and establishing social relationships.

## **2. Method**

This research method was carried out using one group pretest-posttest which is an experimental research design. In this sense, the two groups (experimental and control groups) are homogeneous based on the results of the homogeneity test before the test and experimental/trial exercises and their treatment as done in the experimental lesson, whereas in the control lesson the preparation for learning is linked through regular diversion. To be clearer, you can see an overview of the Nonequivalent Pretest-Posttest Control Group Design based on Creswell (2010):

Table 1: Nonequivalent Pretest-Posttest Control Group Design

<b>Group</b>	<b>Pretest</b>	<b>Treatment</b>	<b>Posttest</b>
Experiment (B1)	O1	X	O2
Control (B2)	O3	-	O4

Source: (Creswell, 2010)

Information:

O1: Experimental Group Pre-test

O3: Control Group Pre-test

X: Treatment (traditional games (Balogo))

--: No Treatment (Conventional games)

O2: Post-test Experiment Group After Treatment.

O4: Post-test Control Group without Treatment

This method is used to determine the increase in emotional intelligence through the traditional Balogo game for children aged 5-6 years in group B1 and group B2 at Dharma Bahagia Kindergarten Samarinda with the direct, objective observation of children's activities to collect data as material for analysis.

### 3. Results

Based on the results of data analysis on the emotional abilities of children aged 5-6 years, it was found that children aged 5-6 years before the application of traditional games in learning activities can be classified based on the indicators of emotional intelligence itself.

Table 2: Achievement of Children's Emotional Intelligence Ability (Pre-test) Experiment Class

<b>Category</b>	<b>Aspects of Emotional Intelligence Ability</b>									
	<b>Realizing themselves</b>		<b>Manage emotions</b>		<b>Motivating themselves</b>		<b>Be Empathic</b>		<b>Establish social relationships</b>	
	<i>f</i>	%	<i>f</i>	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>
<b>VWD</b>	10	67%	5	0	0%	0	0%	4	27%	0
<b>DAE</b>	5	33%	7	9	60%	9	60%	11	73%	13
<b>SD</b>	0	0%	3	6	40%	6	40%	0	0%	2
<b>UD</b>	0	0%	0	0	0%	0	0%	0	0%	0
<b>Total</b>	15	100	15	15	100	15	100	15	100	15

Information:

VWD: Very Well Developed

DAE: Developed As Expected

SD: Start Developing

UD: Undeveloped

Based on Table 2 on the achievement of emotional intelligence abilities of children aged 5-6 years through the traditional Balogo game, for the aspect of self-awareness there are 10 students (67%) who are in the VWD category (Very Well Developed), and 5 children students (33%) are in the DAE category (Developing According to Expectations). For the aspect of the ability to manage their own emotions, there are 5 students (33%) in the VWD category, 7 students (47%) in the DAE category, and 3 students (20%) in the SD category (Starting to Develop). In the aspect of the ability to motivate oneself, there are 12 students (80%) in the DAE category, and 3 students (20%) are in the SD category. In the aspect of the ability to be empathetic, there are 9 students (60%) who are in the DAE category, and 6 students (40%) are in the SD category. For the aspect of the ability to establish social relations, there are 3 students (20%) in the DAE category, and 12 students (80%) are in the SD category.

Table 3: Achievement of Children's Emotional Intelligence Ability (Post-test) Experiment Class

Category	Aspects of Emotional Intelligence Ability									
	Realizing themselves		Manage emotions		Motivating themselves		Be Empathic		Establish social relationships	
	<i>f</i>	%	<i>f</i>	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>
<b>VWD</b>	14	0.93	13	9	0.60	9	0.60	4	27%	0
<b>DAE</b>	1	0.07	2	6	0.40	6	0.40	11	73%	13
<b>MB</b>	0	0.00	0	0	0.00	0	0.00	0	0%	2
<b>UD</b>	0	0.00	0	0	0.00	0	0.00	0	0%	0
<b>Total</b>	15	100	15	15	100	15	100	15	100	15

Based on Table 3 on the achievement of emotional intelligence abilities of children aged 5-6 years through the traditional Balogo game, for the aspect of self-awareness there are 14 students (93%) who are in the VWD category, there is still 1 student (7%) is in the DAE category. For the aspect of the ability to manage one's own emotions, there were 13 students (87%) who were in the VWD category, there were still 2 students (13%) who were in the DAE category. In the aspect of the ability to motivate oneself, there are 11 students (73%) who are in the VWD category, there are still 4 students (27%) who are in the DAE category. In the aspect of the ability to be empathetic, there are 9 students (60%) who are in the VWD category, there are still 6 students (40%) who are in the DAE category. For the aspect of ability to establish social relations, there were 12 students (80%) who were in the VWD category, there were still 2 students (13.3%) who were in the DAE category, and 1 student (6.66%) who were in SD.

Table 4: Achievement of Children's Emotional Intelligence Ability (Pre-test) Control Class

Category	Aspects of Emotional Intelligence Ability									
	Realizing themselves		Manage emotions		Motivating themselves		Be Empathic		Establish social relationships	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	<i>f</i>	%	<i>f</i>	%	<i>f</i>
<b>VWD</b>	10	67%	4	27%	0	10	67%	4	27%	0
<b>DAE</b>	5	33%	11	73%	13	5	33%	11	73%	13
<b>SD</b>	0	0%	0	0%	2	0	0%	0	0%	2
<b>UD</b>	0	0%	0	0%	0	0	0%	0	0%	0
<b>Total</b>	15	100	15	100	15	15	100	15	100	15

Based on Table 4 on the achievement of emotional intelligence abilities of children aged 5-6 years through no treatment (control), for the aspect of self-awareness there were 10 students (67%) who were in the VWD category, and 5 students (33%) are in the DAE category. For the aspect of the ability to manage their own emotions, there are 4 students (27%) in the VWD category, and 11 sand students (73%) are in the DAE category. In the aspect of the ability to motivate oneself, there are 13 students (87%) in the DAE category, and 2 students (13%) are in the SD category. In the aspect of the ability to be empathetic, there are 9 students (60%) who are in the DAE category, and 6 students (40%) are in the SD category. For the ability to establish social relations, there are 7 students (47%) who are in the DAE category, and 8 students (53%) are in the SD category.

Table 5: Achievement of Children's Emotional Intelligence Ability (Pre-test) Control Class

Category	Aspects of Emotional Intelligence Ability									
	Realizing themselves		Manage emotions		Motivating themselves		Be Empathic		Establish social relationships	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
<b>VWD</b>	9	60%	5	33%	2	13%	0	0%	0	0%
<b>DAE</b>	6	40%	10	67%	13	87%	14	93%	11	73%
<b>SD</b>	0	0%	0	0%	0	0%	1	7%	4	27%
<b>UD</b>	0	0%	0	0%	0	0%	0	0%	0	0%
<b>Total</b>	15	100	15	100	15	100	15	100	15	100

Based on Table 5 on the achievement of emotional intelligence abilities of children aged 5-6 years through no treatment (control), for the aspect of self-awareness there were 9 students (60%) who were in the VWD category, and 6 students (40 %) are in the DAE category. For the aspect of the ability to manage one's own emotions, there were 5 students (33%) who were in the VWD category, and 10 students (67%) were in the DAE category. In the aspect of the self-motivating ability, there are 2 students (13%) in the VWD category, and 13 students (87%) are in the DAE category. In the act of ability to be empathetic, there are 14 students (93%) in the category DAE, and 1 student (7%) is in the SD category. For the spect of ability to establish social relations, there are 11 students (73%) in the DAE category, and 4 students (27%) are in the SD category,

While the description of the post-test results in the experimental class and control class can be visualized in the following table:

Table 6: Statistical Data Pretest Experiment Class and Control Class

No	Statistical Data	Experiment Class	Control Class
1.	N (Number of students)	14	15
2.	Maximum Value	24	19
3.	Minimum Value	18	12
4.	Average	2,94	2,17

Table 7: Posttest Statistical Data for Experiment Class and Control Class

No	Statistical Data	Experiment Class	Control Class
1.	N (Number of students)	15	15
2.	Maximum Value	27	25
3.	Minimum Value	24	18
4.	Average	3,86	3,04

This analysis was conducted to test whether the two groups had differences in the results of emotional intelligence abilities or not. Testing whether or not there is an effect of the control class on increasing the emotional intelligence of early childhood in Kindergarten, because previously testing was carried out without any and no treatment and the results of the two groups did not have a significant difference in results. Next is a picture of the pretest and posttest results of the experimental class as follows:

Table 8: Pre-test Statistical Data for Experiment Class and Control Class

No	Statistical Data	Experiment Class	Control Class
1.	N (Number of students)	14	15
2.	Maximum Value	24	19
3.	Minimum Value	18	12
4.	Average	2,94	2,17

Table 9: Post-test Statistical Data for Experiment Class and Control Class

No	Statistical Data	Experiment Class	Control Class
1.	N (Number of students)	15	15
2.	Maximum Value	27	25
3.	Minimum Value	24	18
4.	Average	3,86	3,04

This analysis was conducted to test whether the two groups had differences in the results of emotional intelligence abilities or not. Testing whether or not there is an effect of the experimental class, namely being given treatment through the traditional game "Balog" in early childhood in improving the emotional intelligence of early childhood in Kindergarten.

Furthermore, in this study, the Normalized Gain or N-Gain Score test was conducted to determine the increase in emotional intelligence through the traditional game "Balogo" in early childhood. The trial in this research was one group pretest-posttest which was an experimental research design. The N-Gain test is carried out by calculating the difference between the pretest and posttest values.

Table 10: Category Level N-Gain Category Limit

Limitation	Category
$g > 0,7$	High
$0,3 \leq g \leq 0,7$	Medium
$g < 0,3$	Low

(Meltzer, 2001)

Table 10 states the score of the N-Gain limit level category which is divided into 3 categories, namely low if the value of n-gain is less than 0.3 or 30%. Medium if the value of n-gain ranges from 30-70%, and high if it has an N-gain value higher than 0.7 or higher than 70%.

Table 11: Interpretation Categories of N-Gain Increase

Category Interpretation of N-Gain Effectiveness	
Percentage (%)	Interpretation
< 40	Not Increasing
40 - 50	Less Increase
56 - 75	<b>Enough Increase</b>
>76	Increase

Source: (Hake, 1999)

Furthermore, table 11 explains the categories of interpretation of the N-Gain increase. It consists of 4 categories of interpretations based on Hake (1999). First, the interpretation category does not increase if it is below the percentage of 40%, which means that the treatment or control does not provide a significant increase from the pre-test and post-test. The second category is less increasing if the percentage of n gain is between 40-50%, which means that the treatment or control does not improve the results of the pre-test to post-test. Furthermore, the third category, if it is in the range of 51-75%, is categorized in the moderately increased category, which means that the treatment or control sufficiently increases the results of the pre-test to post-test. Finally, 76% and above are categorized as "increasing" meaning that the treatment or control increases from the results of the pre-test to the post-test.

The results of the n-gain analysis in the experimental class involving pre-test and post-test values can be seen in the following table:

Table 12: Calculation of the N-Gain score in the experimental class

N-GAIN SCORE CALCULATION						
No	Post-test	Pre-test	Post-Pre	Ideal Score (20-Pretest)	N-Gain Score	N-Gain Score (%)
1	20	17	3	3	1.00	100%
2	20	14	6	6	1.00	100%
3	20	16	4	4	1.00	100%
4	18	15	3	5	0.60	60%
5	17	11	6	9	0.67	67%
6	20	12	8	8	1.00	100%
7	20	15	5	5	1.00	100%
8	16	15	1	5	0.20	20%
9	20	14	6	6	1.00	100%
10	15	14	1	6	0.17	17%
11	18	15	3	5	0.60	60%
12	19	16	3	4	0.75	75%
13	19	12	7	8	0.88	88%
14	20	16	4	4	1.00	100%
15	17	14	3	6	0.50	50%
<b>Mean</b>	<b>18.60</b>	<b>14.40</b>	<b>4.20</b>	<b>5.60</b>	<b>0.76</b>	<b>76%</b>



The results of the N Gain test in the experimental class which consisted of 15 observation objects showed that the average post-test score was higher than the pre-test score. This indicated that children in the experimental class tended to experience an increase in scores by giving treatment through the traditional Balogo game. The average N Gain result in the experimental class in this study was 76% which was categorized at a high level, and the category of effectiveness level included in the effective/increasing category. This means that the treatment of traditional Balogo games has a fairly effective effect on improving early childhood emotional intelligence.

Furthermore, the results of the n-gain analysis in the control class involving pre-test and post-test values can be seen in the following table:

Table 13: Calculation of the N-gain score in the control class

N-GAIN SCORE CALCULATION						
No	Post-test	Pre-test	Post-Pre	Ideal Score (20-Pretest)	N-Gain Score	N-Gain Score (%)
1	18	17	1	3	0.33	33%
2	15	13	2	7	0.29	29%
3	17	16	1	4	0.25	25%
4	15	15	0	5	0.00	0%
5	16	16	0	4	0.00	0%
6	15	13	2	7	0.29	29%
7	14	13	1	7	0.14	14%
8	18	17	1	3	0.33	33%
9	14	14	0	6	0.00	0%
10	15	15	0	5	0.00	0%
11	16	15	1	5	0.20	20%
12	16	16	0	4	0.00	0%
13	16	13	3	7	0.43	43%
14	16	16	0	4	0.00	0%
15	15	14	1	6	0.17	17%
<b>Mean</b>	<b>15.73</b>	<b>14.87</b>	<b>0.87</b>	<b>5.13</b>	<b>0.16</b>	<b>16%</b>

Furthermore, the results of the N-gain test in the control class which consisted of 15 observation objects showed that the average post-test score was higher than the pre-test score. This indicated that children in the experimental class tended to experience an increase in scores in the absence of treatment (control). The average N-gain result in the experimental class in this study was 16% which was categorized as a low level, and the effectiveness level category was included in the ineffective/not increasing category. This means that if children are not given any treatment (control) it will not increase emotional intelligence based on the results of the pretest and post-test in early childhood.

#### 4. Discussion

In this sub-chapter, a discussion related to the results of the research is carried out. Balogo game techniques can be done one on one or in groups. Team games are played between 2 to 5 people per team. The Balogo game instills cultural values for playing traditional Balogo games, for example, teamwork, managing one's own emotions, the

desire to win the game, accepting defeat, and social relations with friends and neighbors playing traditional games. This is related to increasing emotional intelligence in early childhood, namely by managing one's own emotions, especially when the game is carried out in groups. How to motivate yourself to win matches, be empathetic towards fellow teams and opponents, and establish social relationships with players and spectators.

The results of the research are in line with Gundana's research (2016) on tracing early childhood intelligence through the conventional diversion of "kaulinan barudak". The City of Tasikmalaya and increasing insight into the interests of children aged 5-6 years in Kindergarten Nurul 'Ilmi Tasikmalaya City with a certainty level of 95%.

Furthermore, this research is also in line with Priono's research (2022) entitled "Socialization of Increasing Emotional Intelligence and Sports Ability Through Traditional Game Activities for Students of MTs Private Mulia Sei Balai Batu Bara". Priono's research (2022) gave results that 5% of students had never played traditional games, 65% stated the importance of traditional games to improve emotional intelligence, and 60% of parents and teachers believed that traditional games could improve sports abilities. This study has the conclusion that traditional games based on the perspective of students' parents are still very important to be preserved because they can increase emotional intelligence which will be useful for the future.

