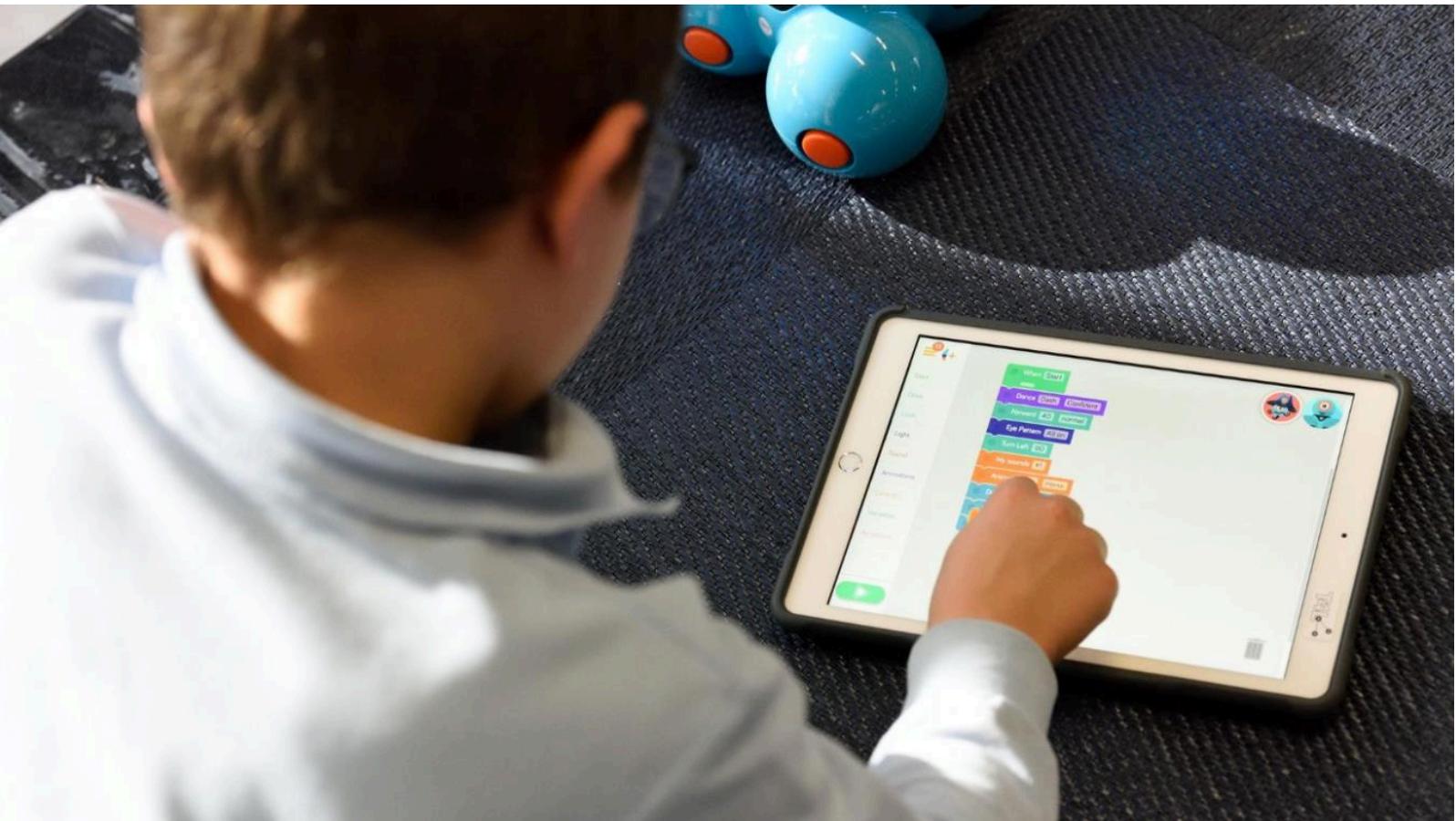


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Comparative Analysis on the Impact of Distance Learning Between Russian and Japanese University Students, During the Pandemic of COVID-19

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Abstract

This article discusses the impact of the full transition to distance learning, during spread of coronavirus infection COVID-19. The advantages and disadvantages of distance learning under the conditions of self-isolation have been identified. A comparative analysis of two groups of students from Russia (18 students) and Japan (31 students) were analyzed based on survey data, which revealed qualitative differences in the psychological condition of students during the self-isolation, and after the transition to the full-time education system. Special attention was paid to such aspects as: the level of psychological (mental) condition, efficiency, productivity, and overall assessment of the form of education. We have found that after the transition to full distance learning, both groups of students observed a decrease in the positive average level of psychological (mental) state, indicating that the mental states were similar regardless of territorial belonging. However, after a partial return to the full-time education system, the average positive level of psychological (mental) state increased, which indicates the importance of full-time education as the only one that creates conditions for emotional, energetic and positive influence between communicators.

Keywords: Distance Learning, Students, University, Pandemic, COVID-19

Introduction

On February 1, 2020, with the spread of the Covid-19 pandemic around the world, the Ministry of Foreign Affairs of Japan began to impose entry restrictions to foreign citizens. From July 20 to July 26, 2020, the number of countries whose foreign nationals were unable to enter Japan were 146 countries (Ministry of Justice of Japan). Among those citizens of foreign countries, in addition to tourists were also citizens who were planning to visit Japan on a work, business and student visa.

Every year in spring and autumn, a large number of foreign students enter Japan. However, in the year 2020, the number of international students has decreased drastically. According to the Ministry of Education, Culture,

Sports, Science and Technology of Japan, students who entered Japan (for the first time) in the fall of 2018 were 35 thousand people, in the spring of 2019 there were 54 thousand people. In 2020, the number of international students who were able to enter the country before the beginning of April (that is, before the complete closure of borders with many countries) was limited, and most of the students could not come to Japan ("Asahi Shimbun"). What are the consequences for international students when they are unable to come to Japan? One of the most obvious consequences that foreign students faced while in their homeland is the transition of most educational institutions in Japan into the distance education.

Before the active spread of Covid-19, face-to-face training was the basis of the educational process. This is a classic type of education, which implies the real presence of students inside the educational institutions. However, with the impossibility to visit the country directly, there is a direct need to replace the dominant form of full-time education with distance learning (DL). According to a study by the survey research conducted by the Digital Knowledge stock company, (Digital Journal, 2020), which specializes in e-learning, in March 2020, the percentage of implementation of DL in Japanese universities throughout the country was approximately 4.2%, but literally a month later in April and May of the same year, this figure was already 93.7% (89.5% growth is seen).

What is DL and what is its concept? According to Andreev A.A. (Andreev, 1997) DL is a synthetic, integral humanistic form of education, based on the use of a wide range of traditional and new information technologies and their technical means, which are used to deliver educational material, its independent study, dialogue exchange between the teacher and the student, and the learning process is generally not critical to their location in space and time, as well as to a specific educational institution". In this case, telecommunications (Zoom, Moodle, Skype, QQ, etc.) are the so-called technological means that have become the leading ones in the distance practice of Japanese universities. Of course, in addition to this definition, there are many different definitions, as well as issues related to the relationship of DL to the educational types, technology, or teaching tools. But the fact that DL is a special synthetic environment that allows you to transfer the traditional process of learning alive on a virtual reality remains unchanged. In this article, we will consider the practical effects of DL, i.e. the impact of DL on the educational process in the conditions of Covid-19 distribution.

Until the pandemic the demand for DL was not well formed as it was new format of education, and the advantages and quality of which was difficult to assess due to lack of statistics P. L. Pecker (2015). However, in 2020 mankind faced such a problem as coronavirus pandemic, which was the main factor in the rapid transition to DL and it suddenly changed in to the only possible form of education and communication. As mentioned earlier, a technological tool that has become the leading distance practice for Japanese universities (82% of 728 Japanese universities have switched to online learning, according to a joint study by Asahi Shinbun and Kawajuku from June 24 to July 26, 2020), is made by means of telecommunications, and the main factor behind this transition was the spread of coronavirus infection.

Sociologist F.W. Taylor (2001) has proposed a classification of DL according to five stages of development:

1. Classical part-time education;
2. The use of various one-way (no feedback) means of transmitting educational materials: printed information materials, live broadcast or recordings on media;
3. Two-way, synchronous distance learning using audio or video conferencing;
4. Asynchronous online learning combined with interactive multimedia;
5. Intelligent flexible teaching, which provides a high degree of automation and control, asynchronous online student learning and interactive multimedia

When discussing the situation of DL in Japan, we can conclude that there is a prevalence of second type of distance education (using one-way means of transmitting learning materials) and third type (two-way, synchronous DL using audio or video conferencing). The educational process using telecommunications, including the conduct of classes through the placement of classes previously filmed by the teaching staff to provide the necessary materials

that should replace full-time lessons, allows to ignore the spatial and temporal aspects, and in turn allows to rationalize the educational process.

O.B. Episheva (2010) identifies two main elements of DL: the physical separation of teachers and some of the students (that is, it indicates heterogeneity and at the same time accessibility in terms of time and space); the use of educational multimedia and electronic resources, both remote and in close proximity (here we can highlight the expansion of the quantitative component of educational materials). In addition to the above elements, it is important to add an increase in the availability of teaching materials for international students who have been planning to study in Japan. Before the pandemic, it was difficult to obtain online materials in Japan due to the various restrictions on online resources. After the rapid development of DL, it became possible to download educational materials, as well as get them online from a teacher in person.

Having combined the elements and selected characteristics, we will try to indicate the main qualities of DL:

1. Spatial accessibility;
2. Temporary availability;
3. Availability of a wider range of training materials;
4. Increasing accessibility to teaching materials through the virtual space

However, in addition to the above mentioned qualities of DL, we should also keep in mind the psychological aspect of DL. The DL model provides the information transfer in a special and educational environment (virtual), and it is known that the specificity of the environment radically affects all components of learning activity: learning motivation, learning situation, monitoring and assessment of student learning (Marchuk, 2013). Here we try to highlight the positive and negative aspects of DL, which was implemented in Japanese universities in 2020 from the point of view of the psychological effect on the personality of students. Positive aspects include, (1) Virtualization of reality by imitating what is happening in social reality, allows to practice skills, gain knowledge and experiences with minimal risk (Ibid, 2013), which can be associated with both a psychological factor and real movement in space; (2) reducing psychological stress and increasing activity during Internet communication due to the virtualization of space; (3) reducing the fear associated with "inability to study abroad", which can be characterized as psychological "border closure"; (4) the ability to actively participate in communication not only as a recipient, but also as a communicator (* only with third type of two-way DL described above). The negative psychological aspects of DL during the educational process during pandemic in Japan include: (1) lack of direct emotional, energetic, suggestive contact between students and the teacher, which complicates the process of transferring sociocultural experience, reduces the charismatic capabilities of educational subjects, negatively influence on personal and group identification of students, educational motivation (Ibid, 2013); (2) the mechanistic nature of the learning process (here we can distinguish both the impossibility of applying "real" pedagogical practices used in the third type of DL, for example, discussion, and neutralization by the virtual world of suggestive impact on students). Absence of direct contact during DL sharpens the importance of taking into account the psychological characteristics of the information flow, which largely determine the effectiveness of learning (Khutorskaya, 2001). In addition to the complexity of the information to maximize the meaningful field of students due to the virtualization, the Covid-19 environment adds stress which can be triggered by the inability to fulfil one's actual needs (like studying in Japan).