Some of the alignment of the results of this study with previous studies provide views related to the views of traditional games in increasing children's emotional intelligence. Traditional games are often related to teamwork, managing one's own emotions, the desire to win the game, accepting defeat, and social relations with friends and neighbors in carrying out traditional games.

## **5. Conclusion & Recommendations**

From the results and discussion in this study, it can be found that in the TK Dharma Bahagia, Samarinda City, related to increasing the emotional intelligence of children aged 5-6 years, there is a difference between the experimental group B1 class which uses the traditional game "Balogo" and the control class which uses conventional games. significant difference. The average N-Gain result in the experimental class in this study was 76% which was categorized as a high level, and the effectiveness level category was included in the effective/improved category. This means that the treatment of traditional Balogo games has a fairly effective effect on improving early childhood emotional intelligence. Meanwhile, the average N Gain result in the experimental class in this study was 16% which was categorized as a low level, and the category of effectiveness level included in the ineffective/not increasing category. This means that if children are not given any treatment (control) it will not increase emotional intelligence based on the results of the pretest and posttest in early childhood.

The results of this study state that the treatment of the traditional Balogo game has a fairly effective effect on increasing emotional intelligence in early childhood. This means that traditional games are very important in increasing children's emotional intelligence. Traditional games are often related to teamwork, self-management of emotions, the desire to win games, accepting defeat, and social relations with friends and neighbors in traditional games. Teachers and parents can give their children a little freedom regarding traditional games to increase children's emotional intelligence, considering that emotional intelligence is a very important aspect of a social life besides intellectual intelligence.

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## Appendix A

### Raw Data (Experimental class example)

No	KKE Indicator	Number of Students in Class B1 (Experiment)															Ave- rage	Amount
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
		T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1		Pre-test
		T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1		T1
1	Realize yourself	4	4	4	4	3	4	3	4	4	3	3	4	4	4	3	3.67	55
2	Manage emotions	4	3	4	4	2	2	3	3	3	3	3	4	2	4	3	3.13	47
3	Motivate yourself	3	3	3	3	2	2	3	3	3	3	3	3	2	3	3	2.80	42
4	Be Empathic	3	2	3	2	2	2	3	3	2	3	3	3	2	3	3	2.60	39
5	Establish social relationships	3	2	2	2	2	2	3	2	2	2	3	2	2	2	2	2.20	33
	<b>Value Amount</b>	<b>17</b>	<b>14</b>	<b>16</b>	<b>15</b>	<b>11</b>	<b>12</b>	<b>15</b>	<b>15</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>12</b>	<b>16</b>	<b>14</b>	14.40	216
	<b>Average</b>	<b>3.4</b>	<b>2.8</b>	<b>3.2</b>	<b>3.0</b>	<b>2.2</b>	<b>2.4</b>	<b>3.0</b>	<b>3.0</b>	<b>2.8</b>	<b>2.8</b>	<b>3.0</b>	<b>3.2</b>	<b>2.4</b>	<b>3.2</b>	<b>2.8</b>		

# Investigation of the Relationship Between Self-Perceptions of Fine Arts High School Students Towards Their Instruments and Their Music Performance Anxiety

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## Abstract

In the study, it was aimed to examine Fine Arts High School (FAHS) students' self-perceptions for their musical instruments and their music performance anxiety according to some variables. Also it was aimed to reveal the relationship between their self-perceptions for musical instrument and music performance anxiety. The sample of the research consisted of 273 music department students studying at Malatya Abdulkadir Eriş FAHS, Konya Çimento FAHS, Balıkesir T.C. Ziraat Bankası FAHS and Ayvalık Sebahat-Cihan Şişman FAHS. The data for the research were obtained by using the "Self-Perception Scale for A Musical Instrument" and the "Kenny Musical Performance Anxiety Scale". As a result of the study, it was determined that Ayvalık Sebahat-Cihan Şişman FAHS students had lower music performance anxiety than students of other schools. It was concluded that female students experienced more anxiety than male students. In addition, it was determined that as the duration of education increased, the level of self-perception for the musical instrument increased. A statistically significant negative weak correlation was found between self-perception for the musical instrument and musical performance anxiety values. In other words, it was concluded that as the students' self-perceptions for their musical instruments increased, their music performance anxiety decreased.

**Keywords:** Self-Perception for the Musical Instrument, Music Education, Music Performance Anxiety

## 1. Introduction

Anxiety, one of the most fundamental emotions individuals have experienced, is a feeling of unpleasant internal confusion. It can cause fatigue, muscle tension, restlessness, difficulty in breathing, tightness in the abdomen, nausea and concentration problems. Uncertainty in life and being unsure about the situations encountered can cause individuals to feel anxiety from time to time, and individuals with anxiety may hesitate to repeat situations that caused them anxiety in the past. American Psychological Association defines anxiety as “an emotion characterized by physical changes such as feelings of tension, anxious thoughts, and increased blood pressure” (Barker, 2003; Chand and Marwaha, 2022; Davison, 2008; Felman, 2020; Huberty, 2009; Miceli and Castelfranchi, 2015; “Overview-Generalized anxiety disorder in adults”, 2018).

Individuals may experience anxiety while taking an exam, speaking in front of the public, participating in sports competitions, performing arts such as dance, acting and music. This anxiety is encountered under different names in the literature such as performance anxiety, music performance anxiety, stage fright, stage excitement, concert anxiety (Baydağ & Alpagut, 2016; Baydağ & Bolat Başoğlu, 2018; Çimen, 2001; Gidergi Alptekin, 2012; Kabakçı, 2016; Kafadar, 2009; Kenny, 2011; Onuray Eğilmez, 2021; Özgür, 2017; Teztel & Aşkın, 2007; Topoğlu, 2014 Yağışan, 2009; Yöndem, 2012). All individuals who play an instrument engage in a long period of practice and devote months or even years to this practice in order to increase their mastery of their instruments and to identify with their instruments. However, these efforts are not enough to prevent some mistakes or to show the real performance from time to time during the performance with the instrument in front of the ensemble. Prejudiced thoughts, such as that something will go wrong before performing, increase music performance anxiety, negatively affect the self-confidence of the individual and cause them to experience such negative emotions more often. In cases where high levels of music performance anxiety are experienced, some physiological reactions may be observed, as well as discomfort up to the level of panic attacks. The aforementioned physiological reactions and various disorders caused by anxiety may also prevent the individual from performing the expected performance on stage. (Jelen, 2017; Kafadar, 2009; Wilson & Roland, 2002).

Music performance anxiety is a common problem not only among amateur but also professional musicians. Famous pianist F. Chopin; "I am not fit to give a concert. The audience scares me, I feel suffocated by their breath, startled by their curious gaze, and dumbfounded by all those foreign faces." In his words, he revealed how music performance anxiety is a situation that affects professionals. Famous musicians such as Maria Callas, Enrico Caruso, Pablo Casals, Luciano Pavarotti, Leopold Godowsky, Wladimir Horowitz, Ignacy Paderewski, Arthur Rubenstein and Sergei Rachmaninoff are also known to experience musical performance anxiety (Kenny, 2011; Ostwald, 1994; Schonberg, 1963; Valentine, 2002; Wilson & Roland, 2002). A study conducted on 214 professional artists on music performance anxiety and its causes proves this idea, with its result that 39% of musicians had music performance anxiety (Osorio et al., 2017).

There have been many studies on music performance anxiety. In a study conducted on 78 music teacher candidates, it was found that women experienced more music performance anxiety than men, graduated high school and grade level did not have a significant effect on music performance anxiety, and there was a negative relationship between self-confidence and music performance anxiety (Özevin Tokinan, 2014).

In another study conducted on students, studying at secondary and high school level in state conservatories, it was found that female students experienced higher performance anxiety than male students, and stringed instrument players experienced higher performance anxiety than other instrument groups. It was determined that students who had their first stage experience before the age of 5 had lower anxiety than students who had their first stage experience at older ages, it was seen that music performance anxiety increased as the level of education increased. It has also been found that there is a positive relationship between the music performance anxiety and age (Aydn and İşgörür, 2018).

In a study conducted on the causes of music performance anxiety, 57% of the participants stated that the difficulty of repertoire, 52% of the participants stated that concerns about the audience's reaction and 51% of the participants stated that feeling under pressure triggered performance anxiety. Among the methods of dealing with the anxiety in question are breathing and relaxation techniques with 66% and increasing working time with 53%. (Osorio et al., 2017). In another study conducted in various music schools, it was determined that meditation has a positive effect on music performance anxiety (Chang et al., 2003).

The above-mentioned studies on the causes and coping methods show that music performance anxiety is a problem encountered from time to time among musicians. It is thought that there may be a change in the level of anxiety felt by the individuals who play the instrument depending on their self-perceptions for their musical instruments, in other words, one of the factors affecting the music performance anxiety may be the individuals' self-perceptions about playing the instrument. This idea has been influential in shaping the present study.

“Self” is an individual's conscious evaluation of himself/herself (Baumeister, 1999; Pescitelli, 1996; Spreckly et al., 2009). How he/she perceives himself/herself, what his/her observations about himself/herself are the factors that constitute the self-concept. Self-concept has a genetic feature, but it is shaped by the individual's experience with his/her environment and is particularly affected by environmental reinforcements (Bayat, 2003; Shavelson et al., 1976). Beliefs such as "I am a good friend" or "I am a good person" are expressed as parts of a general self-concept. It is stated that self-perception is basically the sum of beliefs one has about one's own and others' reactions, in short, it is the answer to the question "Who am I?". It is known that how an individual perceives himself has a significant effect on his motivation, attitude and thoughts (Cherry, 2022).

Shavelson et al. (1976) discussed the self-concept hierarchically. Accordingly, at the top of the hierarchy is the general self-concept. General self-concept; when considered hierarchically, it is divided into academic and non-academic. The academic self-concept is divided into subject areas and then specific areas within a subject. The non-academic self-concept is divided into social, emotional and physical self-concepts and then more specific aspects similar to the academic self-concept. Academic self-concept consists of sub-factors such as mathematics, language, history and music, and music is divided into specific titles such as singing, playing an instrument and directing (Shavelson et al., 1976; Swann et al., 2007).

Shavelson et al. (1976), the place of the self-concept in music within the general self-concept is shown in Figure 1 (Özevin Tokinan, 2013; Ruismaki and Tereska, 2006; Vispoel, 1994).

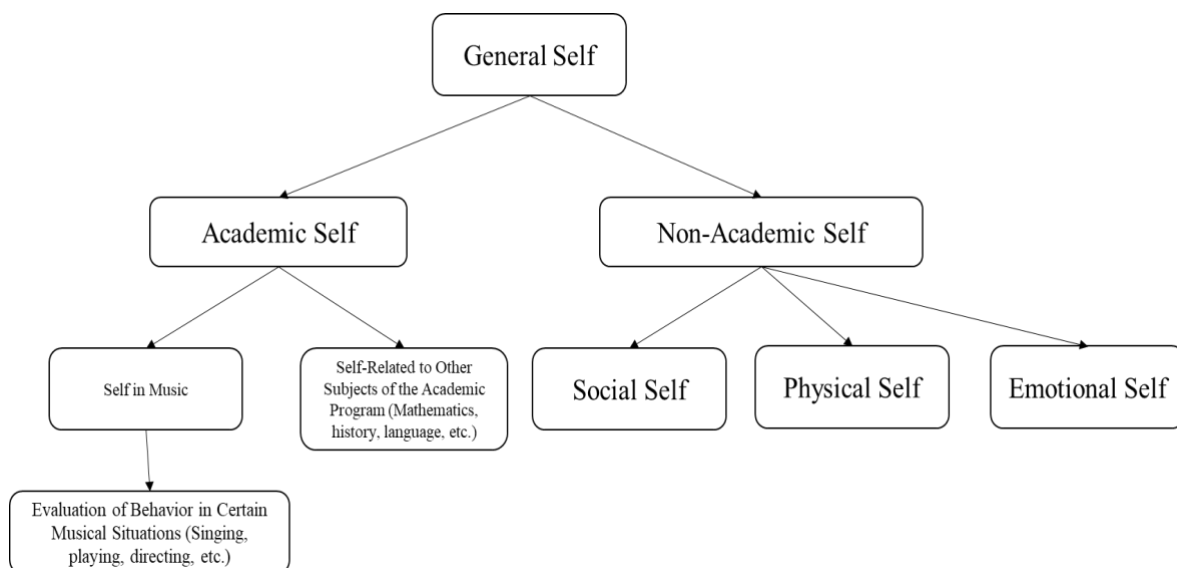


Figure 1: Self-concept in music in the hierarchical organization of the general self-concept

Self-concept in music is related to motivation towards music practice, especially intrinsic motivation. Students with high musical self-perceptions in educational settings tend to put more effort into musical outcomes and learning strategies and perform better in musical activities (Austin & Vispoel, 1998; Schmidt, 2005). Self-concept in music is part of a self-concept hierarchy that includes a superior artistic field and lower-level components (musical composition, playing an instrument, reading music, etc.) (Vispoel, 1995).

There are various studies that address the self-concept in music in terms of different variables. According to the results of these studies, it has been determined that women have higher motivation and participate more in musical activities compared to men (Evans et al., 2002; Jacobs et al., 2002; Simpkins et al., 2010; Wigfield et al., 1997). In addition, in the researches, gender differences in many dimensions of self-concept in music have been underlined and it has been found that women were more prominent. (Austin, 1991; Austin and Vispoel, 2000; Eccles et al. 1993; Forte and Vispoel 1995; Vispoel, 1993; Vispoel and Forte, 1994, 2000; Vispoel and Rizzo, 2003). Vispoel (1994) put forward that the self-concept in music becomes increasingly multifaceted as the individual ages and gains experience in music. However, the specific age at which this differentiation occurs has

not been determined in the empirical research. Although previous research has identified some age or class-related differences in self-perceptions in music, importance and interests in music (Austin and Vispoel, 2000; Eccles et al. 1993), the interrelationship between the structure of self-perception in music and the components of musical self-perception can be seen from middle school to university did not show any change (Vispoel, 2003). However, no systematic testing of the measurement invariance of measurements of self-concept in music across gender, age, and grade has been conducted. This is an important limitation of previous research in this area. Because measurement invariance is a critical prerequisite for any valid group-based comparison (Meredith, 1993; Millsap, 2011; Morin et al. 2015).

One of the sub-factors of self-concept in music is playing an instrument. Self-perception for the musical instrument refers to how the individual perceives himself/herself in playing the instrument, what qualities he/she has and what his/her goals are. It is very important for an individual to have a high level of self-confidence and feel competent in playing an instrument. Individuals who are not aware of their capacity, lack self-confidence and do not feel competent in their instrument cannot be expected to be successful (Otacıoğlu, 2009). In this context, it is thought that individuals' self-perceptions for their musical instruments have an effect on their instrument performance and therefore their performance anxiety. The research was designed based on this idea and was carried out in line with the following purpose.

## 2. Aim of the Study

In the study, it was aimed to examine the self-perceptions of the FAHS students for their musical instruments and their music performance anxiety according to some variables. Also it was aimed to reveal the relationship between students' self-perceptions for their musical instruments and their music performance anxiety. In line with this general purpose, it was tried to seek answers to the following questions.

Is there a significant difference in students' self-perceptions for their musical instruments:

1. according to gender?
2. according to the school?
3. according to the grade level?
4. according to the year of playing the instrument?

Is there a significant difference in students' music performance anxiety:

5. according to the gender?
6. according to the school?
7. according to the grade level?
8. according to years of playing the instrument?
9. Is there a significant relationship between students' self-perceptions for their musical instruments and their musical performance anxiety?