Methods

For more detailed analysis of the above aspects and the characteristics of their manifestation, we are considering the data of the survey conducted from September 9, 2020 to September 14, 2020 through the Google form, between Japanese and Russian students who were planning to visit both countries as exchange students, but due to the pandemic all courses were changed into DL. The topic of the questionnaire was "The impact of the spread of coronavirus on the educational process." A total of 49 students took part in the survey, of which 18 students were from the Russian Federation and 31 students from Japan. We created 1 questionnaire in Russian and Japanese languages with 12 questions. The scale from 1 to 5 were provided, with 1 as very bad, 2 as bad, 3 as satisfactory, 4 as good and 5 as excellent.

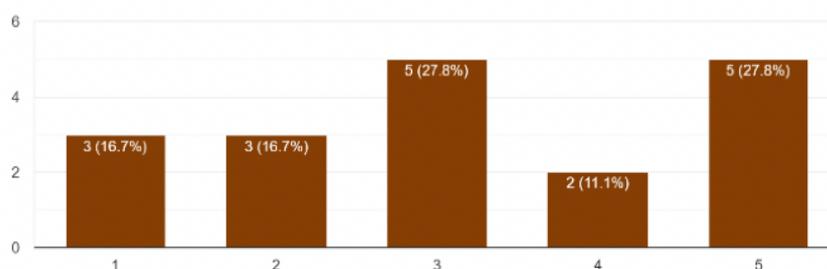
The questions proposed for students were as follows:

1. On a scale from 1 to 5, evaluate your mental state during self-isolation (when lessons were conducted online);
2. On a scale of 1 to 5, rate your mental state after a period of self-isolation (after returning to full-time classes);
3. On a scale from 1 to 5, rate your performance while learning online;
4. On a scale from 1 to 5, rate your performance after the restrictions were lifted and you returned to face-to-face studies;
5. On a scale from 1 to 5, rate your productivity of the educational process during online classes;
6. On a scale from 1 to 5, rate your educational performance after returning to your regular activities;
7. Explain, after returning to normal activities, what factors influenced such changes in your productivity (reasons);
8. On a scale from 1 to 5, rate your motivation (desire) for the educational process, or learning a new hobby;
9. Indicate the subject of your educational motivation during self-isolation (new field of science, new education, hobbies, music, etc.);
10. On a scale of 1 to 5, rate online communication;
11. On a scale of 1 to 5, rate live communication versus online communication;
12. What is preferable for you online classes or face-to-face classes;

In addition to the above questions, separate columns were provided for a more detailed explanation of the reasons for the respondents' answer, which gave us a general picture of the overall personal assessment and definitions made by students about: a) psychological state; b) working capacity; c) the productivity of the educational process; d) factors of productivity changes; e) motivation for the educational process (during self-isolation and after the removal of restrictions); f) comparative assessment of online communication and live communication; and g) positive and negative aspects of online meetings with international students.

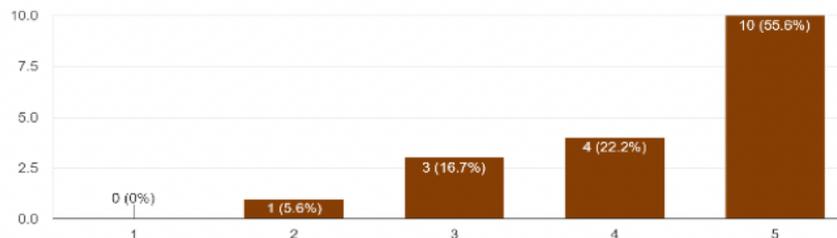
Results and Discussions

Among 18 Russian students, 28% (scale 3) assessed their psychological state during self-isolation as satisfactory; 39% (scale 4-5) - good, positive; 33% (scale 1-2) - negative, bad (Graph 1). In general, during the period of self-isolation, the psychological state of Russian students can be characterized as medium- positive (67%). Among the reasons for the low (negative) it can be noted the students' comments: *"There is no productivity and concentration"*, *"I wanted live communication, I was too lazy to study at home"*, *"Too many tasks, leaving no free time, constant being at the computer screen"*, *"Lack of live communication"*, *"Impossibility to see friends live."* The main factors of the low mood in 28% of students are the lack of "live communication" with both friends and teachers. In other words, as mentioned earlier, there is a clear negative effect from the absence of emotional and suggestive influences arising from direct contact. We would also emphasize the comment *"Too many tasks, leaving no free time, constant being at the computer screen"*. Here, the factor for the negative indicator of the student is the "erasure" of the line between personal and work spaces, which can both increase the influence of the work mood, which in turn will lead to an increase in psychological stress, and reduce the concentration of the student, which can directly affect the student's academic performance.



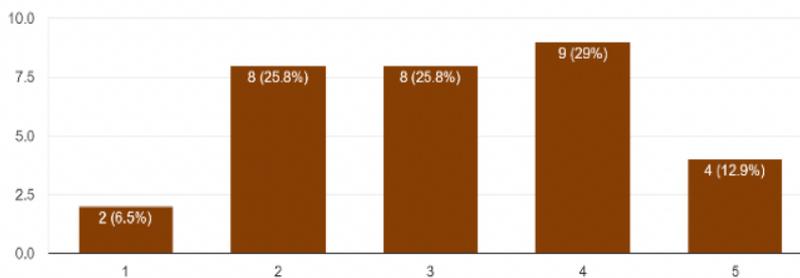
Graph 1. Psychological condition during online learning of Russian students

Next is the psychological state of Russian students after the restrictions were lifted and they returned to the full-time education system: 78% replied - good, positive (scale 4-5); 17% (scale 3) - satisfactory; 6% as bad (scale 1-2) (Graph 2). The general average positive psychological state increased from 67% to 95% (an increase of 28%). The growth of the scale 5 (excellent) from 28% to 56% was especially noticeable. According to the students: “It's easier to work in a team”, “The previous regime has resumed”, “More space, more communication”, which show a clear increase in the general psychological due to the return to full-time education.

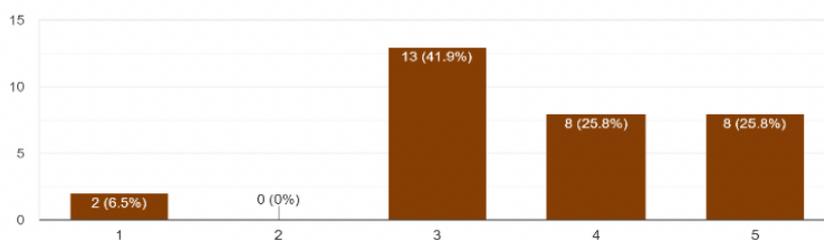


Graph 2. Psychological condition after online learning of Russian students

If we look at the results of the questionnaire survey for the same question of 31 Japanese students, we can see similar dynamics both during the transition to DL, and after the removal of restrictive measures and the transition to the old, full-time education system (Graph 3 and 4). During the transition to the DL system: 42% replied as good, positive (scale 4-5); 26% (scale 3) - satisfactory; 32% (scale 1-2).



Graph 3. Psychological condition during online learning in Japanese students



Graph 4. Psychological condition after online learning of Japanese students

This indicates the similarity of the complex impact on the psychological (mental state) of students to the situation (the spread of coronavirus, the closure of borders, etc.), regardless of a certain territorial affiliation. The results between both groups are shown in Table 1.

During DL	Russian Students	Japanese Students
Scale 4-5	39%	42%
Scale 3	28%	26%
Scale 1-2	33%	32%

Table 1. Comparative results of Japanese and Russian students during the DL

There is also a similarity of qualitative characteristics in comments to the reason for the above mentioned characteristics from Japanese students: "Since I was very busy with distance learning and homework, I couldn't talk to anyone for more than one minute", "I was very worried about making friends. Also, so everything was remote, there were many incomprehensible moments about getting credits and with homework, everything had to be done by yourself, and it was very difficult", "It was difficult to get used to using programs", etc. We would like to note that one of the features of the characteristics on the Japanese side is the prevalence of comments related to the "establishment of friends" and the inability of various fun activities with friends, loneliness (after the beginning of independent life), which could largely determine the decline in the mental of Japanese students. At the same time, based on the survey data, the Russian students emphasized that it was impossible for students to learn the material properly and to conduct face-to-face studies.

Next we will analyse the assessment of the mental state of Japanese students after the restrictions were lifted and return to the full-time education system: 52% replied as - good, positive (scale 4-5); 42% (scale 3) - satisfactory; 7% as bad, negative (scale 1-2) (Table 2). In this case, as in the case with Russian students, there is an increase in the average positive psychological state. The average positive psychological state rose from 68% to 94% (an increase of 26%), which indicates a high desire of students to return to the full-time education system in the context of a complete transition in a pandemic to the remote form of the educational process.

Before and After Pandemic	Russian Students	Japanese Students
Before, scale 4-5	39%	42%
After, scale 4-5	78%△	52%△
Before, scale 3	28%	26%
After, scale 3	17%▲	42%△
Before, scale 1-2	33%	32%
After, scale 1-2	6%▲	7%▲

Table 2. Comparative results between Japanese and Russian students before and after the pandemic

Based on the comparative tables 1-2 and the above data, the following conclusions can be drawn: a) full transition to distance learning can have a negative impact on the psychological state of students; b) similar dynamics are observed for both Russian and Japanese students, which indicates the universality of the process; c) Russian students have an emphasis on the learning process, while Japanese students have an emphasis on communication with friends; d) in both cases, there were comments about the decline in concentration, productivity, etc. to the educational process.

Below we will try to make a comparative analysis (dynamics before and after) of the aspects such as working capacity and productivity, in order to identify how these dynamics during the pandemic and the transition to full DL of the general psychological (moral) state can affect the above aspects which directly affect proper assimilation of the material by the learners.

Comparing the level of performance and productivity before and after the abolition of full DL in the Russian Federation and Japan, it was found that the students' assessment of performance and productivity during the full transition to DL was on average, 23% (the average rate of variation (difference) of the positive average) lower than after the removal of restrictive measures and return to full-time education (Table 3). This indicates about a causal connection of the general mental condition which in turn became the object of the qualitative change of educational process - transition to the distance form of education (2 and 3 types).

Also, the average indicator of the difference in working capacity and productivity of students from the Russian Federation was 14%; students from Japan 31%. How can this difference be explained? If we look to the written answers of Japanese students to the question about productivity and performance during full-time education: "I can work when I see people who are trying," "I thought I could learn more from talking with friends," "I can compare with others how much I have progressed in my studies ", " When I saw working friends, my motivation to study increased", "The enthusiasm of the people around me stimulates me to study ", " Finally, you can learn from each other with friends ", etc. ... , in total, the number of comments that include "friends", "enthusiasm of people around", "motivation from the working atmosphere", amounted to 20 times (two questions: efficiency and productivity). For Russian students, the number of related comments reached only 5 (two questions: efficiency and productivity).

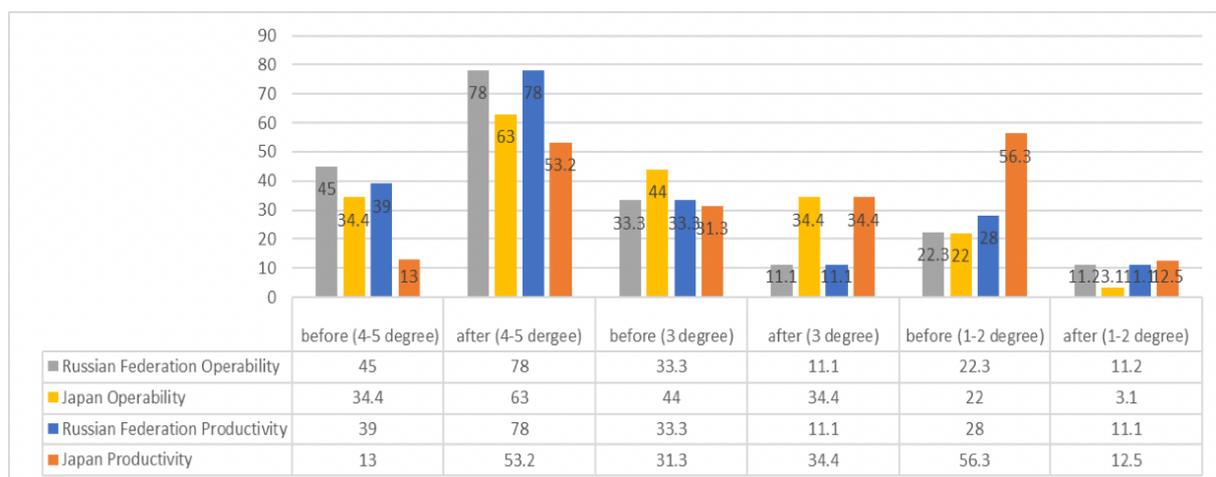


Table 3. Comparison of the level of workability and productivity on the educational process: before and after DL in Russian Federation and Japan

From the data obtained, we can conclude that Japanese students are more susceptible to the influence of the surrounding social environment than Russian students. The behavioural setting in Japanese educational institutions has a stronger effect on student behaviour and academic progress (the influence of others), which can negatively affect the psychological component of Japanese students during the transition to DL. On the other hand, Russian students have a great concentration on the educational process itself, and not on the formation of the conditions of the educational and social environment around them, which gives greater mobility in choosing the current form of education, including increasing the possibility of switching to DL. This also explains the high motivation for learning something new (in addition to basic studies, including a new hobby): Russian students replied for scale 4-5 = 95%, Japanese students for scale 4-5 = 47%, since the level of abstraction from the attachment to a certain social environment among Russian students was higher than among Japanese students.

The overall assessment of online learning by Japanese students was (scale 4-5) 31%, (scale 3) 53%, (scale 1-2) 16%; from Russian students (scale 4-5) 45%, (scale 3) 33%, (scale 1-2) 22%. Full-time education (including face-to-face communication) compared to DL was assessed: Russian students (scale 5) 83%, (scale 4) 6%, (scale 2) 11%; Japanese students (scale 5) 19%, (scale 4) 31%, (scale 3) 47%, (scale 2) 3%. The average positive indicator of Russian students was 89%, Japanese students 97%. It is worth to emphasize that the satisfactory indicator (attitude to full-time education) prevails among Japanese students, which indicates a neutral, for the most part,

attitude towards the standard form of education. Among Russian students, the indicators of this aspect are concentrated only in “good” and “excellent” (scale 4-5). The overwhelming majority of 49 students (Russia and Japan) 80% prefer full-time education to distance learning. Both groups showed a high desire for live communication during the educational process. We can judge about this by the data obtained on the morale of students before and after the cancellation of distance learning.

According to the survey, the following positive and negative aspects of distance (online) education were identified during the spread of Covid-19. Positive aspects: a) continuation of the work process, despite the closure of borders; b) the opportunity to communicate with foreigners; c) saving money; d) the opportunity to study at home; e) the ability to take a lesson at any convenient time (* if distance learning is conducted in a one-way form). Negative sides: a) distancing, lack of live communication (emotional, energetic connection, suggestive influence); b) erasing the boundaries of work and personal space; c) lack of productivity and concentration at work due to a long stay at the computer; d) getting a lot of psychological stress due to the large number of tasks; e) limited question-answer form of communication (inability to ask a question directly, which can lead to distortion of the information received); f) the possibility of problems with the Internet; g) disturbance in daily routines due to time difference.

Conclusion

The survey data of 49 students from two countries of the Russian Federation (18 students) and Japan (31 students) showed:

1. After the transition to full DL, both groups of students observed a decrease in the positive average level of psychological (mental) state, indicating that the mental states were similar regardless of territorial belonging;
2. The declined mental state had a negative impact on student performance and productivity;
3. After a partial return to the full-time education system, the indicators of the average positive level of psychological (mental) state increased, which indicates the importance of full-time education as the only one that creates conditions for emotional, energetic and positive influence between communicators;
4. Based on a quantitative analysis, it was concluded that behavioural setting in Japanese educational institutions has a stronger effect on the behaviour and academic progress of the student, which may adversely affect the psychological component of Japanese students during the transition to distance education. Japanese students are more likely to be affected by the social environment than Russian students;
5. In contrast, Russian students are less dependent on modelling a particular social environment around them for a productive work process, indicating that Russian students are more likely to study at DL than Japanese students.

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Presupposition and Teaching Chinese as a Foreign Language

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Abstract

In cooperative human communication, the speaker has to mark the connection between his utterance and therefore the given information, because the hearer interprets the utterance regarding the data that has already been obtained. Languages adopt various devices to mark the connection between the utterance and also the context. This paper investigates semantic and pragmatic presupposition in Discourse Representation Theory (DRT) within the Chinese language and enhances the pragmatic perspective of presupposition in DRT.

Keywords: Presupposition, Chinese Language, Teaching Foreign Languages

Introduction

In daily language use, most utterances we make don't seem to be isolated from their preceding and following utterances. Utterances are always connected to create a longer unit of language, i.e., discourse. To create the discourse coherent and simple to grasp, we use a category of lexical expressions to attach individual utterances and 'glue' them together. These expressions are often named as discourse markers.¹ Discourse markers are a syntactically heterogeneous group of words, consisting of expressions from different syntactic categories like conjunction, phrase, adverb, etc. they're not classified syntactically but rather in terms of semantic and pragmatic functions. Generally, discourse markers don't contribute to the propositional content of the utterance.

When one reads or hears pieces of language, one normally tries to understand not only what the words mean, but what the author or the speaker of those words shall convey. One of all the principal difficulties that one faces when managing aspects of language could be thanks to distinguishing between entailment and presupposition. These two concepts are described and examined for the rationale that they seem to produce the premise for answering a range of questions both about speaker-commitment and sentence meaning. The presupposition is what the speaker assumes to be the case before making an utterance whereas entailment is what logically follows from what's asserted within the utterance.

As a crucial branch of linguistics, pragmatics "studies how speakers of a language use sentences to successfully communicate. The presupposition is a vital concept in linguistics. This idea has "large plasticity", and different linguists understand and define it differently. However, linguists generally believe that the concept of

presupposition "reflects a minimum of two different levels of relationship: the link between sentence components within the scheme and also the relationship between the speaker and also the sentence within the speech process". Correspondingly, presupposition will be divided into two types: semantic presupposition and pragmatic presupposition. the previous belongs to the research category of semantics, and therefore the latter belongs to the research category of pragmatics.

It is deduced that in the teaching of Chinese as a foreign language if the Chinese learner does not understand the meaning of the sentence, it may be that the presupposition of the meaning of the target word is ignored. Let's take a look at a few related examples:

1. Nǐ lián tā dōu bú rènshi.

The target word with "presupposition" in this sentence is "lian (lián)". It comes with a premise: Many people know him, and you should know him. But the truth is: you don't know him. So the whole meaning of this sentence should be like this: Many people know him, and you should know him, but you don't know him. Say all the meaning in this way and it will be very clear.

If a Chinese learner does not know the usage of "连", or knows it but has never used it, then it is likely that he will just say "don't you know him 你不认识他吗?" and add some exaggerated tone. But obviously, the two sentences are different. One is a surprised or sighing tone, and the other is a general questioning tone. The listener may also respond differently to different sentences, so the speech effects of the two are also different.

2. dàodǐ xiǎng shuō shénme ?

The target word of "presupposition" in this sentence is "to the end (dàodǐ)". It has the premise that: for one thing, you said A at first, you said B just now, but how you say it means C and the three meanings of ABC are different. So ask further: Which one of A, B, C do you mean?

If you can list A, B, and C in this way, and then ask others, even if you don't say "in the end," the meaning will be clear. However, in actual communication, the problem that may be faced is that first of all, the speaker himself is not very clear about what he is saying, and secondly, the listener is also confused and confused, and cannot list according to the information provided by the speaker. Out of A, B, C, so you can only directly ask "What do you want to say?" This may be the real context that people often face.

We will not discuss how to speak clearly, but discuss the pragmatic functions of these words with "presupposition" and give examples. So for this example, if you just ask "What do you want to say?", to some extent, it is an "invalid" question. And the word "to the end" can make questioning exert more pragmatic functions that are expressed through semantics.

This paper attempts to discuss the presupposition in general terms in the Chinese language and its role in the teaching of Chinese as a foreign language and Briefly review the proposal, characteristics, and classification of presupposition theory. And discuss the guiding and enlightening effect of presupposition on Chinese classroom teaching. The clever use of presupposition theory not only takes into consideration the commonality of scholars, but also takes into consideration the individual differences of scholars, implements teaching in accordance with their aptitude, and invigorates the classroom atmosphere.

1. The presupposition theory

As an important branch of linguistics, pragmatics studies how speakers of a certain language use sentences to successfully communicate. Presupposition, also called premise, presupposition, and presupposition is an important concept in linguistics. This concept has "large plasticity, and different linguists understand and define it differently.

However, linguists generally believe that the concept of presupposition "reflects at least two different levels of relationship: the relationship between sentence components in the language system and the relationship between the speaker and the sentence in the speech process. Correspondingly, presupposition can be divided into two types: semantic presupposition and pragmatic presupposition. The former belongs to the research category of semantics, and the latter belongs to the research category of pragmatics.

2. The concept of Chinese semantic presupposition

The semantic presupposition is a kind of semantic relationship between two sentences or propositions. It is "attached to the surface structure of language and is the basis for the formation of sentence meaning. Its fundamental feature is that no matter what kind of speech act, the sentence itself and The presupposition should be constant. The concept of semantic presupposition is based on the true and false value of a sentence and has a close relationship with the meaning of the sentence itself.

When proposition a and proposition b satisfy the following three conditions at the same time: if a is true, then b is true; if a is false, b is still true; if b is false, then a does not have the problem of true or false value, That is, a is an impossible proposition. At this time, proposition b is the presupposition of proposition a; in other words, proposition a presupposes proposition b.

E.g.:

- a. His brother is a marketing manager.
- b. He has a brother. Obviously, when a is true, b is also true; a'. His brother isn't a marketing manager. (a negative form)
- b. He has a brother. It can be seen that when a is false, b is still true; a. His brother is a marketing manager.
- b'. He doesn't have a brother. (b's negative form)

It can be seen that when b is false, the "his brother" in a has no referent, so the sentence has no truth value at all, that is, a is an impossible proposition.