The research is important in terms of examining students' self-perceptions for their musical instruments and their musical performance anxieties with respect to some variables, and revealing the relationship between performance anxiety and self-perceptions for the musical instrument. The results of the research are also important in the sense that they shed light on new research to be conducted in this field.

## 3. Method

In the study, correlational research method, one of the quantitative research methods, was used. "Correlational studies are researches carried out to determine the relationships between two or more variables and to obtain clues about cause and effect" (Büyüköztürk et al., 2017).



### 3.1. Study Population and Samples

While determining the sample, schools located in different geographical regions in Turkey were selected. Participants in the research consist of music students studying at Malatya Abdulkadir Eriş FAHS in the Eastern Anatolia Region, Konya Çimento FAHS in the Central Anatolia Region, Balıkesir T.C. Ziraat Bankası FAHS and Ayvalık Sebahat-Cihan Şişman FAHS in the Marmara Region. A questionnaire was distributed to the whole schools, and 273 students who were willing to answer the questionnaire participated in the research. Descriptive statistics about the sample group are given in Table 1.

Table 1: Descriptive statistics about the sample group

		N (273)	%
<b>Gender</b>	Female	147	54
	Male	126	46
<b>School name</b>	Balıkesir T.C. Ziraat Bank FAHS	47	17
	Ayvalık Sebahat-Cihan Şişman FAHS	60	22
	Malatya Abdulkadir Eriş FAHS	100	37
	Konya Çimento FAHS	66	24
<b>Class</b>	9th grade	54	20
	10th Grade	101	37
	11th grade	56	20
	12th Grade	62	23
<b>Instrument Playing Duration</b>	Less than 1 year	45	16
	1 year	29	11th
	2 years	50	18
	3 years	44	16
	4 years	56	21
	More than 4 years	49	18
<b>Number of Events in a Year</b>	<b>School name</b>	<b>Number</b>	
	Balıkesir T.C. Ziraat Bankası FAHS	19	
	Ayvalık Sebahat-Cihan Şişman FAHS	41	
	Malatya Abdulkadir Eriş FAHS	9	
	Konya Çimento FAHS	22	

Of the 273 students who participated in the survey, 147 (54%) were female students, while 126 (46%) were male students. 37% were Malatya Abdulkadir Eriş FAHS, 24% Konya Çimento FAHS, 22% Ayvalık Sebahat-Cihan Şişman FAHS, and 17% Balıkesir T.C. Ziraat Bankası FAHS students. Likewise, 20% of these students were 9th grade students, 37% were 10'th grade, 20% were 11'th grade and 23% were 12'th grade students. 21% of the students have been playing instruments for 4 years, 18% for 2 years, again 18% for more than 4 years, 16% for less than 1 year, 16% for 3 years and 11% for 1 year. Considering the instrument playing times of the students, it was seen that all of them were almost numerically close to each other, in other words, they exhibit a homogeneous distribution. Nevertheless, it can be said that the students who participated in the survey were experienced students (3 years and above) in terms of playing instruments. Ayvalık Sebahat-Cihan Şişman FAHS was the school that held the most events in their school.

### 3.2. Data Collection Tools

The data were obtained by using the "Self-Perception Scale for A Musical Instrument" developed by Karabulut and Tufan (2014) and the "Kenny Music Performance Anxiety Scale" developed by Kenny (2004) that was adapted into Turkish by Banu Özevin Tokinan (2013).

**Self-Perception Scale for A Musical Instrument:** The scale is a 5-point Likert-type scale, consisting of 19 items that aims to measure students' self-perceptions for their musical instruments. Developed in 2014, the validity and reliability studies of the scale were conducted on 135 students attending the 11th grades of six fine arts high schools. SPSS statistical package program was used for analysis. Factor analysis was performed to determine the construct validity.

**Kenny Music Performance Anxiety Scale:** Kenny Music Performance Anxiety Scale is a 7- point Likert-type scale consisting of 25 items that aims to measure students' music performance anxiety. Validity and reliability studies have been carried out for the scale, and linguistic equivalence studies have been carried out to ensure its adaptation to Turkish culture. The studies were carried out with 696 students continuing their undergraduate education in the music education departments of various universities.

In the current study, the Cronbach's Alpha value of the self-perception for a musical instruments scale was found to be 0.91, while the Cronbach's Alpha value of the Music performance anxiety scale was found to be 0.95. These results show that the reliability values of the scales are quite sufficient. In other words, the reliability values of the scale items were found to be quite high. (Table 2)

Table 2: Reliability analysis of the scale

Scales	Number of Items	Cronbach's Alpha Values
Self-Perception for the Musical Instrument	19	0.912
Music Performance Anxiety	25	0.958

### 3.3. Data Collection and Analysis

The questionnaire for Konya Çimento FAHS and Balıkesir T.C. Ziraat Bankası FAHS were applied online, in Ayvalık Sebahat-Cihan Şişman FAHS and Malatya Abdulkadir Eriş FAHS it was applied to the classrooms during class hours.

Non-parametric tests were used because the mean values of the Self-Perception Scale for A Musical Instrument and the Music Performance Anxiety Scale, which were produced by taking the average values of the answers given by the students to the scales' questions in the survey, did not conform to the statistically normal distribution.

Mann-Whitney U Test was used to determine whether there was a statistically significant difference between the mean scores of students' self-perception for the musical instrument according to gender and teacher change. In addition, whether there is a statistically significant difference between the music performance anxiety averages of the students according to gender and teacher change was also analyzed with the Mann-Whitney U Test. The Mann-Whitney U Test is used when it is desired to compare whether two populations have a similar distribution. The Mann-Whitney U Test is widely used as an alternative to the t-test, which is one of the parametric tests, in non-parametric tests (Bayram, 2015).

In addition, Kruskal Wallis was used to determine whether there was a statistically significant difference in students' mean self-perception for the musical instrument according to schools, grade level and duration of playing the instrument. The Kruskal Wallis test was used to analyze whether there was a statistically significant difference in the musical performance anxiety averages of the students according to the schools, grade level and instrument playing time. The Kruskal Wallis H Test is the equivalent of the one-way analysis of variance (ANOVA) test in non-parametric tests. With this test, it is investigated whether the K sample comes from the same population or from populations with equal averages (Bayram, 2015). Spearman's Rank Correlation was used to determine the relationship between students' self-perception averages for the musical instrument and their musical performance anxiety averages.

## 4. Findings

### 4.1. Findings Regarding the First Research Question

Table 3 shows whether the mean rank of the male and female students' self-perception for the musical instrument is different from each other.

Table 3: Self-perception for the musical instrument by gender

Descriptive Statistics			Mann-Whitney U Test statistic	Sig.
Gender	N	Mean Rank		
Female	147	133.03	8677.50	0.369
Male	126	141.63		

In Table 3, when the Mann-Whitney U Test statistic and its significance value are analyzed, it is seen that the value is 0.369, which is higher than 0.05 at 95% confidence level. According to this result, it was determined that there was no statistically significant difference between the students' self-perception averages for the musical instrument, according to gender.

### 4.2. Findings Regarding the Second Research Question

Table 4 shows whether there is a statistically significant difference between the self-perception averages of students from four different schools for the musical instrument.

Table 4: Self-perception for the musical instrument by school

Descriptive Statistics			Chi Square	Sig.
School Name	N	Mean Rank		
Balikesir T.C. Ziraat Bank FAHS	47	141.17	0.966	0.809
Ayvalık Sebahat-Cihan Şişman FAHS	60	141.29		
Malatya Abdulkadir Eriş FAHS	100	130.90		
Konya Çimento FAHS	66	139.37		

According to the Kruskal Wallis H Test result in Table 4, the significance value is 0.809, which is higher than 0.05 at 95% confidence interval. According to this result, it was determined that there was no statistically significant difference between the self-perception averages of the students for the musical instrument in four different schools.

### 4.3. Findings Regarding the Third Research Question

Table 5 reveals whether there is a statistically significant difference between the averages of students' self-perception for the musical instrument in four different classes.

Table 5: Self-perception for the musical instrument by grade level

Descriptive Statistics			Chi Square	Sig.
Class	N	Mean Rank		
9th grade	54	143.49	4,703	0.195
10th Grade	101	138.25		
11th grade	56	148.25		
12th Grade	62	119.15		

According to the Kruskal Wallis H Test result in Table 5, it is seen that the significance value is 0.195, that is, it is higher than 0.05 at 95% confidence interval. As a result, there is no statistically significant difference between the average of self-perceptions of students for the musical instrument in four different classes.

#### 4.4. Findings Regarding the fourth research Question

In Table 6, it is revealed whether there is a statistically significant difference between the averages of the students' self-perception for the musical instrument in different playing periods.

Table 6. Self-perception for the musical instrument according to the instrument playing time

Descriptive Statistics			Chi Square	Sig.
Instrument Playing Time	N	Mean Rank		
Less than 1 year	45	127.37	10,558	0.050
1 year	29	117.43		
2 years	50	146.12		
3 years	44	129.24		
4 years	56	128.38		
More than 4 years	49	164.94		

According to the Kruskal Wallis H Test result in Table 6, it is seen that the significance value is 0.050, that is, it is equal to 0.05 at 95% confidence interval. In other words, there is a statistically significant difference between the averages of the students' self-perception for the musical instrument in six different instrument playing times. The mean rank value of the students whose instrument playing time is longer than 4 years was higher than the others.

#### 4.5. Findings Regarding the Fifth Research Question

Table 7 shows whether the music performance anxiety averages of male and female students differ from each other.

Table 7: Music performance anxiety status by gender

Descriptive Statistics			Mann-Whitney U Test statistic	Sig.
Gender	N	Mean Rank		
Female	147	158.94	6035,500	0,000
Male	126	111.40		

Looking at the Mann-Whitney U Test statistic and its significance value in Table 7, it is seen that the significance value is less than 0.05 at 95% confidence interval. As a result, it is seen that there is a statistically significant difference between the music performance anxiety averages of the students according to gender. When the mean rank value is analyzed, it has been determined that the value of male students is lower than that of female students.

#### 4.6. Findings Regarding the Sixth Research Question

Table 8 shows whether there is a statistically significant difference between the music performance anxiety averages of students from four different schools.

Table 8: Music performance anxiety status by school variable

Descriptive Statistics			Chi Square	Sig.
School name	N	Mean Rank		
			10,160	0.017

Balikesir T.C. Ziraat Bank FAHS	47	142.12
Ayvalık Sebahat-Cihan Şişman FAHS	60	109.88
Malatya Abdulkadir Eris FAHS	100	140.31
Konya Çimento FAHS	66	152.99

Looking at the Kruskal Wallis H Test statistic and its significance value in Table 8, it is seen that the significance value is 0.017, that is, it is lower than 0.05 at 95% confidence interval. As a result, it is seen that the mean rank value of Ayvalık Sebahat-Cihan Şişman FAHS is lower than the averages of other schools.

#### 4.7. Findings Regarding the seventh research Question

Table 9 shows whether there is a statistically significant difference between the music performance anxiety averages of the students in four different classes.

Table 9: Music performance anxiety by grade level

Descriptive Statistics			Chi Square	Shallow.
Class	N	Mean Rank		
9th grade	54	146.77	2,894	0.408
10th Grade	101	140.76		
11th Grade	56	122.83		
12th Grade	62	135.16		

According to the Kruskal Wallis H Test result in Table 9, the significance value is 0.408, which is higher than 0.05 at 95% confidence interval. As a result, there is no statistically significant difference between the music performance anxiety averages of the students in four different classes.

#### 4.8. Findings Regarding the Eighth Research Question

Table 10 shows whether there is a statistically significant difference between the music performance anxiety averages of the students in six different instrument playing periods.

Table 10: Music performance anxiety status by instrument playing time

Descriptive Statistics			Chi Square	Shallow.
Instrument Playing Time	N	Mean Rank		
Less than 1 year	45	139.86	5,346	0.375
1 year	29	141.66		
2 years	50	156.11		
3 years	44	133.49		
4 years	56	122.09		
More than 4 years	49	132.32		

According to the Kruskal Wallis H Test result in Table 10, the significance value is 0.375, which is higher than 0.05 in the 95% confidence interval. As a result, there is no statistically significant difference between the music performance anxiety averages of the students in six different instrument playing times.

#### 4.9. Findings Regarding the Ninth Research Question

Table 11 shows the relationship between students' self-perceptions for their musical instruments and their music performance anxiety.

Table 11: The relationship between self-perception for the musical instrument and music performance anxiety

<b>Descriptive Statistics</b>		<b>Spearman's rho</b>	<b>Sig.</b>
<b>scales</b>	<b>N</b>		
Average of Self-Perception for the Musical Instrument	273	-0.270	0,000
Average of Music Performance Anxiety	273		

According to the result of the correlation analysis in Table 11; There is a statistically significant negative weak correlation between the average of the Self-Perception Scale for the Musical Instrument and the average of the Music Performance Anxiety Scale.

## 5. Discussion and Conclusion

### 5.1. Discussion and Results Regarding the First Research Question

No significant difference was found in the self-perceptions of FAHS students for their musical instruments, according to the gender variable. As a result of this finding, it can be said that there is no difference in the self-perceptions of male and female students for their musical instruments. This situation can be attributed to the fact that the education curriculum of the students is the same, the co-education model is applied without gender discrimination, and the opportunities provided by the principle of equality in the conditions of education are applied in the same way for everyone. In some studies, conducted on adolescents, no significant difference was found between gender and self-perception (Altuntaş, 2020; Elsel, 2021). However, in other studies on self-perception for the musical instrument, it is seen that male students have higher self-perceptions than female students (Arıcı, 2019; Karabulut, 2014).

### 5.2. Discussion and Results Regarding the Second Research Question

No significant difference was found in the self-perceptions of FAHS students for their musical instruments, according to the school variable. According to this result, it can be said that the school they attend does not affect the students' self-perception for their musical instruments. Considering the fine arts high schools participating in the survey, the sufficient internet infrastructure in the Central Anatolia, Eastern Anatolia and Marmara regions of Turkey where the sample group in question was selected, the curriculum determined by the ministry of education being processed in the same way in these schools, the presence of sufficient number of teachers and administrative personnel in the schools, and the fact that there are no problems in the technical infrastructure and facilities at a level that hinders education can be shown as the reason why there is no significant difference in students' self-perceptions for the musical instrument between schools. However, in a study, contrary to the current results, it was stated that students studying in Southeastern Anatolia and Eastern Anatolia had higher self-perceptions for the musical instrument than students studying in other regions (Karabulut, 2014).

### 5.3. Discussion and Results Regarding the Third Research Question

No significant difference was found in the self-perceptions of FAHS students for their musical instruments, according to the grade level variable. In this result, it can be said that students' self-perceptions for the musical instrument do not differ by grade level. The fact that the students had similar school experiences may be cited as a reason for this result. Similarly, in Elsel's (2021) study conducted on adolescents, no significant difference was found between class level and self-perception. Contrary to the results of the current research, in another study conducted with high school students, it was determined that self-perception differs according to grade level (Erözkan, 2004).

### 5.4. Discussion and Results Regarding the Fourth Research Question

A significant difference was found in FAHS students' self-perceptions for their musical instruments, according to the variable of instrument playing time. The fact that the students spent a long time with their instruments and had

the opportunity to perform many performances during this time may have been effective in increasing their self-perceptions for their musical instruments. The increase in the duration of playing instruments may have increased the students' sense of belonging to their instruments and gave them time to realize themselves. According to this result, it can be said that the duration of playing the instrument affects the self-perception for the musical instrument. Arıcı (2019) also concluded in his research that as students' individual instrument playing time increases, their level of self-perception for their musical instruments also increases.