As can be seen from the above example, sentence b is a presupposition of sentence a, or in other words, sentence a presupposes sentence b.

Unlike traditional standard logic, the semantic presupposition is not binary logic (only two values are true and false) but belongs to three-valued logic (that is, there are three values of true value, false value, and meaningless).

As "an essential attribute of semantic relations within a language", semantic presupposition has the following characteristics in Chinese:

1. Semantic presupposition is "restricted by the laws of logic generally accepted by people" [6] 161, so for the analysis of semantic presupposition of sentences or propositions, "only based on logic and grammar to investigate" [7] 119.

E.g.:

- a. The movie I watched yesterday is amusing.
- b. I watched a movie yesterday.

According to "commonly accepted logical semantics"[8]148, it is easy to see that sentence a in these two sentences is presupposed by sentence b.

2. "If there are no nouns in the sentence or if the description has no referent (that is, the default is false), the whole sentence has no truth value at all." [7]119 That is to say, "The semantic presupposition is that the sentence obtains the truth value. Necessary conditions" [2] 66. If the semantic presupposition is false, then the sentence has no truth value or false value at all, and it becomes meaningless.

E.g:

- The king of the United States is kind-hearted.

In this sentence, "the king of the United States" has no signification, that is, the semantic presupposition cannot be satisfied, so the whole sentence is meaningless.

3. The semantic presupposition is stable.

The stability of semantic presupposition means that "negating a sentence or asking a question will not negate or doubt the 'presupposition', but it also explains that the 'presupposition' is true" [2] 66-67.

E.g.:

- a. The movie that Tim watched yesterday is amusing. b. The movie that Tim watched yesterday isn't amusing.
- c. Is the movie that Tim watched yesterday amusing?
- d. Where did Tim watch the movie yesterday

As a semantic relationship between two sentences or propositions, the semantic presupposition is restricted by the generally accepted logical laws and has stability and variability. At the same time, when there is no noun in the sentence or the definite description has no referent, the whole sentence If there is no truth value, there is no meaning.

3.Presupposition features and research directions

Regarding the complexity of presupposition theory, philosophers and linguists have argued their different views. However, linguists and philosophers' understanding of presupposition is or has attended merge. Summarize the common and stable things that exist within the presupposition. it's going to be found that the preset has the following characteristics:

(1) Presupposition is that the knowledge inexplicit the sentence. For example, I do know he's divorced. The presupposition of this sentence is "he has been married." From the surface information of the sentence, the information inherent in the sentence is thought.

(2) The default is that the mutual knowledge set by both parties:

A: When did it happen / before or after?

B: Years later.

A: Why is it so sudden?

B: No way, MI.

The assumption during this conversation is that B's mother has kicked the bucket, unfortunately, and either side is alert to it. Both parties within the communication set together and understand each other. It saves the cumbersome language and expresses sympathy for the alternative party. If you say the presupposition, I heard that your mother kicked the bucket, when did it happen? Years ago or after? this could make B very upset.

(2) The presupposition is also a prerequisite for comprehensible and meaningful sentences. The sentences in communication must have practical meanings understood by both parties. Generally speaking, if a sentence is true, it's assumed to be true, and a sentence is fake if it's assumed to be true. If and providing it's assumed to be false, the sentence has no meaning. The mother asked the kid: "Have you finished your homework?" This sentence presupposes that the teacher assigns homework to the kid. If the teacher doesn't assign homework to the child, that is, the default is fake, then this sentence is meaningless.

The research of presupposition is summarized into semantic presupposition and pragmatic presupposition. Semantic presupposition belongs to the research category of semantics, and pragmatic presupposition belongs to the research category of pragmatics.

Linguists' research on presupposition starts from semantics. Semantic presuppositions are presuppositions analyzed from semantics. Its basic feature is to incorporate the proposition into the speculation of truth conditions.

The distinction between Presupposition and Implicature in Chinese

The presupposition theory was proposed by the German philosopher Frege in 1892. It originally belonged to the category of logic and was later introduced into the field of linguistics. The presupposition is the junction of semantics and pragmatics. It is different from implication and assertion, but both are an important factor in sentence interpretation.

The technical term 'implicature' was introduced by Paul Grice in his theory of conversational implicature, which consists of cooperative principles and maxims of conversation. He argued that speakers will be cooperative once they talk and hence they have to observe such maxims as quality, quantity, relation, and manner. That's to mention, they ought to speak sincerely, relevantly, and clearly while providing sufficient information. Otherwise, conversational implicatures are going to be produced by deliberately flouting the maxims. Grice (1975) also distinguished the natural and non-natural meanings of utterances. Entailments, into which presuppositions were classified, were thought to be the natural meanings since they're attached conventionally to the linguistic forms and present on every occasion when the expression occurs. Implicatures of conversational implicatures, as a contrast to traditional implicatures, were non-natural or non-conventional in this they're variable and enthusiastic about conversational principles. During this section, we'll concentrate on the excellence between presupposition and also the two kinds of implicatures within the specific context of Chinese.

So far, the literature that specifically discusses the presupposition of the item component from the angle of the semantic relationship of the syntactic components has not yet been seen. Therefore, we've tried to reclassify the semantic presupposition (specifically "logical semantic presupposition" or "Typical semantic presupposition").

Regarding the categories of objects in modern Chinese, academic circles have always been at odds. Or consistent with the difference of its constituent materials (for example, "Wifen Theory" believes that there are nominal objects, verbal objects, adjective objects, subject-predicate phrasal objects, and sophisticated sentence objects), or consistent with the semantic relationship between them and verbs Different points (for example, "14 sorts of talks" [1], "13 forms of talks" [2]). Seeable of the deficiencies within the naming and definitions of every family, the author intends to grant a brand new arrangement supported the achievements of former sages. Some terms are identical to former sages but have different definitions.

Presupposition and implication are other meanings derived from the overall meaning of the sentence into information, but these two meanings are not the same. "Implication" is an important concept in modern logic, and it refers to an inclusive relationship in the sense of sentences. Broadly speaking, it includes presupposition, which is only a special kind of implication. But Yu Ding presupposes that many unique properties are implied.

The implication M means that implication does not consider the connection in the sense of the inner boundary of its antecedents and subsequent ones. It is only an abstraction of the K-false relationship between the antecedents and the subsequent. Pieces of Random. Such as:

- (1) Zài jiǎngtái shàng zuò bàogào de rén shìgè lǎoshī.
- (2) Zài jiǎngtái shàng zuò bàogào de rén shìgè yǔyán xué jiā.
- (3) Yǒurén zài jiǎngtái shàng zuò bàogào

Example (1) can be deduced from (2), and also can be deduced from (3), the negative formula of (1):

- (4): The person giving the lecture on the podium is not a Ph.D.

From the above example, the mountain (3) can also be pushed, but (2) cannot be derived. This is the difference between them: (2) is an implication, and (3) is a presupposition.

The presupposition is a proposition that can be deduced from both the positive and negative forms of the sentence. When (1) is negated, (2) is also negated. Flash is the negated upper component, and the bu position component Q is also negated. The difference between WE value bar f | can be expressed as:

p 预设 q,那么 pE 则 qS, p 假则 q 也衰。

P 错含 q,那么 pK 在 q 真..p 假则 q 可真可假。(1)

A 预设 B

A 断言 B

f	—	t	r	—	t/f
z	—	f	f	-	f

There is a little difference between the “-” and the “+” for a sentence. • When it is negative, the default can be maintained but the implied cannot. Therefore, it can be called a negative test to divide the pre-S and implication.

(1) THE SUPPOSITION OF COMPOUND SENTENCES AND COMPOUND SENTENCES, RESEARCH 硕士学位论文,福建师范大学

Chinese presupposition trigger

1. presupposition and presupposition trigger types

(1) *Presupposition classification*

The concept of presupposition was first produced in the theory of name reference (referred) proposed by Frege. Frege's "On Meaning and Signification" holds that no matter what we assert, when we make this assertion, we have already acquiesced that the simple or compound proper name in this assertion has a reference. He also believes that a sentence or sentence we express presupposes the name of the sentence to be referred to, that is, presupposes the existence of the object the name refers to. (Wang Yueping, 2011: 2) Russell used the "independent proof method" to refute Frege's thesis in "On the Signification". He believes that even a sentence with no definite description as the subject still has true and false value. (Wang Yueping, 2011: 2-3) Strawson published the article "On Allegations" in 1950, and the publication of the subsequent series of research results made the presupposition question get the attention of the academic circle. He mentioned the problem of using in a specific context, thinking that when we make a judgment, and this judgment is based on the description of the main word, then this description has something to say, we will not make an A judgment based on a description that has no reference as the main word. He also distinguished two closely related concepts: "presupposition" and "implication". (Wang Yueping, 2011: 4-5) Then Sellers gave a new interpretation of presupposition, which gave birth to the concept of "pragmatic presupposition", which was the first to study presupposition from the perspective of speaker and language use, thinking that discourse If the presupposition of is not satisfied, the discourse does not have true or false value, but is just expressed inappropriately and unsuitable for communication. (Wang Yueping, 2011: 6)

Regarding the classification of presuppositions, in addition to the relatively broad semantic presuppositions and pragmatic presuppositions, the more representative ones abroad are Alwood's existing presuppositions, factual presuppositions, and category presuppositions. Gates The dichotomy of potential presuppositions (possible presuppositions) and actual presuppositions (realistic presuppositions). Yu Er divides semantic presuppositions into potential presuppositions and actual presuppositions and then divides actual presuppositions into existential presuppositions and facts Presupposition, lexical presupposition, structure presupposition, non-realistic presupposition, and anti-factual presupposition, etc. (Wang Yueping, 2011: 67-69) Domestic research on the classification of presupposition is more representative. For example, Xu Shenghuan (1993) mainly "studies presupposition from the perspective of semantics and logic, and believes that presupposition is reflected in sentence meaning or Implied certain objective states of affairs and situations are used as the factual basis of the entire state of affairs and situations described in the sentence. Presuppositions are divided into absolute presuppositions and relative presuppositions, which correspond to existential presuppositions and state of affairs

presuppositions respectively "Fan Xiao's "Grammar Theory Outline" divides presuppositions into existential presuppositions, factual presuppositions, opposites, and variability presuppositions, and repetitive presuppositions. (Chu Jing, 2007).

(2) presupposition trigger types

In the 1870s, many linguistic Ning scholars discovered that presupposition is not only a phenomenon unique to noun phrases but a linguistic phenomenon shared by many words and syntactic structures. Such words and grammatical structures (Karttunen) are called "presupposition triggers". He collected 31 such triggers. Levensen (1983) summarized into 3 kinds of presupposition phenomena.

Katunan lists as many as 31 presupposition triggers in English. Levinson selected definite descriptives, narrative verbs, implicit verbs, change of state verbs, and repetitive verbs in the article "Pragmatics". There are 13 items including words, judging verbs, temporal clauses, cleft sentences, implicit cleft sentences with accents, contrast, and comparative structures, non-limiting relative clauses, counterfactual conditional sentences, and interrogative sentences. Chinese scholars Mr. Fan Xiao and Professor Lan Chun discussed presupposition triggers relatively early. Among them, Professor Lan Chun's (1999) "A Preliminary Study of Presupposition Triggering Items in Modern Chinese" is the first domestic article to study presupposition triggers in modern Chinese. The article summarizes 9 more active modern Chinese predictions from daily conversations: specific descriptions, factual verbs, state changes, restatements, time adverbial clauses, emphasizing sentence patterns, contrasting structures, conditional clauses, and questions that contradict the facts. Set the trigger item. Fan Xiao's "An Outline of Grammar Theory" studies presupposition triggers from the perspective of the connection with the real world, opening a new level of research on presupposition triggers (Ma Xiaowen, 2011). Xing Fuyi's (1991) "Modern Chinese" introduces 6 commonly used prerequisite triggers in the "Discourse Comprehension" section of Chapter 5 "Modern Chinese Pragmatics", namely: (1) Adverbs that indicate repetition, such as "you, Re" etc.; (2) Verbs that indicate changes in state, such as "stop, correct, resolve, correct", etc.; (3) Some mental activity verbs, such as "forget, regret, regret", etc.; (4) Sustainability Words, such as "continue, being", etc.; (5) interrogative pronouns, enumeration options in interrogative sentences, such as "why, when", etc.; (6) certain complex sentences, such as "if, if, although... .But..." etc. "This is the first more systematic discussion of Chinese presupposition triggers" (Wang Yueping, 2011: 19) Based on the above brief description, we believe that the presupposition triggers and predictions There is a close connection between the hypotheses, and the generation of the preset meaning is caused by different preset trigger items.

2. The Pragmatic Function of Chineses Presupposition Trigger

With the deepening of the research on presupposition triggers, there have been many new achievements and original ideas in the research of presupposition triggers, mainly focusing on pragmatics. For example, Zhao Xiong (1999) "New Compilation of Pragmatics" made some necessary explanations on the main premises based on Levinson's 13 premises, and believed that "these so-called premises should be A language that is understood as a representation, as a potential premise, and as a language means to express the speaker's premise". Suo Zhenyu (2000) "Pragmatics Course" selected some important examples of presupposition triggers based on Levinson's introduction, and pointed out that our "choice of the core phenomenon that is usually considered presupposition depends on us. The definition of presupposition, because presupposition is a very complicated issue, scholars have many different views." He Ziran and Ran Yongping (2009)'s "New Introduction to Pragmatics" analyzes the prerequisite relations and prerequisite triggers from the perspective of communication (including verbal communication and nonverbal communication), and believes that "prerequisite relations may be affected by certain sentences in the sentence. It is caused by the influence of words or structures. These words or structures are called prerequisite triggers. They are the basis for the generation of premises." Although the article uses Chinese as an example to introduce triggers, because English and Chinese are basically the same, we can see in the introduction that we still haven't jumped out of the scope of Levinson's 13 introductions. Wang Yueping (2011) "Study on Chinese Presupposition" comprehensively and systematically combs the results of presupposition research at home and abroad, and divides the triggers of Chinese semantic presupposition into triggers of typical

semantic presupposition and triggers of atypical semantic presupposition. There are two kinds of language, and the typical semantics presupposes from definite descriptive language, narrative verb, state change verb, directional verb, acting verb, strong implicit verb, relative verb, restatement verb, sentence focus mark, and ordinal. The 17 aspects of quantifier phrases, predicate-complement phrases, temporal adverbial clauses, comparative sentence patterns, metaphorical sentence patterns, emphatic sentence patterns, and interrogative sentences serving as sentence components are classified and narrated as examples. The difference in triggers shall prevail, and SARS Type semantic presupposition is divided into three types: word-triggered, phrase-triggered, and mode-triggered. Many new concepts have been proposed, and quite innovative theoretical thinking has been carried out on the issue of presupposition triggers. Here we take the six presupposition triggers introduced in Xing Fuyi (1991) "Modern Chinese" as examples to introduce the pragmatic functions of presupposition triggers.

(1) Adverbs that indicate repetition

In modern Chinese, adverbs are a relatively complicated part of speech, and the adverbs "又" and "再" are used frequently in Chinese. Many adverbs have different meanings and usages due to different conditions such as context and tone. "再" and "又" are widely used in modern Chinese. They are a pair of adverbs that are very close to each other.

The most important adverbs that express repetition in modern Chinese are "又" and "再". The difference between these two words is summarized in "现代汉语八百词" as "又" is used for the realized, "再" Used for unimplemented.

Chinese repeating adverbs represented by "又" tend to express the semantic evolution of the grammatical meaning related to the tone. The origin of this semantic meaning is related to the basic meaning "addition, repetition" of the adverb "又" Close connection. The adverb "又" with the meaning of "turning" from the meaning of "additional" is concatenated with the syllogism proposition of the negative premise, thus constituting the strengthening of the negative tone; the adverb "又" in the cross-examination question is due to the question element The change of and the expansion of the semantic relationship between the clauses before and after the cohesion gradually changed from the basic meaning of "representing the repetition of action and behavior" to strengthening the cross-examination tone.

- (1) Xiōngdì, nǐ yòu xiě cuòle.
(Brother, you made a mistake again)
- (1) Wǒ méi xiǎngdào, nǐ huì zài fān zhè zhǒng lèisì de cuòwù.
(I didn't expect that you would make this similar mistake again.)

From the example (1), we can see that the word "又" presupposes that the brothers were late before. As shown in example (2), the word "再" is presupposed. We did not expect you to make this kind of mistake. However, not only did you make this kind of mistake, but you also made this kind of similar mistake again. Both examples sentences express The speaker's intense disappointment and unbelievable emotions.

Note: The word "也" in modern Chinese belongs to the same repetitive adverb as "还, 又, 再", which means repetition of meaning and is used frequently in modern Chinese. As an adverb, "也" can express multiple meanings. In terms of syntactic function, "也" generally modifies the verbs behind it, so it is often classified as an adverbial when dividing sentence components. But from the perspective of semantic function, when "also" is used as an adverb, the semantic direction is more complicated.

(2) Verbs that express state change

Chinese linguists have given a more acceptable definition of state verbs: "state verbs often contain the meaning of entering this state from another state, so they are often used with the auxiliary word '了'. For example, "I'm hungry", "I'm full now", "Now I am connected", etc.

(1) Tā yǐjīng tíngzhǐ yīqiè de shètuán huódòng, zhuānxīn xuéxí.

(He has stopped all asocial activity and concentrated on studying.)

(2) Zhè zhǒng zuòshì mǎmǎhūhū de tàidù, tā zǎoyǐ gǎizhèng.

(He has corrected this sloppy attitude.)

(3) Zhè cì hùwài tàzhǎn huódòng, jiějuéle bānji bùfèn tóngxué bùcānjiā jítǐ huódòng, bù zhǔdòng hé dàjiā jiāoliú de wèntí.

(This outdoor development activity solved the problem that some students in the class did not participate in group activities and did not take the initiative to communicate with everyone.)

(4) Zhè cì tánhuà, jiūzhèngle zhāng sān xīnzhōng duì lǐ sì de wùjiě.

(This conversation corrected Zhang San's misunderstanding of Li Si.)

The "stop" in example (1) presupposes that he had participated in a lot of club activities; the "correction" in example (2)--the pre-set information triggered by the trigger is that he always did things carelessly before; example (3) The trigger word "resolve" in) contains the preset information that some students in the class often do not participate in-class group activities and do not actively communicate with everyone; the "correct" in example (4) contains the presupposition that Zhang San gave Li Siyou before misunderstanding.

(3) Compound sentence relative

1. Related words

3.1 The semantic presupposition of related words

related words as presupposition triggers can derive presuppositions from it and the sentences connected, and these presuppositions generally only involve their logical meaning relationships. Compare:

(1) Tā shì nánfāng rén, tā de zhàngfū shì běifāng rén.

(2) Tā shì nánfāng rén, tā de zhàngfū què shì běifāng

Example (1) is a parallel relationship, and example (2) adds "but" to become a turning relationship. This does not mean that (1) implies a turning point. For example, M Flash has a semantic presupposition: Southerner's The husband is from the south. (1) Without saving this preset, there is no risk of a turning point in this situation (Zhang Bin 2003: 57). It can be seen that certain related words always have a corresponding presupposition. This presupposition is often the basis for judging compound sentences.

3.2 The Pragmatic Presupposition of Related Words

Discourse-related words, as the most typical means of explicit discourse cohesion, their correct use is one of the keys to determine whether the context of the entire discourse or discourse is coherent and the meaning is complete and clear.

Sometimes the semantic presuppositions of the syllabic words cannot fully reveal the W method of the inter-speaking of the peptides. For this moment, we should discuss it from the perspective of the speaker, the listener, and the context E.g.:

(1) If even animals can control themselves to achieve a certain purpose, shouldn't people with thoughts and feelings be better at controlling themselves? (Zhu Xiao "Talking about Self-control")

Generally speaking, suppose that the AB of the complex sentence "If A, then B" must logically have a related implication relationship between A. But the related sentence pattern "If A, then B" often has no related implication relationship (such as (1)), but the speaker used W to "if...then" this pair of words expressing a sufficient condition for the hypothesis. The original flash is that A has a similar semantic dysfunction between AB. "Animal...can control G self" and "human...I control Q self"—they have semantics in common. Suppose: Since one is similar, then the former is true, and the latter is also true. If you agree with the former, you must agree with the latter. The speaker makes W denote the "if" sentence that assumes sufficient conditions to strengthen the logic of the argument. Sometimes there is a similar semantic relationship between AB, and this form can also be used.

Related words generally have their presuppositions, and it can be said that the presuppositions of the related words of each compound sentence category can be distinguished from the presuppositions of related words representing other compound sentence categories. This is for us to use presuppositions to solve complex sentences. Some of the different opinions in this chapter provide a theoretical basis.

3. The Presupposition of Object Components in Chinese

The referents and state of affairs of the subject-object, the object-object, the instrumental object, the material object, the method object, the location object, the time object, the cause object, the instructing object, and the disabling object are all presupposed to exist; the result object, the target object, and the subject Objects and existential objects do not contain presuppositions of individual things, but presuppositions that contain similar things; denoted objects contain presuppositions of names or presuppositions of things that contain names; quantitative objects presuppose that quantitative words refer to The quantity exists; the virtual object does not contain the existence presupposition. Analyzing the presupposition of Chinese object components should pay attention to First, we must scientifically classify Chinese objects with complex and changeable forms. When categorizing, we must pay attention to comparison and analysis from the perspective of cognition, that is, from the perspective of the expansion of the meaning of words (such as metonymy, metaphor, etc.). This is because: From the perspective of categorization, the "object" in Chinese is a prototype category. The non-prototype object (member) is the result of the constant expansion of the prototype object (member) through metonymy and metaphor. Second, the presupposition analysis of Chinese object components must be carried out from multiple dimensions such as semantics, pragmatics, and syntax. The analysis of the dimension of the semantic relationship between syntactic components is the key. (1)

(1) The Analysis on Presupposition of Object in Modern Chinese paper. WANG Yue-ping 2013 年 7 月 J.of Jiangsu Normal Univ(Philosophy and Social Sciences Edition) July 2013

4. The application of presupposition triggers in TCFL

Discussions on how to improve the quality of Chinese teaching are held frequently, and universities across the country have quickly established overseas study centers, opening up a new teaching model for teaching Chinese as a foreign language. With the deepening of teaching research, we found that in addition to the freshness of contacting foreign students from different countries, a common problem is that foreign students have a lack of understanding of Chinese culture, Chinese thinking patterns, and Chinese customs. Teachers who have taught Chinese as a foreign language often feel that they are inadequate, or the speaker is intentional, and the listener is "unintelligible".

presupposition exists in the context, on the only hand, it's miles restrained by the context, however, it influences the context. the presupposition is a crucial part of the context and the idea of discourse know-how. the speaker deliberately consists of unknown or unproven data or fake information in that means of the sentence, which can frequently reap sudden outcomes. because of the dearth of foreign language surroundings in home language teaching, specifically overseas language teaching, foreign language school rooms are supported through instructors' presuppositions. trainer talk may be very predictive. it could be seen as a trigger for rookies' gaining

knowledge of presuppositions, and it's also an essential supply of correct demonstrations for students to efficaciously communicate in and outside the schoolroom.