#### *5.5. Discussion and Results Regarding the Fifth Research Question*

A significant difference was found in the music performance anxiety of FAHS students according to gender variable. Based on this result, in terms of gender variable, it was concluded that female students have higher music performance anxiety than male students. In a study, it was determined that women were diagnosed with psychological disorders more than men (Marye, 2011). Music performance anxiety is also a psychological disorder that affects individuals (Kenny, 2005). The fact that women experience more performance anxiety than men can be attributed to this situation. In some studies, it has been stated that the anxiety levels of girls are higher than boys (Yöndem, 2007; Özevin Tokinan, 2014; Studer et al., 2011; Abel et al., 1990; Jelen, 2017; Kaspersen and Gotestam, 2002; Steptoe et al., 1995). Abel et al. (1990) stated that this gender-based difference in music performance anxiety may be due to the fact that women are more likely to express anxious feelings openly than men.

#### *5.6. Discussion and Results Regarding the Sixth Research Question*

A significant difference was found in the music performance anxiety of FAHS students according to the school variable. According to this result, it can be said that the school variable affects the state of music performance anxiety. The school with the lowest level of music performance anxiety was found to be Ayvalık Sebahat-Cihan Şişman FAHS. As can be seen in Table 1, the fact that the students at the school in question gave many concerts and organized many activities can be cited as a reason for this. The fact that the students were in environments where they would perform a lot may have increased their self-confidence and ensured that their anxiety levels were low during the performance. Contrary to the current research results, there are also studies that conclude that the school variable does not have a significant effect on music performance anxiety (Baydağ & Alpagut, 2016; Erözkan, 2020).

#### *5.7. Discussion and Results Regarding the seventh research Question*

No significant difference was found in the music performance anxiety levels of the FAHS students according to the class variable. According to this conclusion, it can be said that the grade level variable does not affect the music performance anxiety state. The fact that the students have similar school experiences may be cited as a reason for this result. It has been observed that some studies in the literature have findings that support the results of the current research (Erözkan, 2020; Güdek and Çiçek, 2017). In another study, it was concluded that the class variable had an effect on music performance anxiety, and it was determined that as the class levels of the students increased, their performance anxiety levels also increased (Aydın, 2017).

#### *5.8. Discussion and Results Regarding the Eighth Research Question*

No significant difference was found in the musical performance anxiety of the FAHS students according to the instrument playing time variable. As a result, there is no statistically significant difference between the music performance anxiety averages of the students in six different instrument playing times. In some studies, it was concluded that the duration of education did not affect the music performance anxiety (Özevin, Tokinan, 2014; Sadler and Miller, 2010).

### 5.9. Discussion and Results Regarding the Ninth Research Question

A statistically significant negative weak relationship was found between the average values of the Self-Perception Scale for a Musical Instrument and the average values of the Music Performance Anxiety Scale. In other words, it was concluded that as the students' self-perceptions for their musical instruments increased, their music performance anxiety decreased.

The fact that students with high self-perception for the musical instrument have a good command of the piece they will perform, have a high sense of belonging to their instruments, pay the necessary attention to the piece they will perform and continue their studies in this way, as mentioned in the scale of self-perception for the musical instrument, the fact that students love their instruments, stating that the time they spend practicing with their instruments is enjoyable, expressing that their instruments reveal their talents and make them feel privileged in society can be shown as reasons for low music performance anxiety.

Accordingly, the results obtained from the study can be summarized as follows:

- 1- There was no statistically significant difference between the averages of students' self-perception for the musical instrument according to gender, four different schools, and grade level, but the difference was found to be significant according to the duration of playing the instrument.
- 2- While a statistically significant difference was found in favor of male students and in favor of Ayvalık Sebahat-Cihan Şişman Güzel Sanatlar High School, there was no significant difference in terms of grade level and instrument playing time.
- 3- A statistically significant negative weak relationship was found between the average values of the Self-Perception Scale for A Musical Instrument and the average values of the Music Performance Anxiety Scale.

## 6. Recommendations

In order to obtain more precise generalizations about the results related to the current research topic, it may be recommended to conduct different studies on larger, different samples and by increasing the variables used. In order for students to increase their self-perception for their musical instruments, it can be suggested that they should sufficiently examine the works they will perform, carry out the necessary research and studies on them, internalize the works they will perform by practicing them sufficiently, create a programmed study discipline related to the work they will perform, and work diligently on specific points in line with the directives of their instrument teachers. As a result of the research, it was determined that music performance anxiety decreased with the increase of self-perception for the musical instrument. Accordingly, it is thought that the implementation of the aforementioned suggestions will help students to decrease their music performance anxiety along with the increase in their self-perceptions for their musical instruments.

As a result of the research, it was determined that the school and education duration variable affected students' music performance anxiety. It is thought that the number of events such as concerts organized by the schools during the year and the duration of the education received by the students affect this result. Accordingly, it can be suggested to make arrangements in the curriculum to enable FAHS students to practice their instruments more, to increase instrument lesson hours, to enable students to perform on stage more frequently, and to provide information and practices on methods of coping with music performance anxiety in order to reduce the level of music performance anxiety.

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# Traineeships in Greek Higher Education: The State of the Art and the Way Forward

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## Abstract

The paper studies the establishment of work experience programs in the context of the Greek Higher Education Institutions (HEIs) and connects it with the attempts to include Work-Based Learning (WBL) in the education system on a large scale. Emerging challenges caused by two significant recent changes in the Greek Higher Education landscape set the aim of this study. The integration of Technological Education Institutions in Higher Education Institutions and a significant financial change initiated by the new law which transfers the cost of compensation for traineeships to host institutions and not to Operational Programs. The paper presents the current state of the art in the Greek Higher Education and provides a detailed analysis of the existing barriers. The particular study acquires special interest in light of the intensification of the efforts made all over the world aiming to improve the organization and implementation of such interventions. Work experience programs offered by HEIs are required to be better adjusted to the special educational and labor market characteristics of each country and to become more effective. In Greece, the educational and the labor market policy framework recognizes the significant contribution of WBL in general and of traineeships in particular to the development of the appropriate professional knowledge and competences by higher education students. At the same time, traineeships can operate as a communication channel between educational institutions, businesses and social partners, which facilitates their multifaceted information exchanges. Considering, however, the operational autonomy that has been granted to HEIs in Greece, each University develops its own strategy as regards the connection between higher education studies and the labor market. The research presented in the paper constitutes a quantitative analysis of all the types of traineeships implemented by the Greek HEIs with special reference to certain axes, the optional or mandatory character of WBL, the awarded ECTS, similarities of WBL within the same scientific field in different HEIs, the possibility to undergo a WBL placement abroad.

**Keywords:** Traineeship, Work-Based Learning, Internship, Higher Education Institutions, Greece

## 1. Introduction

In modern Greece, young people confront a series of challenges that are predominantly related to their smooth social and economic integration in the labor market. The challenge of their successful transition to employment is the most emblematic one, as they become more vulnerable than other groups due to the general shortage of jobs, the difficulty in accessing employment and the limited opportunities to acquire work experience. For many years the unemployment rates in Greece remain the highest in the European Union both in the case of young people under the age of 30 (2021: 28.4% vs. 13.0% of the EU average) (Eurostat database) and in the case of new higher education graduates of the same age group (2021: 14,7% vs. 6.8% of the EU average). At the same time, 25 to 64 year-old tertiary education graduates face the highest unemployment rate (17.2%) compared to the OECD member states (4.6%) (OECD, 2018).

In addition, labor market signals are intensifying with regard to the deterioration of the skills mismatch and the difficulty of enterprises in finding personnel with the necessary expertise and experience so as to easily adapt to the work environment. This situation seems to further hamper the transition of young people to employment.

Work-based learning (WBL) is the acquisition of knowledge and skills through carrying out tasks – and reflecting on them – in a professional context either in the workplace (as in work-based training) or in a vocational education and training institution (Cedefop, 2011; 2014; Morley, 2018). WBL is a generic term, denoting all types of learning that take place in a real work environment. Apprenticeships, internships/traineeships and on-the-job training are the most common types of work-based learning. These types usually combine elements of learning in the workplace with classroom-based learning. In the case of Higher Education Institutions, WBL can be included in the academic study programs, as a mandatory or optional course, funded by national or European funds or the enterprises. In Greek Higher Education Institutions, traineeships are the prevailing form of WBL.

In the direction of strengthening the efficiency of the transition to work, countries are introducing new or revising existing actions, which restore a closer relationship between education and the labor market. This aim is pursued through a wide range of activities, among which practical training actions stand out, allowing the participating students of different levels of education to gain direct professional experience and direct knowledge of the organization and operation of the workplace. Work experience activities appear significantly more numerous, more diverse and more inclusive, allowing interested groups to choose a path that meets their particular circumstances and needs. In addition, there is a tendency to upgrade work experience acquisition actions in the social consciousness, while they are determined according to a series of criteria, which include the general purposes and the more specific objectives that each one serves, the target groups to which it is addressed, the methodology with which it is applied, the place it occupies within the hierarchical organization of the educational system and the way in which the relevant experiences accumulate and connect (or not) organically with the other parts of the educational process.

Various forms of learning in the workplace are projected in the modern environment, which connect different practices of acquiring work experience with the educational process. Each of these has distinct goals and different requirements to meet, but the main purpose remains the transition to employment. From the complex network of such activities, the most widespread forms of gaining work experience in the professional environment in relation to the educational process are apprenticeships, traineeships and internships, which are given special emphasis by modern educational systems at both institutional and operational levels. Workplace learning is called upon to become organic part of the European policy to improve conditions in education, employment and social cohesion (Perusso & Wagenaar, 2021). For this reason, various European actors focus on their effectiveness by developing specific political initiatives and institutional infrastructure.

## 2. Literature Review

Through their participation in WBL programs, students not only develop useful social and professional skills, which would be difficult to acquire in the traditional educational environment, but they also improve their

knowledge of the working environment, thus enabling themselves to redefine their learning strategy (D'Abate et al., 2009; Martin & Wilkerson, 2006; Varghese et al., 2012; Perusso&Wagenaar, 2021). This experience contributes to the maximization of the studies' learning outcomes, to the improvement of the academic performance and to the enhancement of students' curriculum vitae, thus ensuring significant advantages for them in the recruitment processes (Ebner et al., 2021; Baert et al., 2021).

Previous work experience constitutes an important qualification for young people to be able to enter the labor market. Employers require it in the recruitment processes, while, in combination with the observed skills mismatches, its lack can hinder youth professional prospects or put them at risk of becoming NEETs (Young People not in Employment, Education or Training). Research has confirmed that such a danger exists and highlights the need for greater mobilization at national and supranational level for the design of appropriate work experience programs (Drakaki et al., 2013; Papadakis, 2013; Papadakis, 2021).

In recent decades we have seen a rapid increase in interest in Greece in finding effective ways to gain work experience through internship programs, which are understood as an alternative way to develop human capital (Mihail, 2006). These are differentiated according to the educational level and the learning needs to which they have to respond. Furthermore, they respond to the needs of multiple recipients, such as students and graduates, employees and employers (including their trade unions), teachers and business organizations, the labor market and the economy, society and policy makers. Experience from the real work environment helps them to readjust their individual learning strategy and seek to shape their academic and professional qualifications (and consequently their professional expectations) based on the conditions prevailing in it, and there is evidence of a positive effect of the internship on the academic performance of the participants (Matsouka & Mihail, 2016; Olo et al., 2021).

At the same time, participation in a WBL program is seen as an element that enriches the student's CV with work experience and enhances positive differentiation in the competitive environment (Collin & Tynjalla, 2003; Garavan & Murphy, 2001). The theoretical and technological knowledge acquired during studies is tested in practice, offering the individual the opportunity to adapt to evolving conditions by developing valuable transferable skills and professionally oriented abilities and maximizing the learning outcomes of educational activities.

It has also been observed that the participation in WBL is usually associated with higher wages, longer stays in (first) work and a lower risk of remaining unemployed, as well as a better match between qualifications and jobs after entering employment (Boud & Solomon, 2001). To these must be added the opportunity offered to individuals during a WBL activity to develop closer links with the labor market and to join a wider network of – potential – employers, an element that can undoubtedly play a decisive role in their future professional development. Recognizing the benefits derived from taking advantage of opportunities from the types of WBL offered, students are changing the priorities they set during their studies, choosing more often than in the past to combine periods of study and work either in parallel or alternately, while declaring their satisfaction with such participation. Work-based learning contributes to the methodical and practical utilization of the acquired knowledge and the consequent updating and development of further skills and abilities of young students.

Employers also gain significant advantages from the participation of their companies in WBL programs (Sessions, 2006; Urquia-Grande & Estébanez, 2018; Smith & Green, 2021). On the one hand, these programs are a means of better communication between the workplace and the educational providers at all levels, which allows them to participate in the reform of study programs and educational methods, so that students acquire the skills, abilities and qualifications that correspond to the existing demand in the labor market. In the long run this creates the conditions for the existence of a sufficient supply of skilled labor in accordance with the emerging needs of the economic system.

On the other hand, through WBL programs companies have access to a large pool of trained workforce, which allows them to apply more efficient search and recruitment procedures for personnel, who are suitable for their needs and can contribute substantially to the enhancement of productivity, efficiency and competitiveness of their businesses. Therefore, it becomes necessary to cultivate a culture supportive of WBL programs in business, in order to strengthen the prospects for its further promotion and the improvement of its effectiveness.

### 3. Work-based learning in the Greek context (HEIs)

Historically, the concept of WBL has received little attention in the Greek academic and policy framework as a result of inherent deficiencies in the cooperation between the Universities and the labor market. As a result, the provision of a minimum support to the students concerning a skills-based curriculum that will support them in the job transition was not evident (Asonitou, 2015; Panagiotakopoulos, 2012). A significant strategy applied by the Greek universities was to enhance the academic knowledge offered in their study programs on the basis that the theoretical learning should not be combined with the practical application during the studies of a student (Besta et al., 2009).

In Greece, WBL in the form of traineeships was first implemented by the Technological Education Institutes (TEIs) (Iakovides, 1998; Taousanidis & Antoniadou, 2008). In TEIs, WBL was integrated in the study program, had a duration of six months and in most cases students received a salary. From 1996, the work experience programs have been supported financially by the national operational programs. The Greek State diagnosed the need for receiving financial support in order to reinforce the integration of WBL in Universities and TEIs. Thus, the Ministry of Education financially supported WBL in the context of EPEAEK I (1994-1999), which resulted in the first Operational Program by which WBL was formally and effectively financed. Since then, WBL has continued to be funded, in large part, by Operational Programs (EPEAEK II [2000-2006], NSRF 2007-2013 and NSRF 2014-2020). In the case of TEIs, the student compensation was set at 80% of the unskilled worker's salary, as determined each time by the National Collective Labor Agreement. This covered the amount regarding the remuneration, as well as the social security and health insurance. In some cases WBL was financed directly from the companies that offered the positions to the students.