Now that we understand the related research results of presupposition theory and presupposition triggers, we can grasp the relevant issues in a high-level manner. Appropriate introduction of related research results of presupposition theory and presupposition triggers is very helpful for teaching Chinese as a foreign language. , Especially in oral teaching, listening teaching, and reading teaching, the understanding of presupposition theory and presupposition triggers language knowledge can effectively improve the learning efficiency of foreign students, save teaching time and improve teaching efficiency. The specific analysis is as follows:

(1) make complete use of the common information of pragmatic presupposition. instructors can dynamically choose words primarily based on this shared know-how, after which appropriately express their mind. however, students also can use it to peer the crucial mind via the floor language phenomenon and discover a satisfactory correlation to recognize the words, to apprehend the speaker's actual mind and intentions. overseas language teaching activities are conversation activities wherein teacher and pupil activities have an effect on and engage with each other. correctly apprehend and manage the shared know-how among teaching and recall the collective state of affairs of inexperienced persons to reap the first-rate teaching effect.

(2) Teach students according to their aptitude. Discourse information in verbal communication can be divided into old information and new information. The old information refers to the common background knowledge of the verbal communication topic before the communicative activity, while the new information refers to the newly added content in the discourse. One of the important responsibilities of the speaker is to use a reasonable syntactic structure and tone to ensure the consistency of the new information and the old information.

As mentioned above, in the modern teaching process, teachers should make assumptions about students' knowledge status and adjust speaking strategies and content according to the listener's specific preset knowledge, to ensure the appropriateness of speech and make verbal communication activities go smoothly. Going on, it can avoid repeating the pre-existing knowledge and follow the economic principle of language.

We know that for most second language learners, lack of understanding of the necessary information is the biggest obstacle to reading difficulties. Sometimes learners recognize every Chinese character in a sentence, but they don't understand the meaning of this sentence. Therefore, we need to properly introduce the knowledge of the presupposition trigger language in the reading teaching. Some scholars even suggest that presupposition knowledge should be included in the teaching materials of Chinese as a foreign language. The author thinks that it is not impossible.

The research results of presupposition theory and presupposition trigger language not only have great reference significance for teaching Chinese as a foreign language, but also for other teachings including Chinese teaching, speech communication teaching, rhetoric teaching, literary creation, advertising production, News interviews, legal documents, court inquiries, and interrogation skills are all meaningful. Presuppositions are common in people's verbal communication activities. It can be said that people's verbal communication practices cannot be separated from presuppositions and predictions. Set the trigger language research.

Conclusion

We know that presupposition is universally present in people's speech practice and language practice. Although certain results have been achieved in the study of presupposition and triggers of presupposition, there is always no conclusion, so we are using While presupposition theory assists the teaching of Chinese as a foreign language, it also opens a new level for the study of presupposition and presupposition trigger theory. It is helpful for the in-depth study of presupposition theory and presupposition trigger theory and is a mutual promotion. the process of.

There are still many problems in the study of Chinese presupposition. In addition to the above discussed in this article, there are many unsolved problems.

The efforts made are only preliminary explorations, and I hope this article can provide useful inspiration for solving problems in the research of complex sentences.

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The Cyclical Fluctuation of U.S. Public Higher Education Institutions Establishment Impact by the Kandretieff Cyclical Wave

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Abstract

In the past several centuries, 566 public four-years higher education institutions were founded in the United States. Meanwhile, the expansion of higher education and economic development has been apparent across the U.S. higher education history. This study provided a detailed comparative look at Braudel's (1972) long term theory that explores the relationship between the cycle of public colleges' and universities' establishments and socio-economic environments. The result shows that the rise and fall trends of public higher education development are closely associated with the economic environment in the U.S. It is expected that this research could help higher education policymakers and administrators better understand the functions of the economic environment on higher education development and encourage them to make feasible decisions of higher education development to adapt to the economic environment.

Keywords: Higher Education History, Public Colleges, Kandretieff Cyclical Wave

1. Introduction

Public colleges and universities are regarded as essential components of the U.S. higher education system. The standard explanation for the distinction between public and private higher education institutions originates from neo-classical economics and statist political perspectives (Marginson, 2007). According to the distinction of ownership, higher education institutions can be divided into public and private sectors (Levy, 1986; Varghese, 2004). Although private higher education institutions have dominated the U.S.s for much of its history, more than 80 percents of undergraduate students attend public colleges or universities today (Levy, 1986; Altbach & Levy, 2005). For example, the NCES 2018 report noted that 14.53 million undergraduate students have enrolled in public colleges or universities in the U.S. (Snyder, De Brey, & Dillow, 2019). In some sense, the development of public higher education promotes college students' enrollment growth and provides continual economic dynamics on intellectual resources. UNESCO's (2004) report demonstrated that the enrollment ratios are rapidly climbing past 50 and even 80 percent in some industrialized countries, foreshadowing the possibility of universal higher education. Therefore, most industrialized countries have initiated increases in higher education investment in the new millennium (Levy, 1986).

The budget resources directly decide the types of higher education institutions. In contrast to the private higher education institutions, public higher education institutions are a kind of non-market driven, non-profit, and state-owned organizations (Marginson, 2007). In terms of the U.S. public higher education system, the main financial resources come from the general state subsidy in direct state or federal appropriations to public colleges or universities (Heller, 2001). The traditions of state support for higher education remain strong from past to present in the United States (Altbach & Levy, 2005).

Three clarity features were summarized that represented the U.S. higher education system: affordability, accessibility, and accountability (Heller, 2001). Initially, public higher education institutions take responsibility for the community at local, state, and national levels since they are funded publicly (Zook, 1947). Public colleges and universities maintain an affordable tuition rate through the general state subsidy (Heller, 2001). Additionally, the public higher education system tends to ensure equal opportunity to attend higher education (Heller, 2001). Thus, the second feature supports that public colleges and universities provide more opportunities for individuals to access higher education resources without regard to their backgrounds (Bastedo & Gumport, 2003). Thirdly, public higher education institutions have the accountability to accept the performance assessment by the state government (Heller, 2001).

Based on public higher education institutions' features on finance, mission and accountability, public colleges and universities have a close relationship with political powers such as budget, power of government, professionalism of legislature, and governance structure (Tandberg, 2010). Keep and Mayhew (2004) described that the government supporting the development of public higher education often depends on two basic visions: 1) it is necessary for economic development; 2) it can improve the financial situations of people who come from the lower socio-economical background. In other words, political power is one important dynamic power that affects the public higher education system's development.

Additionally, public higher education development is also associated with the economic environment. Scholars (Burkhalter, 1996; Hensley, Galilee-Belfer, & Lee, 2013) stated that the public higher education system responds actively to the change of the surrounding economic environment, and leaders of public colleges usually craft flexible plans to prepare college graduates for their respective careers and roles within the new global economy. Thus, it seems that public higher education institutions engage in providing qualified talents to meet economic development demands. For example, Marginson's (2010) study identified higher education as the research and innovation center for developing the global economy. Pegkas and Tsamadias (2014) explored the relationship between higher education development and economic growth, and their results indicated that the expansion of higher education is strongly associated with economic growth statistically. Mallick and Dash (2015) also proved that the increase of higher education expenditure creates better human resources development and contributes to economic growth. Public colleges attempt to play a crucial role in developing high tech, new generation knowledge creation, training intellectual labor, and the spinning-off of new business ventures (Gastells & Hall, 1994). Therefore, it is reasonable to consider that public higher education exerts positive effects on maintaining economic prosperity through knowledge communication and innovation.

However, it is assumed that mutual influence occurs between the economic environment and the public higher education development. Public higher education institutions are frequently required to reform due to the changes of the economic environment (Brown & Heaney, 1997). On the other side, the economic environment is also supposed to affect the development of public higher education. Humphreys (2000) found that "1% percent change in real per capita income was, on average, associated with a 1.39% change in real state appropriations per full-time equivalent student enrolled" (p. 398). Although many studies show that public higher education development would promote economic growth, limited studies have discussed how the economic environment would influence public higher education institutions. As a result, this study explores the relationship between the economic environment and the expansion or constriction of U.S. public higher education institutions from a historical chronicle perspective through the following questions:

- 1) What are the distributions of the establishment years of U.S. public universities on the historical time series?
- 2) How has the economic environment impacted the increasing or decreasing trends of the number of

public universities in the U.S. higher education history?

2. Theoretical Framework

This study utilizes Braudel's Long Term Theory to explore the similarities and differences of economic development cycles and the establishment of public higher education institutions in the long time series. According to Braudel's theory (1976), social time is divided into three categories: the temporality of events, intermediary duration of conjunctures, and long-term structural time (Sousa, 2006). Temporality events refer to "innovations, inventions, episodes, individual stories, and fast-changing transformations" (Sousa, 2006, p. 375). Intermediary conjuncture is defined as "the short-run grouping of events for a common purpose" (Savitt, 2000, p. 91). In contrast to temporality events and intermediary conjuncture, long term time is a structural time that incorporates cyclical change and multiple events (Sousa, 2006). "The long term time, intermediary conjuncture duration, and the event or more properly the short term are regarded as a guide to historical analysis and reconstruction" (Lee, 2012, p. 15).

Temporality events include daily episodes and individual actions in human history (Sousa, 2006), while intermediary duration of conjunctures usually examines the set of events such as in the Industrial Revolution (Savitt, 2000). Braudel (1972) considered that historical event selection is based on historical studies' positive or negative preferences. Therefore, in contrast to the traditional historical perspective, the long-term time theory emphasizes the cycle, trends, regime, or cultural movements that are supposed to be meaningful in 10, 25, or even 50 years (Sousa, 2006). Lee (2012), therefore, concluded that "Braudel presented an in-depth clarification of his idea of time as a social structure rather than a simple chronological parameter" (p. 3). In some sense, this theory promotes historical research focusing on the trends or cycle of historical chronicle time series and analyzing history in a long term structural perspective.