In Greece, traineeships were mandatory and institutionalized by law only in TEIs in accordance with the P.D 175/85. In Universities traineeships are mandatory in some Departments (e.g. Psychology, Pharmacy, Agriculture, etc.) and optional in some others. In any case, traineeships in Universities were never institutionalized by law. In Universities there are individual Departments, in which traineeships are provided as a compulsory course in accordance with their founding law. However, traineeships were not regulated by an institutional/legal framework, as in the case of TEIs. The absence of an institutional/legal framework creates a gap for the implementation of traineeship schemes by the University Departments. The University traineeships were supported and implemented exclusively due to the existence of the institutional/legal framework of the TEIs traineeships.

Currently, under the new legislation of the Ministry of Education in 2019 (L. 4589/2019), all TEIs were either integrated in existing universities or were transformed into new university institutions. This change, along with the new current law (L. 4957/2022, article 69) about WBL, creates challenges in the future of WBL in Greece. The greatest challenge is that the new law failed to introduce a unified framework for WBL in the new university landscape.

The new provision for WBL (L. 4957/2022, article 69) states that students can take part in WBL during their undergraduate and postgraduate studies. The traineeship is under the supervision of a teacher/tutor of the University and can be carried out in public services, legal entities of public law, local government organizations, legal entities of private law and businesses that are referred to as "host institutions". The traineeship can also be carried out in institutions of a foreign country, as long as the supervision of the educational process is safeguarded by the sending academic institution. For each traineeship a contract is concluded between the student, the Higher Education Institution and the host institution where the student will undergo his/her traineeship.

Upon the traineeships' completion a number of credit units (European Credit Transfer and Accumulation System - ECTS) is awarded to the student. The exact number of ECTS is determined by a decision of the Assembly of each academic Department. In addition, the Assembly of the Department decides on details regarding the traineeship, such as the compulsory or non-compulsory character, its duration, its implementation period according to the needs and requirements of the academic study program, as well as the minimum requirements concerning the academic progress that must be met before the start of the traineeship.

If the traineeship is not compulsory for the completion of the degree, the internal regulation of the academic study program determines the conditions and the selection criteria for the traineeship. A member of the academic staff is assigned the responsibility for the overall supervision of the traineeships. There is also a traineeship committee, which comprises professors or other members of the teaching staff and is presided by the member of the academic staff who is responsible for the traineeships. The traineeship committee aims at evaluating applications of students who wish to carry out a non mandatory traineeship, assigns a supervisor for every student undergoing a traineeship, resolves issues that might arise and, at the end, evaluates the traineeship. The supervisor, who is a member of the teaching staff of the department, is responsible to guide and support the student throughout the traineeship by facilitating the student's communication with the host institution and the traineeship committee.

All students who carry out a traineeship are entitled to health insurance provided by the national organization health services. The amount of the monthly compensation for traineeships in private sector organizations has been set to 80% of the minimum wage, provided the traineeship concerns educational activity corresponding to full time employment of forty hours per week. If the traineeship agreement sets fewer work hours, the amount of the compensation is adjusted proportionally. The major innovation of the new law (L. 4957/2022, article 69) is that it provides that the compensation and the social insurance of student trainees is mainly borne by the hosting institutions and not by the national operational programs. In some cases, the compensation and insurance costs may be covered, in part or in full, by the budget of co-financed programs or by university-funded projects that are managed by the Special Accounts for Research Funds of the HEIs. There are many countries (i.e. Germany) where the cost of compensation and insurance of student trainees is borne entirely by the host institutions. The new legislation raises concerns whether the host institutions in Greece will be willing to undertake the increase in the traineeship costs by almost 80% and to continue to contribute to the schemes' implementation.

The traineeship placements for all undergraduate students are supported by ATLAS. The ATLAS system, the centralized online service, is used for the administrative procedures for the traineeship placements and for the selection of the participants. All companies in Greece can register to the ATLAS system and host student trainees. More specifically, the ATLAS connects the providers of trainee placements with all the academic institutions of the country, thus creating a unified database of offers for trainee positions. The operation of the ATLAS system has contributed to (a) an increase in the number of trainee positions available to students, (b) the simplification of the communication between host institutions and Higher Education Institutions, (c) the effective information of the Higher Education Institutions about the available positions, (d) the creation of a central database of available trainee positions, (e) the direct monitoring and assessment of the quality of the traineeship and of the knowledge gained by the students and (f) the decrease of bureaucracy.

Last, in each Higher Education Institution there is a Traineeship Office, which operates as a contact point for students and businesses interested in participating in traineeship projects. Additionally, each University has an Erasmus Office that is responsible for the mobility placements of students under the Erasmus Program in other European countries.

#### **4. The Survey**

This paper presents the finding of a research that focused on the degree of integration of traineeship programs offered by the Greek Higher Education Institutions.

##### *4.1. Methodology*

The sample of the research consists of 267 Departments offering undergraduate studies in 15 Higher Education Institution in Greece. The research took place during the period from June to September 2021.

Different sources of information were used for the selection and the analysis of data. First, the authors studied the traineeship-related information, as well as the study programs that were accessible on the website of each



department. Then, there was a short online meeting with a representative of each University in order to confirm the collected data.

The Academic study program of each department was examined based on the following topics:

- (a) Traineeships exist as a compulsory or a non-compulsory component of the study program
- (b) The semester in which a traineeship takes place
- (c) The duration of the traineeship
- (d) The ECTS accredited to the traineeship
- (e) The implementation of the traineeship in another country under the Erasmus Program

The use of descriptive statistics has been adopted in order to assess the level of adoption of specific WBL strategies in the study program. Descriptive statistics have been an important element in order to quantitatively describe a phenomenon (Kaur et al., 2018) and present results that will help answering the following research questions:

Research Question 1: How many Departments have a traineeship program as mandatory in their study programs ? What is the earliest semester set for the start of a traineeship program?

Research Question 2: How many Departments award ECTS at their respective traineeship programs?

Research Question 3: What are the differences between Departments in the same scientific fields concerning the traineeship programs?

Research Question 4: Is there a unified approach to traineeships inside the same HEI?

Research Question 5: Is the Erasmus+ traineeship included in the study programs of the Greek HEIs?

#### 4.2. Sample Description

The Universities that were examined offer a variety of study programs and are geographically dispersed in the country. Six of the Universities are located in the capital Athens, seven Universities are located in mainland Greece and three Universities are located in the island of Crete (Table 4.1).

Table 4.1: List of Universities and Departments

Name	Departments
Agricultural University of Athens	16
Democritus University of Thrace	10
International Hellenic University	32
National Technical University of Athens	8
National and Kapodistrian University of Athens	42
Mediterranean University of Crete	11
Athens University of Economics and Business	8
University of Western Attica	25
University of Thessaly	35
University of Ioannina	12
University of Crete	14
University of Macedonia	8
University of Patras	33
University of Piraeus	8
Technical University of Crete	5
<b>Total</b>	<b>267</b>

In examining the study programs of the Departments, those that had not included a reference to traineeships (53 Departments) were excluded from the sample. The rest of the sample (N: 214) constitutes the basis of the research. Annex 1 presents the full list of the Universities, Schools and Departments that were analyzed for this study.

4.3. Research Findings

4.3.1. Research Question 1: Type of traineeship and earliest semester

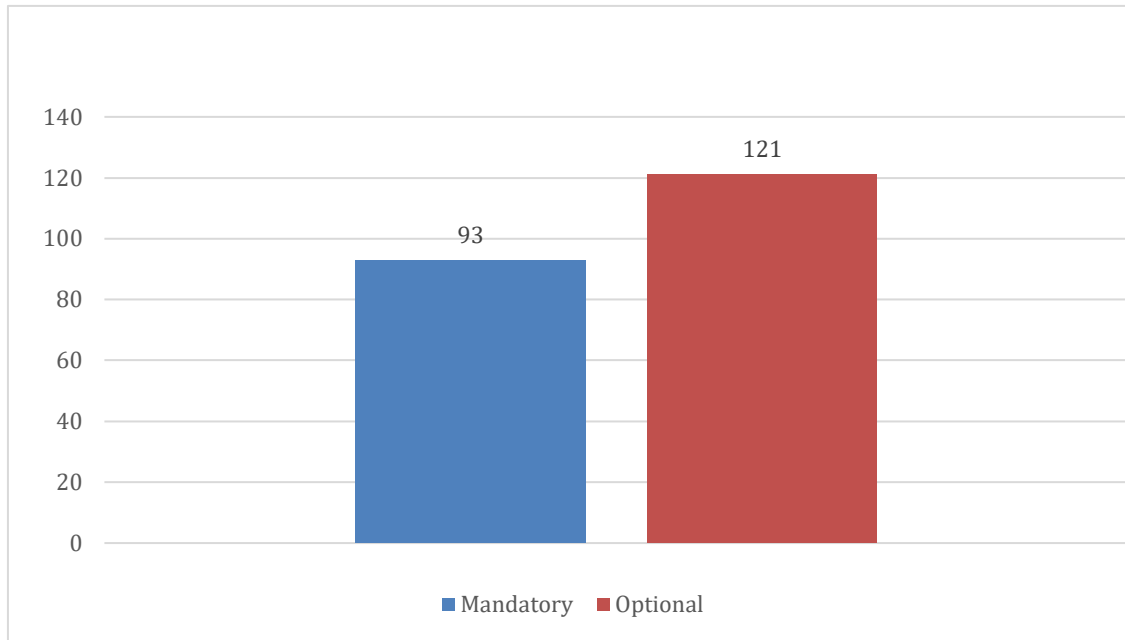


Figure 4.1: Character of Traineeship

Out of the 214 Departments that were examined in the sample, 93 have included a traineeship as a mandatory component in their study programs, while in 121 it constitutes an optional component. The majority of the 93 Departments are in the field of education, where traineeships take place in educational institutions and are mandatory for obtaining the University degree. This type of traineeships usually lasts an academic semester, unless it is stated otherwise in the study program (Figure 4.1).

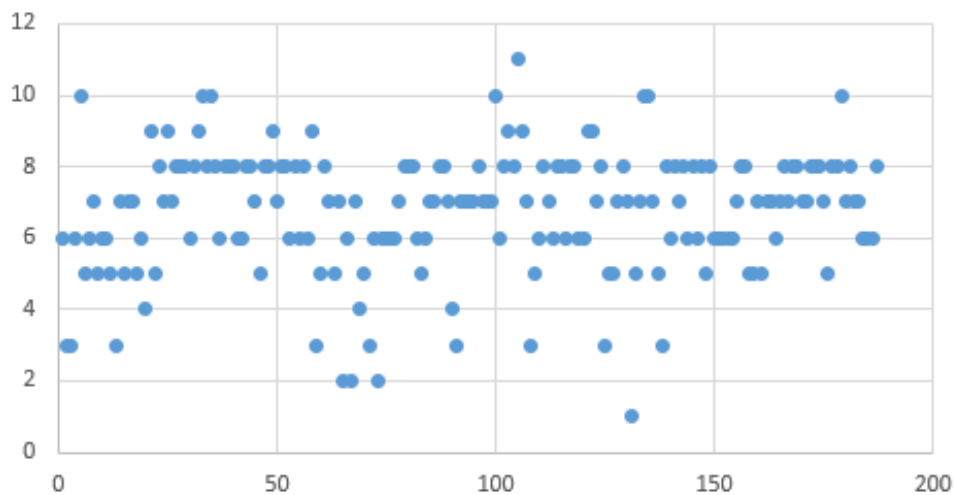


Figure 4.2: Semester of start of WBL

The semester when a traineeship is implemented varies greatly and depends on the department as shown in Figure 4.2. Four departments (Department of Physics, Department of Economics and Department of Preschool Education of the University of Crete and the School of Architecture of the Democritus University of Thrace) offer this option at any semester of the studies, in 15 departments a traineeship can start from the third semester onwards, in 60 departments from the fifth semester onwards and in the remaining 126 departments from the seventh semester. 9 departments follow the general guidelines of their Universities' Traineeship Offices.

#### 4.3.2. Research Question 2: ECTS award

The majority of the Departments (N: 187) award ECTS upon the completion of the traineeship. However, 27 Departments do not accredit their traineeship programs with ECTS (Figure 4.3).

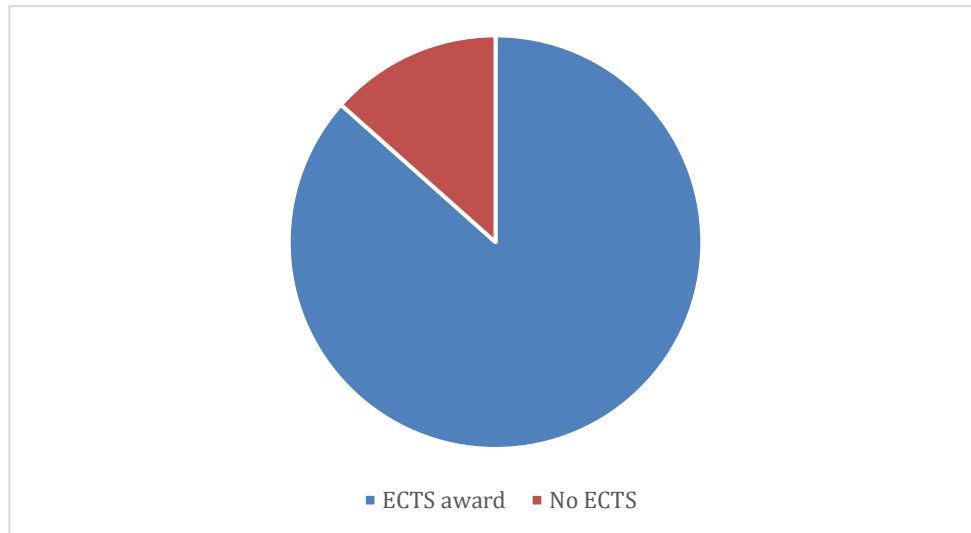


Figure 4.3: ECTS award after WBL completion

The spread of ECTS awarded is demonstrated in the Figure 4.4. From the sample of the research, the majority of the departments award 5 ECTS per traineeship program, while others, especially in the educational sciences field, award more than 10 ECTS units. Six extreme cases of departments that offer more than 30 ECTS create an additional fragmentation since they come from different scientific fields (Nursing, Educational Sciences and Preschool Education, Dietetics and Nutrition, Economics).

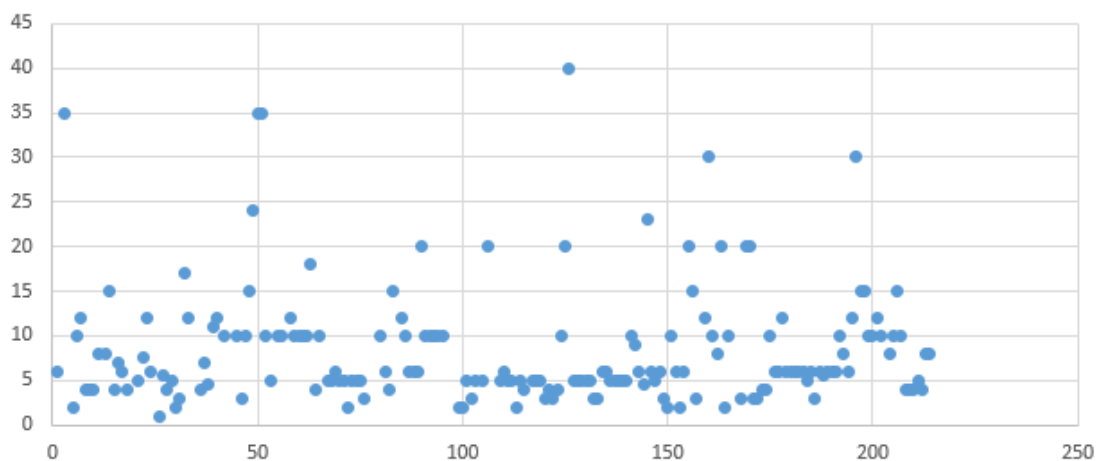


Figure 4.4: Spread of ECTS

#### 4.3.3. Research Question 3: Differences between Departments in the same scientific fields

The Departments of the same scientific field were examined under the assumption that similar fields (e.g. economics or business) should follow a similar pattern concerning traineeships. However, this was not the case, as it is evidenced from Figure 4.5, since even in the same fields this fragmentation exists. In the field of economics and business, 36 out of 44 Departments have included traineeships in their study program, while the obligation to submit a report after the completion of the traineeship exists only in 10 Departments of the sample. Grading (0-10) is referenced in 10 Departments, while 10 others have a 'Pass' or 'Fail' system. Last, 37 out of the 44 Departments have not included a traineeship option under the Erasmus+ Program in their study programs.

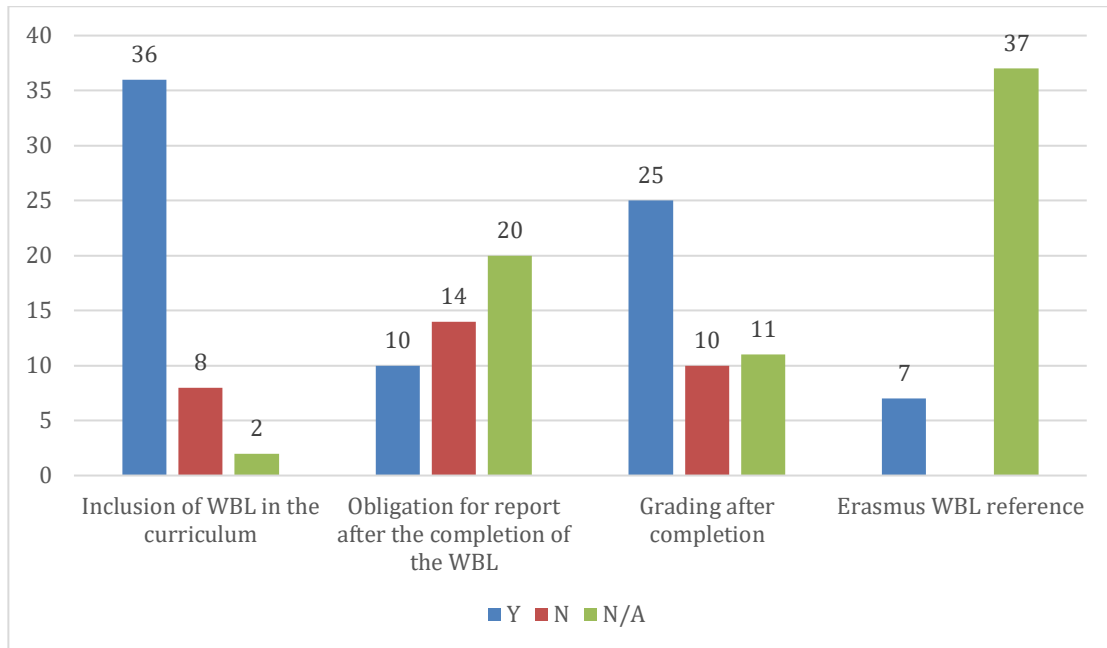


Figure 4.5: Fragmentation in the same field (Economics)

4.3.4. Research Question 4: Differences inside the same HEI

There were no major differences regarding the elements of traineeships when examined in the same HEI. Figure 4.6 presents a significant spread when examining the ECTS system regarding traineeships inside the same HEI. Regardless of the study areas offered by each University, the existing range of 2 to 35 ECTS, as shown in the case of the National and Kapodistrian University in Athens, is in line with the general situation that exists in the other HEIs.

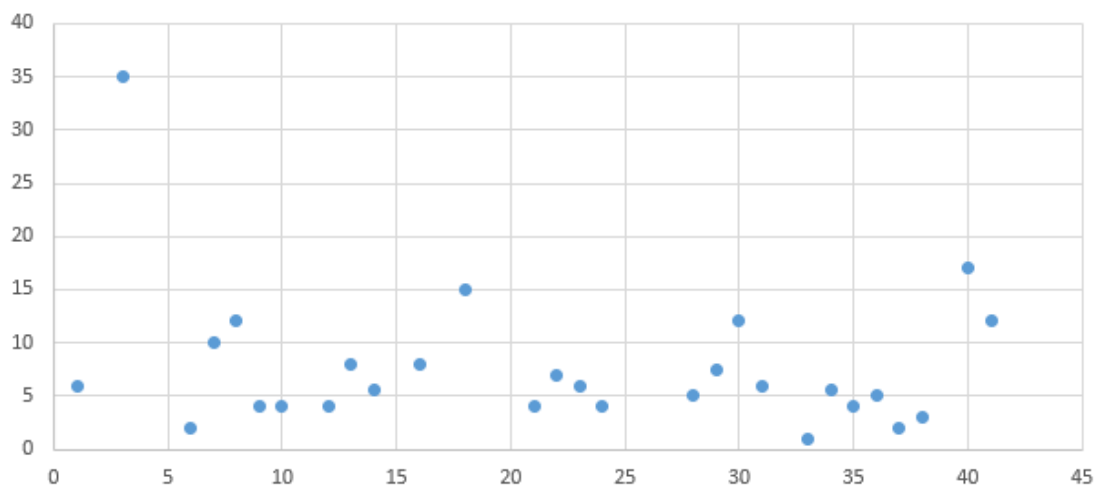


Figure 4.6: Spread of ECTS in the National and Kapodistrian University

#### 4.3.5. Research Question 5: Inclusion of Erasmus+ Traineeships in the study programs

As it is depicted in Table 4.2, only 54 departments, corresponding to the 25% of the sample, offer to undergraduate students the option to participate in a traineeship in another country under the Erasmus+ program.

Table 4.2: Erasmus Traineeships reference in the study programs

Erasmus WBL	Sample of departments	Percentage
Yes	54	25%
No	160	75%
Total	214	100

### 5. Discussion and Conclusions. Implications for Universities and Policy Makers

As it is evident from the results of the study, the fragmentation that exists in the operational settings of the Greek HEIs constitutes a major obstacle in the implementation of a unified strategy regarding traineeships. This is evident in the same study areas, as well as in the examination of the traineeships' elements in different HEIs. The lack of a unified approach can have a significant negative impact on the students' perceptions towards traineeships and on the host institutions' willingness to engage in these programs. This fragmentation equally affects both the universities located in big cities and those located in semi-urban areas. There is great need for the latter to have a unified strategy for traineeship implementation, because both the students and the host institutions are interested in the increase in traineeship positions (Theodora, 2010) especially in the tourism sector (Varvaresos, 1999). Additional research needs to be conducted in this area in order to better address the supply and demand of traineeship positions taking into consideration the geographical particularities of the country.

Another element that needs to be addressed is the lack of internationalization of the traineeship programs in the Greek HEIs. Although Erasmus offices are present in every University, most Departments have not included Erasmus+ Traineeships in their study programs. Giannopoulou et al. (2020) stress the same evidence when examining the perceptions of Greek students participating in Erasmus+ mobility schemes and highlight the same obstacles when examining the cooperation between the Erasmus+ offices and the departments of the HEIs.

An important element of our definition of WBL is that this is a guided and structured activity, which both the student and the host institution need to perform in accordance with pre-set requirements. (Hogson, 1999; Rowley, 2003; Sambrook, 2005; Stasz & Brewer, 1998). This means that, like all educational activities, WBL should be planned, monitored and assessed. Within predefined frameworks, students must acquire precisely defined knowledge material, while the academic supervisor and the mentor appointed by the host institution continuously give feedback to the student about his/her performance and mistakes, as well as about the correct solution paths. However, the lack of a unified approach on the reporting, grading and ECTS awarding in the HEIs, albeit offering a degree of flexibility, further limits the full application of such programs. The traineeship must be (albeit optional) an option for students and must be organically integrated into the undergraduate study Program of the respective Department, so that its successful completion corresponds to a specific number of ECTS.

Today, there is a specific need for the preparation and training of the coordinators who will supervise the implementation of the traineeship at the host institution, as well as the preparation of the students before the start of the traineeship.

The lack of information mentioned above is the reason why, in many cases, both host institutions and students formulate wrong expectations about the process, content and results of the traineeship, and this often leads to misconceptions during the program. This affects all three parties of the traineeship. It can lead student trainees to disappointment, lack of motivation, resentment towards the host institution and even the profession (Renganathan et al., 2012). The host institution can be negatively affected with a severe impact on the quality of the traineeship program. Moreover, the host institution can become the subject of the students' criticism depending on their

performance, knowledge and motivation. Last, for HEIs, these misconceptions can have a negative impact on their relations with the labor market, since they cannot always ensure a stable and clearly defined framework for cooperation.

### Acknowledgements

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## Annex 1. List of selected Universities and Departments

NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS									
SCHOOL OF RURAL DEVELOPMENT, NUTRITION AND SUSTAINABILITY									
Dpt of Rural Development, Agrofood and Management of Natural Resources									
SCHOOL OF EDUCATION SCIENCES									
Dpt of Primary Education				Dpt of Early Childhood Education					
SCHOOL OF HEALTH SCIENCES									
Dpt of Medicine		Dpt of Nursing		Dpt of Dentistry		Dpt of Pharmacy			
SCHOOL OF PHYSICAL EDUCATION AND SPORT SCIENCE									
Dpt of Physical Education and Sport Science									
THEOLOGICAL SCHOOL									
Dpt of Theology									
Dpt of Social Theology and the study of Religion									
SCHOOL OF SCIENCES									
Dpt of Aerospace Science and Technology		Dpt of Biology	Faculty of Geology & Geoenvironment	Dpt of History and Philosophy of Science		Dpt of Informatics and Telecommunications	Dpt of Physics	Dpt of Mathematics	Dpt of Chemistry
LAW SCHOOL									
SCHOOL OF ECONOMICS AND POLITICAL SCIENCES									
Dpt of Port and Shipping Management	Dpt of Communication and Media	Dpt of Economics	Dpt of Political Science and Public Administration	Faculty of Turkish Studies and Contemporary Asian Studies		Dpt of Business Administration	Dpt of Sociology	Dpt of Digital Arts and Cinema	
SCHOOL OF PHILOSOPHY									
Dpt of Educational Studies		Dpt of English Language and Literature	Dpt of French Language and Literature	Dpt of German Language and Literature	Dpt of Theatre Studies	Dpt of Spanish Language and Literature	Dpt of History and Archaeology		Dpt of Italian Language and Literature
Dpt of Music Studies	Dpt of Russian Language and Literature of Slavic Studies		Dpt of Philology	Dpt of Philosophy, Education and Psychology	Dpt of Philosophy	Dpt of Psychology	BA Program in the Archaeology, History and Literature in Ancient Greece		
NATIONAL TECHNICAL UNIVERSITY OF ATHENS									
School of Civil Engineering	School of Electrical and Computer Engineering		School of Architecture	School of Chemical Engineering	School of Agronomy and Topographical Engineering	School of Mining and Metallurgical Engineering	School of Naval Architecture and Mechanical Engineering		School of Applied Mathematics and Natural Sciences
INTERNATIONAL HELLENIC UNIVERSITY									
SCHOOL OF GEOTECHNICAL SCIENCES									
Dpt of Agriculture (Thessaloniki)			Dpt of Forestry and Natural Environment (Drama)			Dpt of Food Science and Technology (Thessaloniki)			
SCHOOL OF DESIGN SCIENCES									
Dpt of Creative Design and Clothing (Kilkis)				Dpt of Interior Architecture (Serres)					
SCHOOL OF HEALTH SCIENCES									
Dpt of Nutrition and Dietetics (Thessaloniki)		Dpt of Obstetrics (Thessaloniki)	Dpt of Nursing (Thessaloniki)	Dpt of Nursing (Branch of the Dpt in Didymoteicho)		Dpt of Physiotherapy (Thessaloniki)	Dpt of Biomedical Sciences (Thessaloniki)		
SCHOOL OF SCIENCES									
Dpt of Geology (Kavala)		Dpt of Informatics (Kavala)		Dpt of Physics (Kavala)		Dpt of Chemistry (Kavala)			
SCHOOL OF SOCIAL SCIENCES									
Dpt of Early Childhood Education and Care and Education (Thessaloniki)			Dpt of Oriental Languages and Cultures (Thessaloniki)			Dpt of Library Science, Archival and Information Systems (Thessaloniki)			
SCHOOL OF ENGINEERING									



Dpt of Production Engineering and Management (Thessaloniki)	Dpt of Environmental Engineering (Thessaloniki)	Dpt of Informatics and Electronic Systems Engineering (Thessaloniki)	Dpt of Informatics, Computer and Telecommunications Engineering (Serres)	Dpt of Surveying and Geoinformatics Engineering (Serres)	Dpt of Mechanical Engineering (Serres)	Dpt of Civil Engineering (Serres)	
SCHOOL OF ECONOMICS AND MANAGEMENT							
Dpt of Supply Chain Management (Katerini)	Dpt of Organization Management, Marketing and Tourism (Thessaloniki)	Dpt of Management Science and Technology (Kavala)	Dpt of Accounting and Information Systems (Thessaloniki)	Dpt of Accounting and Finance (Kavala)	Dpt of Economics (Serres)	Dpt of Business Administration (Serres)	
TECHNICAL UNIVERSITY OF CRETE							
Dpt of Production Engineering and Management	School of Mineral Resources Engineering	School of Electrical and Computer Engineering	Dpt of Environmental Engineering	School of Architecture			
UNIVERSITY OF MACEDONIA							
Dpt of Economics	Dpt of Balkan, Slavic & Oriental Studies	Dpt of Business Administration	Dpt of Accounting and Finance	Dpt of Applied Informatics	Dpt of International & European Studies	Dpt of Educational and Social Policy	Dpt of Music Science & Art
UNIVERSITY OF CRETE							
Dpt of Philology	Dpt of Primary Education	Dpt of Preschool Childhood Education	Dpt of Sociology	Dpt of Economics	Dpt of Psychology	Dpt of Political Science	Dpt of Medicine
Dpt of Materials Science and Technology	Dpt of Chemistry	Dpt of Mathematics and Applied Mathematics	Dpt of Physics	Dpt of Biology	Dpt of Computer Science		
AGRICULTURAL UNIVERSITY OF ATHENS							
Dpt of Plant Sciences							
Faculty of Crop Science		Dpt of Forestry and Natural Environment Management		Dpt of Forestry and Natural Environment Management			
Dpt of Animal Sciences							
Dpt of Animal Science			Dpt of Hydrobiology and Aquaculture				
Dpt of Environment and Agricultural Engineering							
Dpt of Natural Resources & Agricultural Engineering			Dpt of Informatics in Agriculture and the Environment				
Dpt of Food and Nutrition Sciences							
Dpt of Food Science and Human Nutrition			Dpt of Dietetics and Quality of Life				
Dpt of Applied Biology and Biotechnology							
Dpt of Biotechnology							
Dpt of Applied Economics and Social Sciences							
Dpt of Agricultural Economics and Rural Development	Dpt of Agricultural Business Administration and Supply Systems	Dpt of Regional and Economic Development	Dpt of Culture and Rural Tourism	Dpt of Supply Systems Management	Dpt of Administration, Economics and Communication of Cultural and Tourist Units – DOEPTM		
UNIVERSITY OF IOANNINA							
SCHOOL OF PHILOSOPHY							
Dpt of Philology		Dpt of History and Archaeology			Dpt of Philosophy		
SCHOOL OF SCIENCE							
Dpt of Mathematics		Dpt of Physics			Dpt of Chemistry		
SCHOOL OF HEALTH SCIENCES							
Dpt of Medicine	Dpt of Biological Applications and Technologies		Dpt of Nursing		Dpt of Speech and Language therapy		