Kondratieff's theory, which represents the long cycle of the capitalism economy, was designed based on Braudel's Long Term Theory (Santamaria & Bailey, 1984). Taylor (1988) considered that "the realization of a time series is the linear combination of a linear trend, nearly periodic components, and random fluctuations" (p. 413). Nikolay Kondratieff, a Russian economist, introduced the long big cycle of capitalism economy, which is described as the long wave cycle of capitalism economy development from 1780s to 1920s (Kondratieff, 1925, cited in Grinin, Devezas & Korotayev, 2012). Nikolai Kondratieff observed some economic indicators' historical record then illustrated that a forty-to-sixty-year economical cyclical fluctuation period from 1780 to 1920 existed (Korotayev & Tsirel, 2010). To some extent, Kondratieff's theory indicated that the capitalism economy existed in the long cyclical fluctuation. That is, the fluctuation of the U.S. economy is caused by some kind of cyclical process (Taylor, 1988). Table 1 showed the original findings of Kondratieff's capitalism long wave cycle from 1780s – 1920s. After 1920, several studies developed more long waves based on his theory. Grinin, Devezas & Korotayev (2012) summarized various studies toward Kondratieff's waves at the post-Kondratieff's era and provided the last three waves in 2010 (see Table 2).

Table 1. Kondratieff Cycles; Source: Kondratieff (1935).

		Start	End
First Long Wave	Rising Phase	1780-1790	1810-1817
	Declining Phase	1810-1817	1844-1851
Second Long Wave	Rising Phase	1844-1851	1870-1875
	Declining Phase	1870-1875	1890-1896
Third Long Wave	Rising Phase	1890-1896	1914-1920
	Declining Phase	1914-1920	

Table 2 Post-Kondratieff^o Long Waves and Phases Source: Grinin, Devezas & Korotayev (2012)

		Start	End
Four Long Wave	Rising Phase	1890-1896	1914-1920
	Declining Phase	From 1914 to 1928/29	1939-1950
Five Long Wave	Rising Phase	1939-1950	1968-1977
	Declining Phase	1968-1974	1984-1991
Six Long Wave	Rising Phase	1984-1991	2008-2010
	Declining Phase	2008-2010	

3. Method

This study used 566 U.S. four-year public universities that were funded by states and/or federal government as samples. Data of the establishment year of four-year public universities or colleges was collected from College Blue Book: Narrative Description (2009). Each public four-year higher education institution among 50 states and 3 oversea districts was tabulated. Only 11 public higher education institutions were established from 1693 to 1789, and they were distributed in 96 years. These 11 higher education institutions supported by state or federal were integrated into one historical period. The 10 year time interval set for each historical period starts in the 1800s. The establishment numbers of four-years public higher education institutions were positioned at different 10 year periods on the time series. The timeline graph was crafted according to the distribution of public college establishment numbers in different historical periods. After that, the comparative study was conducted into the timeline of the establishment number of public higher education institutions and Kandretieff's Cyclical Wave.

Scholars (Esser & Vliegenthart, 2017) noted that "Comparative research is a combination substance (specific objects of investigation studied in different macro-level contexts) and method (identification of differences and similarities following established rules and using equivalent concepts)" (p. 4). Comparative research aims to explore the differences and similarities and establish the universal social pattern across different contexts (Mills, Van de Bunt, & De Bruijn, 2006). Therefore, this study compares the similarities and differences of the wave crest and trough of U.S. public higher education institutions' chronicle timeline and the Kandretieff Cyclical Wave.

4. Findings

RQ1 What are the distributions of the establishment years of U.S. public universities on the historical time series?

Most of the public universities were concentrated in New York (32), California (30), Texas (38), Pennsylvania (29), Georgia (21), and Ohio (18), respectively. Compared to other states, these states have more public education institutions in the U.S. The number of four-year public colleges and universities located in these four states occupied beyond 25% of the total number of public higher education institutions in the U.S. (see Table 3).

Table 3 The number of public higher education institutions in U.S.

State	College Number	State	College Number	State	College Number
Alabama	16	Kentucky	8	Ohio	18
Alaska	3	Louisiana	14	Oklahoma	14

Arizona	5	Maine	8	Oregon	8
Arkansas	11	Maryland	12	Pennsylvania	29
California	30	Massachusetts	13	Puerto Rico	12
Colorado	14	Michigan	15	Rhode Island	15
Connecticut	7	Minnesota	11	South Dakota	6
Delaware	2	Mississippi	9	Tennessee	10
District of Columbia	1	Missouri	13	Texas	38
Florida	12	Montana	6	Utah	4
Georgia	21	Nebraska	7	Vermont	5
Guam	1	Nevada	2	Virgin Islands	1
Hawaii	3	New Hampshire	4	Virginia	15
Idaho	4	New Jersey	13	Washington	6
Illinois	12	New Mexico	6	West Virginia	10
Indiana	14	New York	32	Wisconsin	13
Iowa	3	North Carolina	16	Wyoming	1
Kansas	8	North Dakota	6		

The majority of higher education institutions were established between the 1850s to the 1970s. Four hundred and eighty-nine four year state or federal supported higher education institutions were established during this period, and the wave peak points appeared in three different periods: 1850 – 1870 (75 public colleges and universities), 1880 – 1910 (164 public colleges and universities), and 1950-1970 (105 public colleges and universities) (see Table 4).

From 1850 to 1870, 75 state or federal supported higher education institutions were founded. Following this period, 164 public colleges and universities were established from 1880 to 1910. When it came to the 1950s to the 1970s, 105 state or federal supported higher education institutions were established.

Table 4 The Distribution of Establishment Years among four year Public Universities and Colleges

Historical Period	College Number	Historical Period	College Number
1693-1798	11	1901-1910	52
1800-1810	3	1911-1920	30
1811-1820	5	1921-1930	34
1821-1830	7	1931-1940	15
1831-1840	14	1941-1950	29
1841-1850	10	1951-1960	36
1851-1860	26	1961-1970	69
1861-1870	49	1971-1980	19

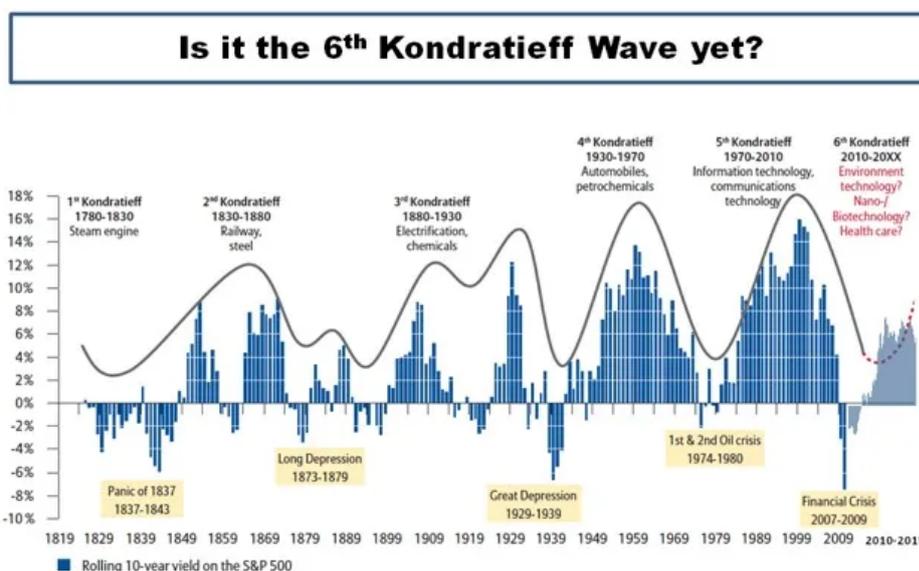
1871-1880	37	1981-1990	4
1881-1890	58	1991-2000	4
1891-1900	54		

RQ2 How has the economic environment impacted the increasing or decreasing trends of the number of public universities in the U.S. high education history?

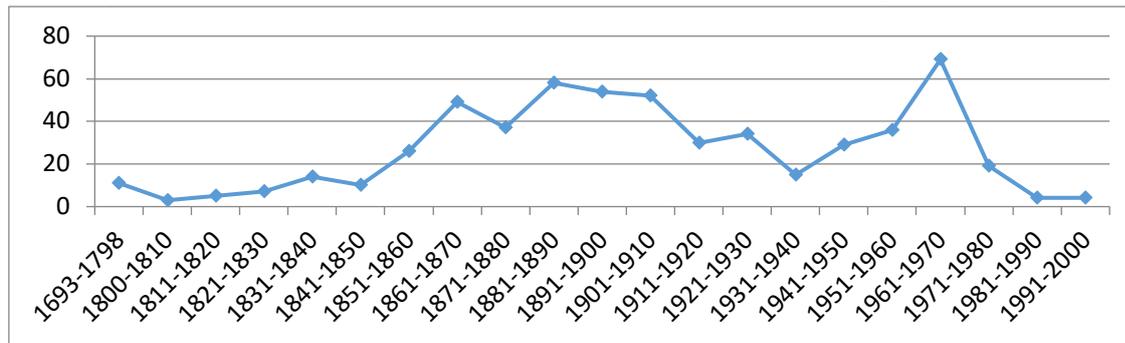
A comparative study was conducted between the Kondratieff Wave and the time series of the establishment years of four year public higher education institutions. Based on Kondratieff's long term economic cyclical theory, Investors (2010) summarized and crafted five cyclical economic waves from the 1780s to 2010, and the wave crest appeared in 1830-1880, 1880-1930, 1930-1970, and 1970-2010 (see Line Graph 1). Numbers among public colleges and universities for each ten-year interval were extended to the time series from 1800 to 2000 (see Line Graph 2).

Based on comparative observations, results show that the rise and fall trends of public colleges' and universities' establishment numbers are associated with the Kondratieff Cyclical Wave fluctuation. Specifically, according to the chronicle timeline of Kondratieff's Cyclical Wave, the capitalism economy underwent the second rising phase that triggered the technology innovation on railway and steel from 1850 to 1870. Meanwhile, 65 public higher education institutions were established during this period, and the establishment number of public colleges and universities occupied 11%. In terms of 1880-1930, the capitalist economy embraced the third rise phase promoted by electronic and chemical industries. At the same time, the establishment number of public higher education institutions reached 228. This number occupied 40% of the total number of public high education institutions. From 1950 to 1970, the capitalism economy returned to the rise phase on Kondratieff's Cyclical Wave attributed to information technology advancement. The public higher education welcomed the last wave of expansion with 124 public higher education institutions founded. This number took up 22% of the total number of public colleges and universities. Based on the comparative results, the fluctuation of the timeline of the establishment number of public colleges and universities matches the Kondratieff Cyclical Wave. It is estimated that the cyclical fluctuation of public higher education institutions' establishment numbers is influenced by the change of economic environment in U.S. higher education history.

Line Graph 1 Kondratieff Cyclical Wave Source: Allianz Global Investors (2010, p. 6).



Line Graph 2 The time series of establishment number among four year public higher education institutions



5. Discussion

The comparative findings illustrate that public colleges and universities' expansion and constriction are usually associated with economic cycles in the past several centuries. Windolf (1992) analyzed the relationship between indicators of the enrollment rate and the Gross National Products. They concluded that the expansion of higher education fluctuates about 20 years in U.S. history. This study indicates that the establishment number of public higher education institutions exist in 50 year cycles following the economic cyclical changes. Thus, from the perspective of numerical college size, higher education expansion's cycle remains around 50 year terms. Additionally, the changes in the economic environment would lead to institutional transitions. Windolf (1992) noted that institutional change consists of four phases over a length of 60 years. This institutional transition cyclical period is similar to the Kandretieff Cyclical Wave fluctuation cycle and the cycle of public colleges' and universities' establishment numbers. The higher education system is one of the important components of the social regime. Thus, it is estimated that the economic environment encourages institutional change and then affects the public higher education system's reform and expansion.