SCHOOL OF EDUCATIONAL SCIENCES										
Dpt of Primary Education					Department of Pedagogical School of Pre-primary School Teachers					
UNIVERSITY OF PATRAS										
Dpt of Biology	Dpt of Geology	Dpt of Material Science	Dpt of Mathematics	Dpt of Physics	Dpt of Chemistry00	Dpt of Architecture		Dpt of Electrical and Computer Engineering		
Dpt of Computer Engineering and Informatics			Dpt of Environmental Engineering	Dpt of Mechanical and Aeronautical Engineering	Dpt of Civil Engineering	Dpt of Chemical Engineering	Dpt of Medicine	Dpt of Pharmacy	Dpt of Educational Sciences and Social Work	
Dpt of Educational Sciences and Early Childhood Education			Dpt of Theatre Studies	Dpt of History and Archaeology	Dpt of Museum Studies	Dpt of Philology	Dpt of Philosophy	Dpt of Business Administration	Dpt of Business Administration of Food and Agricultural Enterprises	
Dpt of Tourism Administration	Dpt of Management Science and Technology		Dpt of Economics	Dpt of Agriculture	Dpt of Biosystem and Agricultural Engineering	Dpt of Food Science and Technology	Dpt of Plant Production Science	Dpt of Animal Production, Fisheries and Aquaculture		Dpt of Speech and Language Therapy
DEMOCRITUS UNIVERSITY OF THRACE										
Dpt of Law	Dpt of Physical Education and Sport Science		Dpt of Languages, Literature and Culture of Black Sea Countries	Dpt of Greek Philology	Dpt of History and Ethnology	Dpt of Social Work	Dpt of Social Policy	Dpt of Economics	Dpt of Political Science	Dpt of Architectural Engineers
UNIVERSITY OF THESSALY										
Dpt of Architecture	Dpt of Electrical and Computer Engineering	Dpt of Planning and Regional Development Engineering	Dpt of Mechanical Engineering	Dpt of Civil Engineering	Dpt of Special Education	Dpt of Early Childhood Education	Dpt of Language and Intercultural Studies	Dpt of History of Archaeology and Social Anthropology	Dpt of Culture and Creative Media and Industries	
Dpt of Dietetics and Nutrition	Dpt of Physical Education and Sport Science		Dpt of Biochemistry and Biotechnology	Dpt of Public and One Health	Dpt of Medicine	Faculty of Veterinary	Dpt of Nursing	Dpt of Physiotherapy	Dpt of Business	Dpt of Accounting and Finance
Dpt of Economics	Dpt of Forestry Wood Science and Design		Dpt of Environmental Sciences	Dpt of Energy Systems	Dpt of Digital Systems	Dpt of Agronomy, Ichthyology and Aquatic Environment		Dpt of Agronomy-Agrotechnology	Dpt of Animal Science	
Dpt of Mathematics	Dpt of Informatics and Telecommunications		Dpt of Food Science and Nutrition		Dpt of Computer Science and Biomedical Informatics		Dpt of Agriculture Crop Production and Rural Environment			Dpt of Physics
ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS										
Dpt of International and European Studies		Dpt of Economics	Dpt of Administrative Science and Technology		Dpt of Business Organization and Management	Department of Accounting and Finance	Dpt of Marketing and Communication		Dpt of Informatics	Dpt of Statistics
UNIVERSITY OF PIRAEUS										
Dpt of Economics	Dpt of Business Organization and Management		Dpt of International and European Studies	Dpt of Tourism Studies	Dpt of Maritime Studies	Dpt of Industrial Management and Technology		Dpt of Banking and Financial Administration		Dpt of Statistics and Insurance Science

HELLENIC MEDITERRANEAN UNIVERSITY										
Dpt of Management Science and Technology	Dpt of Business Administration and Tourism	Dpt of Accounting and Finance	Dpt of Nutrition and Dietetics Sciences	Dpt of Social Work	Dpt of Nursing	Dpt of Electronics Engineering	Dpt of Electrical and Computer Engineering	Dpt of Mechanical Engineering	Dpt of Music Technology and Acoustics	Dpt of Agriculture
UNIVERSITY OF WEST ATTICA										
SCHOOL OF ADMINISTRATIVE, ECONOMIC AND SOCIAL SCIENCES										
Dpt of early childhood education and care		Dpt of Archival, Library Science and Information Systems			Dpt of Business Administration	Dpt of Tourism Management	Dpt of Social Work		Dpt of Accounting and Finance	
SCHOOL OF FOOD SCIENCES										
Dpt of Food Science and Technology					Dpt of Wine, Vine and Beverage Sciences					
SCHOOL OF HEALTH AND WELFARE SCIENCES										
Dpt of Biomedical Sciences		Dpt of Occupational Therapy		Dpt of Obstetrics		Dpt of Nursing		Physiotherapy Dpt		
SCHOOL OF APPLIED ARTS AND CULTURE										
Dpt of Graphic Design and Visual Communication		Dpt of Interior Architecture			Dpt of Conservation of Antiquities and Works of Art			Dpt of Photography and Audiovisual Arts		
SCHOOL OF ENGINEERING										
Dpt of Electrical and Electronics Engineering		Dpt of Biomedical Engineering	Dpt of Industrial Design and Production Engineering		Dpt of Informatics and Computer Engineering	Dpt of Surveying and Geoinformatics Engineering		Dpt of Mechanical Engineering	Dpt of Naval Architecture	Dpt of Civil Engineering



# Teachers' Attitude Scale Towards Metaverse Use: A Scale Development Study

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## Abstract

The metaverse, or virtual universe, is a hypothetical iteration of the internet that supports persistent online 3D virtual environments through traditional personal computers as well as virtual and augmented reality devices. The "metaverse", which has been on the agenda in recent days, had a great impact both in Turkey and in the world. In other words, a virtual world, represented by a metaverse avatar, where users can shop, socialize, participate in leisure activities and learn. The concept of metaverse, which came to the fore with billions of dollars of investment plans by companies such as Facebook, Microsoft, Roblox and Epic, is seen as the next stage in the development of the internet. It is possible to access this virtual reality universe using VR headsets, augmented reality (AR), smart watches and smart glasses. With the increasing popularity of online learning, educators, trainers, institutions are looking for ways to make distance learning more interesting and interactive. There are 4 important ways that the metadata store can help with this; creating an engaging and life-like online classroom, encourage communication, supporting immersive learning and enriching gamification. Due to the effect of the pandemic on digitalization, many different models have been developed in education methods and three-dimensional models have been focused on, where students' readiness levels and interaction with each other are higher. Metaverse is one of these methods. In this sense, it is important to get opinions from teachers and students, who are the most important stakeholders of education, in the use of metaverse technologies, which make a quick introduction to learning and teaching processes, in educational environments. It is important to determine the readiness levels of students and teachers, especially for the use of metaverse technologies in teaching environments. In the light of all these, this study was based on evaluating the teachers' attitudes towards metaverse technologies by considering the teacher dimension. It is aimed to present a valid and reliable scale that can be developed for the relevant subject. The validity and reliability studies of the scale were carried out on a total of 301 computers teachers working as permanent teachers in a city in Türkiye. The three-factor structure (perceived benefit, readiness and satisfaction) of the scale with an eigenvalue greater than 1 explains 78.42% of the total variance. A scale whose validity and reliability have been proven according to the results of EFA and CFA has been added to the literature. Moreover it is foreseen that the research will be important since it is the first scale developed in Türkiye on the metaverse.

**Keywords:** Metaverse Technologies, Teacher' Attitudes, Scale Development, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA)

## 1. Introduction

Lee et al., (2021), states that there is a paradigm change in information and communication technologies every ten years; He states that communication with computers in the 1990s, the web in the 2000s, and the mobile in the 2010s have changed, and the keyword of the paradigm of the 2020s is Metaverse. Even though the concept of metaverse is increasing its popularity day by day, the discussions about it in the academic field are limited (Duan et al., 2021).

Some researchers explain that the Metaverse has been on the agenda lately, with the impact of COVID-19 on digitalization (Kang, 2021& Kuş, 2021). When the literature is examined, it is stated that COVID-19 accelerates the transition to the digital world, which offers solutions regardless of the physical world and different variables. Lee (2021), on the other hand, justified the rise of the Metaverse with the continuity of non-face-to-face communication during the COVID-19 pandemic. On the other hand, it is emphasized that the popularity of Metaverse started to increase an average of one year after the start of the pandemic, recorded a sharp rise in April of 2021 for the first time and gained momentum after the name of Facebook Inc. was changed to Meta. It is stated that the technologies that form the basis of Metaverse have been in a natural development process for a long time and technology companies' investments in this sense have accelerated. In this context, Facebook uses realistic avatars of a person. It created a virtual reality project called Codec Avatar (Tech@Facebook, 2019) focused on designing. ByteDance, the creator of TikTok, took the step to create its own Metaverse and acquired the virtual reality startup Pico Interactive, which ranked third in sales of virtual reality-oriented headsets in the first quarter of 2021 (Borak, 2021).

Metaverse-supported training platforms available 2D-based by overcoming the limitations of online and remote classrooms it can increase students' active participation by bringing together lecture (theory) and practice (practice) (Kye et al., 2021; Mystakidis, 2022). At the point of moving education to the Metaverse, the information and guidance to be provided to students and teachers in the transition process is important (MacCallum & Parsons, 2019). Lee et al. (2022) experienced an effective and successful training process in 3D-based aircraft maintenance simulation compared to the video-based course with the same content. During the augmented reality supported education process, students were able to continue instant communication with their classmates by listening to the experts and practicing. Via Metaverse, high costs in education can be minimized. For example, instead of building a new planetary house for education and training in the near future, it may make more sense to build the same in the digital world for 1% of the cost (Damar, 2021). Moreover in the metaverse environment, holistic support of learning processes in a visual, auditory and kinesthetic way will enable effective learning (Lee & Hwang, 2022).

In the literature, the effect of metaverse technology applications and its positive results on learning from virtual primary school groups to higher education are emphasized (Suh & Ahn, 2022; Sahandar, 2019; Sahin, 2016). However, the main thing to consider is how to integrate students' holistic skills, senses and knowledge development into technology platforms in the educational setting of the future. It is important to determine the readiness levels of students and teachers, especially for the use of metaverse technologies in teaching environments. In the light of all these, this study was based on evaluating the teachers' attitudes towards metaverse technologies by considering the teacher dimension.

### *1.1. Purpose and Important of the Research:*

Technology is advancing rapidly, and with Mark Zuckerberg, the founder of Facebook, announcing that the company will be renamed Meta, the tech world has started to speak a brand new term: "Metaverse", which many tech experts call "the future of Web 3.0". Meta means "after, beyond" in Greek. The Oculus VR headset has made a huge investment in VR, and with Facebook's acquisition of Oculus, these headsets have been made cheaper compared to their competitors. Aiming to transform the company from being a social media company into a metaverse company in the next 5 years, Zuckerberg introduced her virtual offices called "Horizontal Workrooms" and took an important step in moving the business world to Metaverse. The Oxford dictionary has declared the word of 2022, which we are preparing to leave behind. With the popular vote, the word of the year was metaverse (virtual universe).

Metaverse, which is derived from the combination of the word meta and the words "universe" in English, also means "beyond the universe". You can think of it as a world where the world on the internet is brought to life or rendered in 3D. The use of the concept of metaverse, which has entered human life so quickly, in teaching environments has also been under the spotlight. It is important to determine the readiness levels of students and teachers, especially for the use of metaverse technologies in teaching environments. It is aimed to present a valid and reliable scale that can be developed for the relevant subject. When the literature is examined, it has been determined that there is no relevant scale in Turkey within the scope of the subject. In this sense, it is foreseen that this study will be a first and fill the gap in the literature. Besides, it will be possible to evaluate teachers' perspectives and attitudes towards a new technology based on the scale data. In line with these results, teacher competencies in the use of related technology will be questioned and improvement measures can be taken.

## 2. Method

This study is a scale development study. Scale development is the process of developing items that will stimulate the characteristics of individuals to be measured and appropriate response categories to these stimuli. The development stages of the scale and the relevant sections are presented below:

### 2.1. Study Groups

The study group of the research consists of 301 computers teachers working as permanent teachers in a province in Türkiye. The demographic characteristics of the participants are presented in tables below:

Table 1: Gender

Gender	f	%
Female	71	76.4
Male	230	23.6
<b>Total</b>	<b>301</b>	<b>100</b>

Table 2: Branch

Branch	f	%
Numerical	139	46.2
Verbal	94	31.2
Vocation	68	22.6
<b>Total</b>	<b>301</b>	<b>100</b>

Table 3: Education Status

Education Status	f	%
Degree	139	46.2
Master	94	31.2
Phd	68	22.6
<b>Total</b>	<b>301</b>	<b>100</b>

Table 4: Teaching Time

Teaching Time	f	%
1-5 years	87	28.9
6-10 years	65	21.5
11-15 years	54	17.9
16-20 years	48	15.9
20 years and more	47	15.8
<b>Total</b>	<b>301</b>	<b>100</b>

Table 5: Have you had computer education?

Computer Education	f	%
Yes	186	61.8
No	115	38.2
<b>Total</b>	<b>301</b>	<b>100</b>

Table 6: Have you had design education?

Design Education	f	%
Yes	172	57.1
No	129	42.9
<b>Total</b>	<b>301</b>	<b>100</b>

Table 7: Do you use Digital Materials in your lessons?

Digital Materials	f	%
Yes	115	38.2
No	186	61.8
<b>Total</b>	<b>301</b>	<b>100</b>

Table 8: Is there any digital material that you have developed yourself?

Develop digital materials	f	%
Yes	136	45.2
No	165	54.8
<b>Total</b>	<b>301</b>	<b>100</b>

Table 9: Did you receive Instructional Design Training?

Instructional Design	f	%
Yes	137	45.5
No	164	54.5
<b>Total</b>	<b>301</b>	<b>100</b>

Table 10: Your Institution

Institution	f	%
Yes	94	31.2
No	207	68.8
<b>Total</b>	<b>301</b>	<b>100</b>

## 2.2. Data Collection Tool

As a first step, an item pool of 17 items based on theoretical foundations was created as a result of a comprehensive literature review. In addition to this, 9 items were added to the scale that reveal the demographic characteristics of the instructors. The data were analyzed with the SPSS 21 package program.

## 2.3. Introduction of Scale

The scale consists of 17 items and 3 dimensions, the naming of the dimensions was made by the researchers. These dimensions are perceived usefulness, readiness, satisfaction. The perceived usefulness consists of 6 items, readiness 6 and satisfaction 5 items.

### 2.3. Validity and Reliability Study of the Scale

The three-factor structure of the scale with an eigenvalue greater than 1 explains 78.42% of the total variance. The validity and reliability studies carried out prove its consistency within itself. In this study, the construct validity of the related scale was examined as a validity study. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) was performed for the construct validity of the scale. Kaiser Meyer Olkin, who tested the adequacy of the scale as a result of EFA (KMO) value was found to be .88. According to the results of the exploratory factor analysis, the 3-dimensional structure of the scale was confirmed. Accordingly, it was determined that the final conformity indices of perceived benefit, readiness and satisfaction dimensions were within the desired limits.

#### 2.3.1. Validity of the scale

	Component		
	1	2	3
S11	,834		
S12	,785		
S13	,731		
S14	,665		
S15	,653		
S16	,599		
S23		,864	
S24		,752	
S25		,653	
S17			,800
S18			,762
S26		,647	
S19			,667
S27		,556	
S20			,689
S21			,591
S22			,537

Opening factor analysis (AFA) was performed to demonstrate the distribution of scale items on the sample. The essence of the scale with a three-factor structure of 17 items greater than 1 explains 78.42 %of the total variance. The fact that the variance ratio explained is over 30 %is sufficient in the test development studies in behavioral sciences (Rennie 1997; Buyukozturk, 2018). The results obtained after validity and reliability studies prove that the scale has a consistent structure within itself.

## 2.4. Exploratory Factor Analysis (EFA)

Since the data obtained from the scale were normally distributed, the "Principal Component Analysis" method was used in the factor analysis process. The most widely used of these is the Principal Components method (Hutcheson & Sofroniou, 1999). In order to carry out exploratory factor analysis, first of all, the Kaiser-Meyer-Olkin (KMO) test, which tests the adequacy of the scale of "Teachers' attitude towards Metaverse use", was examined. The KMO



value was found to be .88. According to Field (2000), a KMO limit value greater than .80 indicates a "perfect conformity". Rotation was performed to show the status of the items in the factors. The results obtained from EFA confirmed that the scale has a three-dimensional structure. These dimensions are "Perceived Benefit", "Readiness" and "Satisfaction" and are seen in Figure 1. In addition, the load values in the factors with the items and the common factor variance are presented in Figure 1 and Table 10.

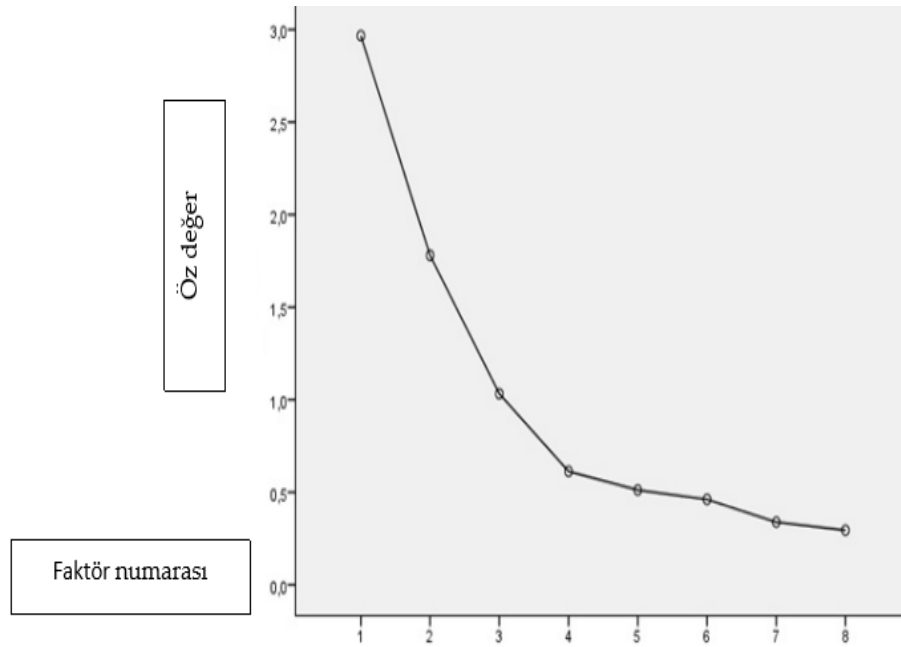


Figure 1: Eigenvalue-factor number graph of Teachers' Attitude Scale towards Metaverse Use Scale

Table 10: Results of Exploratory Factor Analysis

Initial Eigenvalues			Sum of Subtraction of Square of Charges			Rotation Sum of Square of Charges		
Total	Variance %	Cumulative %	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	12.165	53.272	12.365	53.272	53.262	5.643	22.782	22.882
2	2.335	9.625	2.531	9.725	62.183	4.346	16.745	41.733
3	1.203	5.410	1.503	5.410	66.798	4.893	15.872	58.412

### 2.5. Reliability of the Scale

In order to test the reliability of the study, the internal consistency coefficient of the 3-factor structure of the scale consisting of 17 items, which was determined by Cronbach Alpha, was determined as .88. At the end of the statistical analyzes for the sub-dimensions of the scale, the internal consistency coefficients calculated with Cronbach Alpha were .90 for the perceived benefit dimension; .84 for the readiness dimension and .85 for the satisfaction dimension were determined. According to the researchers, reliability increases when the reliability coefficient approaches 1 (Huang, Ryan, Zaber & Palmer, 2014; Sekaran, 2003). In this context, it can be interpreted that the reliability coefficients of each of the relevant dimensions of the scale are "excellent".

#### 2.5.1. Perceived Benefit Confirmatory Factor Analysis

The confirmatory factor analysis results of the Benefit Factor of the scale, which was evaluated within the conceptual framework, are shown in Figure 2. In Figure 2, S11, S12, S13, S14, S15, S16 are the question codes representing the observed variables.

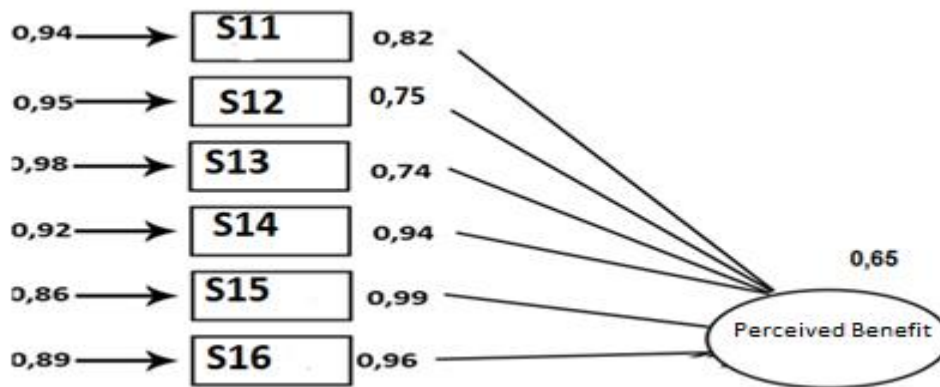


Figure 2: Perceived Benefit Confirmatory Factor Analysis

In the CFA in Figure 2, the values on the arrows directed from the Benefit to Learning factor to the observed variables show the standard regression coefficients (confirmatory factor analysis loads) of each observed variable used to explain the factor. The error values (1-R<sup>2</sup> results) of the observed variables in Figure 2 are seen on the arrows directed from the error values to each observed variable. In the DFA in Figure 2, the values on the arrows directed from the Benefit to Learning factor to the observed variables. It shows the standard regression coefficients (confirmatory factor analysis loads) of each observed variable used to explain the factor. The error values (1-R<sup>2</sup> results) of the observed variables in Figure 2 are seen on the arrows directed towards each observed variable from the error values. When Figure 2 is examined, it is observed that the strongest question in the perceived benefit factor is question 15 and the weakest question is question 13.

2.6. Benefit Factor Conformity Indices

Table 11: Perceived Benefit Factor Conformity Indices

Properties	Conformity Indices					
	$\chi^2/df$	GFI	AGFI	TLI	CFI	RMSEA
	41,6/ 17	,912	,976	,905	,922,	,049

The final conformity indices of the utility factor were observed to be within the desired limits as seen in Table 11, and the relationships between the variables are seen in Figure 2.

2.6.1. Readiness Confirmatory Factor Analysis

The confirmatory factor analysis results of the readiness factor of the scale, which was evaluated within the conceptual framework, are shown in Figure 3. In Figure 3, S17, S18, S19, S20, S21, S22 are the question codes representing the observed variables.

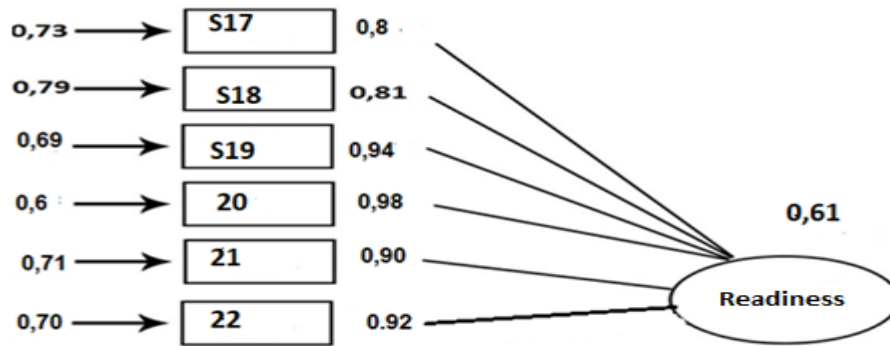


Figure 3: Readiness Confirmatory Factor Analysis

In the CFA in Figure 3, the values on the arrows directed from the Readiness factor to the observed variables show the standard regression coefficients (confirmative factor analysis loads) of each observed variable used to explain the factor. The error values (1-R<sup>2</sup> results) of the observed variables in Figure 3 are seen on the arrows directed towards each observed variable from the error values. When Figure 3 is examined, it is observed that the strongest question in the Readiness Factor is question 20, and the weakest question is question 17.

2.7. Readiness Factor Fit Indices

Table 12: Readiness Factor Confirmatory Indices

Properties	Conformity Indices					
	$\chi^2/df$	GFI	AGFI	TLI	CFI	RMSEA
	78,2/ 17	,918	,923	,911	,942	,052

The final conformity indices of the readiness factor were observed to be within the desired limits as seen in Table 12, and the relations between the variables are seen in Figure 3.

2.7.1. Satisfaction Confirmatory Factor Analysis

The confirmatory factor analysis results of the Satisfaction Factor of the scale, which was evaluated within the conceptual framework, are shown in Figure 4. In Figure 4, S23, S24, S25, S26, S27 are the question codes representing the observed variables.

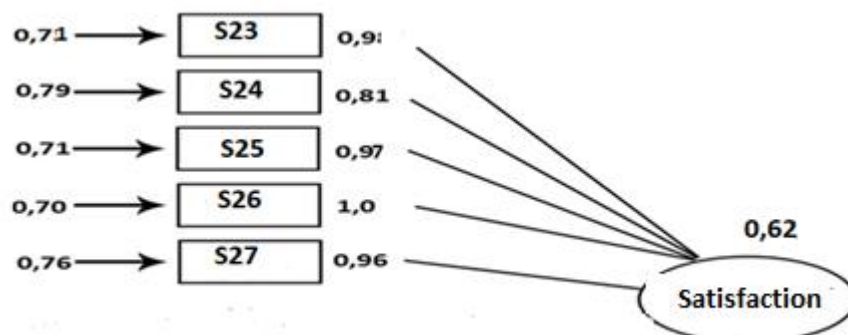


Figure 4: Readiness Confirmatory Factor Analysis

2.8. Satisfaction Factor Confirmatory Indices

Table 12: Satisfaction Factor Confirmatory Indices

Properties	Conformity Indices					
	$\chi^2/df$	GFI	AGFI	TLI	CFI	RMSEA
	2,2/18	,915	,945	,928	,936	,047

The final conformity indices of the satisfaction factor were observed to be within the desired limits, as seen in Table 12, and the relationships between the variables are seen in Figure 4.

### 3. Result and Suggestions

Technology is advancing rapidly, and with Facebook founder Mark Zuckerberg announcing that the company will be renamed Meta, the tech world has started to speak a whole new term: The "Metaverse" called "the future of Web 3.0" by many technologists. Meta means "after, beyond" in Greek. Metaverse, which is derived from the combination of the word meta and the words "universe" in English, also means "beyond the universe". Zuckerberg describes the metaverse as a "virtual environment" that one can enter instead of looking at the screen. It's basically a world of endless, interconnected virtual communities where people can meet, work and play using augmented reality glasses, smartphone apps or other devices.

In the light of all these, this study was based on evaluating the teachers' attitudes towards metaverse technologies by considering the teacher dimension. It is aimed to present a valid and reliable scale that can be developed for the relevant subject. The validity and reliability studies of the scale were carried out on a total of 301 computers teachers working as permanent teachers in a city in Türkiye.

Exploratory Factor Analysis (EFA) was performed to show the distribution of scale items over the study group. At the end of EFA, 17 items and 3-dimensional structure of the scale were revealed. These dimensions are; They were named as Perceived Benefit (1), Readiness (2), and Satisfaction (3). Kaiser-Meyer-Olkin for the validity study of the scale.(KMO) value was checked; In this context, the KMO value is .88 detected.

Confirmatory in research to verify the resulting construct Factor Analysis (CFA) procedures were applied. As a result of these processes, it has been proven that the final fit indices of all dimensions of the scale are within the desired limits. In summary, "Teachers' attitude scale towards Metaverse use" has been presented to the literature as a data collection tool with proven validity and reliability. It is possible to use the related scale safely in the evaluation of teachers' attitudes towards metaverse technologies.

In the context of the recommendations; future work, further work groups and at different levels. In addition, cultural and geographical differences created by the relevant scale can be taken into account in order to guide future studies and researchers.

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**ATTACHMENTS****TEACHERS' ATTITUDE SCALE TOWARDS METAVERSE USE**

Gender Male ( ) Female ( )

Branch .....

Education Status .....

Teaching Time .....

Have You Taken Computer Education? Yes ( ) No ( )

Have you received Design Education? Yes ( ) No ( )

Do you use Digital Materials in your lessons? Yes ( ) No ( )

Is there any digital material that you have developed yourself? Yes ( ) No ( )

Have you received Instructional Design Education? Yes ( ) No ( )

Your Institution Public ( ) Private ( )

<b>TEACHERS' ATTITUDE SCALE TOWARDS METAVERSE USE</b>		<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Perceived Benefit (Dimension I)</b>		<b>Strongly agree</b>	<b>Agree</b>	<b>Undecided</b>	<b>Not Agree</b>	<b>Strongly disagree</b>
<b>1</b>	Useful of Metaverse Applications in Teaching.					
<b>2</b>	Metaverse applications in teaching increase efficiency.					
<b>3</b>	Using Metaverse in education makes teaching easier.					
<b>4</b>	Using Metaverse in education increases productivity.					
<b>5</b>	The use of Metaverse applications in teaching increases academic success.					
<b>6</b>	Using Metaverse in teaching increases persistent learning.					
<b>Readiness (Dimension II)</b>						
<b>7</b>	I can design my own avatar in metaverse.					
<b>8</b>	I can design my own course materials in Metaverse.					
<b>9</b>	Metaverse technologies affect our health positively.					
<b>10</b>	Metaverse environments make a positive contribution to people's happiness.					
<b>11</b>	Metaverse educational environments make a positive contribution to the improvement of the quality of education.					
<b>12</b>	Metaverse educational environments increase students' motivation to learn.					
<b>Satisfaction (Dimension III)</b>						
<b>13</b>	Metaverse teaching environments enrich educational materials					
<b>14</b>	I am proficient in Metaverse Design programs.					

<b>15</b>	I am proficient in Metaverse Software programs.					
<b>16</b>	I am proficient in Metaverse Game engines.					
<b>17</b>	I am proficient in the use of Metaverse Hardware tools.					