In general, higher education expansion is natural to connect with education reform. Shavit (2007) described that education reform pushed the expansion of higher education and promoted inequality improvement. Some previous studies discussed that the turndown of the economy had a strong relationship with higher education reform. For example, Forrester (1976) and Simsek (2005) revealed that the large scale of higher education reform of developed countries usually occurred in the declining phase of the Kandretieff Cyclical Wave western history. This study's comparative results show that the number of public colleges has constricted on the Kandretieff Cyclical Wave's declining phase. However, the relationship between education reform and higher education expansion is against the Shavit (2007) conclusion. In other words, if the higher education reforms occurred in the decline phase of the Kandretieff Cyclical Wave, the higher education reform may not be able to change the number of public higher education institutions. Therefore, political power is not the sole dynamic to affect the expansion of public higher education institutions.

Additionally, the public higher education system owns the innate relationship with political power. The development of public higher education is closely bound up with the government's public expenditure as the state, and federal appropriations are the major financial resources for public colleges and universities. Carpentier (2003) and Nunes (2003) examined the effects of expanded public expenditure on education from the long term theory, and they indicated that the economic growth brought about the increase of government budget, as well as the increase of the public expenditure on education that will promote economic growth. It is reasonable to estimate that when the economic development enters into the rise phase of the Kandretieff Cyclical Wave, the public expenditure on education will increase following economic prosperity. Furthermore, the scale of higher education will be expanded. Findings of this study support Carpentier's (2003) and Nunes' (2003) statements that the numerical expansion of higher education institutions was the direct result of public expenditure growth when the capitalist economy entered into the rise phase. As a result, the expansion of higher education relies on support from the government under economic growth.

6. Conclusion and Implications

In summary, the present study indicates that the establishment events of public higher institutions exist as cyclical fluctuation on the historical time series, and this cyclical fluctuation reflects the Kandretieff Cyclical Wave model. Additionally, there is a symbiotic relationship pattern between the economic environment and the higher education expansion. That is, in the past 200 years, the stability or prosperity of the economic environment was a kind of impetus to push the growth of public colleges and universities.

The past historical evidence toward the higher education development and the economic environment provide references for policymakers, administrators, and scholars to find the routine principles and pattern of the current policymaking. Understanding the routine, principles, and patterns that hide among higher education history evidence could help higher education policymakers and administrators design optimal education policy. It is expected that this study could provide a macro-historical image towards the development of public higher education institutions and the economical environment in the U.S.

It is also expected that this study would provide related historical references to help public policymakers and administrators create feasible policies for higher education that adapt to the current economic development situation. For example, as the public expenditure is affected by economic growth, the government should consider increasing the investment on higher education during the continual rising phase of economic development in order to realize the expansion plan. The new public colleges or universities should consider establishing during the rising economic phase. Since the reforms of higher education are associated with the changes in the economic environment, during the economic turndown period, education reforms should be applied to maintain the current scale. The education reforms could also help the higher education system better prepare for the next new economic rising phase and avoid the intellectual shortage due to the higher education constriction for the next rise cycle. In other words, policymakers and administrators could grasp and utilize the optimal time according to the cyclical transitions of the economic and higher education development to push reasonable budget allocation policy and education reform.

7. Limitations and Future Study

Some limitations exist in this study. Initially, this study used the Kandretieff Cyclical Wave to describe the capitalist economic cycle. However, some scholars disputed the authenticity of the Kandretieff Cyclical Wave. For example, Rothbard (1984) and Van Ewijk (1981) argued that there was no cyclical wave of capitalist economic development. Secondly, this study only examined the economic influence on the establishment number of public higher education institutions in U.S. higher education history. Several social or political events could possibly affect the expansion of the U.S. public higher education institutions, such as the Morrill Land-Grant Act (1862), the Servicemen's Readjustment Act (1944), and the National Defense Act (1958). These three significant milestone acts would promote higher education expansion in U.S. higher education history (Gavins, 2016; Herren & Hillison, 1996; Jolly, 2009). Therefore, future study should involve social and political factors to further explore the hiding codes that influence U.S. public higher education expansion.

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Barriers of Adult Refugees' Educators in Leros, Greece

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Abstract

In the present paper we attempted to highlight the obstacles that the adult refugees' educators in the area of Leros face. To collect our data, we used the qualitative approach and conducted interviews throughout the avalanche sampling, so that the participants could express their ideas and perceptions. Our sample consists of adult refugees' educators working in NGO ECHO100PLUS, which is activated in Leros. The analysis of the data revealed the educators' inexperience and lack of training, as well as the inadequate organization and support on the state's behalf. However, the bright side is the full support from ECHO100PLUS and the positive attitude of the local community and the trainees towards the educator's work.

Keywords: Adult Education, Barriers, Refugees' Trainers

1. Introduction

The unprecedented influx of refugees and immigrants into Greece has created new conditions and has pointed out on the one hand the need for support and assistance and on the other hand the problems and shortcomings of Greek structures. The Greek state is called upon to meet the basic needs of a growing refugee population. These needs have to do not only with food and housing, but also with their integration and adaptation to the new cultural environment, mainly through education, not only of children and adolescents, but also of adults.

After all, the main and primary goal of adult education is to compensate for social inequalities through the progress and improvement of the educational level of the vulnerable social groups (Kokkos, 2008, p.9). Adult refugee education programs seem to help improve self-image and self-confidence, smooth socialization and integration into society (Xirouchakis, 2019), as well as to avoid marginalization, social exclusion and social pathogenesis (Bezati & Theodosopou, 2006).

The success factor of a program is, basically, the educator. The educator's work is considered quite demanding, as he/she needs to be knowledgeable about the subject, to know how to perform his/her role and which his/her

position in the team is depending on the educational circumstances. In addition, he/she has to cope with adversity arising from the fact that he/she is addressed to a vulnerable group. Of course, even if the educator fulfills all the above criteria, he/she must always be vigilant, as there are additional parameters and obstacles that can put a program at risk.

In general, the education of adults with different nationalities and cultures in combination with the economic and educational deficiencies and weaknesses makes it necessary to probe the obstacles that arise from both the teaching of a socially vulnerable group, such as refugees, and the shortcomings in benefits and infrastructure (Institute of Continuing Adult Education, 2010).

The goal of this research is to record the views of the educators who teach adult refugees in Leros about the obstacles they face in their daily work. The recording of the obstacles aims to improve those parameters (teaching-related or not) which, however, are crucial for achieving effective education (Rogers, 1998, p.51).

In order to achieve this goal, we conducted a qualitative approach, using telephone and live interviews with the adult refugees' educators who work for the NGO ECHO100PLUS. The results of the research revealed the need for organization and finding resources from the state.

2. Literature Review

2.1. Adults' education

In general, education is considered the preparation for life. As life is constantly changing, the preparation should be unremitting and endless. Adult education was founded on this basis (Lindeman, 1926, p.3-4). According to Jarvis (2004, p.32), adult education can help people connect more easily with modern culture, make creative use of their free time and enrich their lives. Adult education has its own characteristics. According to Thompson (2019), the characteristics that differentiate it from the education of minors have to do both with the variety of its forms and its voluntary nature, as well as with the fact that it takes care of the individual needs through a detailed curriculum. The great theorists of education, such as Piaget, Vygotsky, etc., often developed conflicting theories concerning the way in which minors and/or adults learn (Kokkos, 1998, p.23). Of course, despite the points of controversy, the above theories have in common the following basic principles:

- a) all people have cognitive needs, ie a need for knowledge, exploration and understanding (McLeod, 2018);
- b) the active involvement of the learner in the learning process is more effective than the passive transmission of knowledge;
- c) all people, depending on their personality, age, and previous educational experiences, express specific preferences as to how they are educated and taught; and
- d) previous knowledge and experiences are very important, as they are the foundation for building new cognitive paths (Kokkos, 2008, pp.46-47).

The adult educator to perform his/her work should be guided by the basic principles of adult education, which emphasize in social theories of action and not psychological theories of learning (Collins, 1991), although according to Imel (1998) the above is not a definitive list of adult education principles, but a guide of good practices that the educator should know and handle.

2.2. Vulnerable groups

All people who experience social exclusion, become victims of racism and prejudice and as a result are deprived of access to the labor market (such as people with disabilities, drug users, ex-prisoners, refugees and minorities) consider to be socially vulnerable groups (Tsimpoukli, 2008, p.281). In the education of vulnerable groups, especially refugees, both the special needs of this group and the different ethnocultural capital of its members must be taken into account, as they can become causes of a failed educational program (Kefala, 2017).

2.3. Barriers

Based on the psychological approach, a person to meet his educational needs must first have the coverage of biological needs and security needs (Vergidis, 2008, p.29). Failure to meet basic needs creates barriers for both the trainee and the educator. At the same time, the cultural and social heterogeneity of the group creates additional obstacles, as the educator on the one hand has to take them into account in the planning of teaching, on the other hand is called to combine different ethnocultural elements and structure a cohesive group (Blackledge & Hunt, 2004, p.266). Of course, we cannot ignore the fact that traumatic experiences, as well as the physical and psychological state in which the trainees find themselves are additional barriers to the smooth running of the program (Richardson, MacEwen & Naylor, 2018).

According to Valakas (2008, p.172), the room in which teaching takes place is vital for the successful, leak-free implementation of a program. In general, a classroom should be comfortable and attractive and predispose team members to learning and collaboration. At the same time, it must be equipped with supervisory means and provide opportunities for leisure. Also, according to Gözpinar (2019), the classroom should be a neutral space for refugees. From the above it can be concluded that the lack of adequate infrastructure, equipment and teaching materials is an additional obstacle that complicates the work of educators (Kantzou, Manoli, Mouti & Papadopoulou 2017).

Based on the research of Gözpinar (2019), teachers agree that teaching is a profession that is learned over time and the teaching of refugees is no exception to this rule. Lack of experience is therefore another obstacle faced by adult refugee educators.

Additional obstacles arise from the lack of coordination by a central body (Pottakis & Nikolopoulos, 2017), from the constant movement of refugee populations and the overcrowded classrooms (Walters, Garii & Walters, 2009).

3. Methodology

3.1. Qualitative approach

The choice of methodological approach was largely determined by the theoretical position, interests and political perspective of the researchers (Diefenbach, 2008). Additional factors that lead us to this choice are the fact that the literature gives us little information about the obstacles that adult refugee educators face and, therefore, it is very important to draw information from the participants themselves through investigation (Mason, 2003, p.96), as well as the fact that the size of the available sample makes the qualitative approach necessary (Creswell, 2016, p.209).

3.2. Sampling and data collection process

In the present study, the sample consisted of 9 educators who teach or have recently taught adult refugees in Leros. The sample was selected based on speaking Greek, in order to facilitate the research and to avoid any wrong conclusions due to the translation. Participants were approached through the avalanche process (Creswell, 2016, p.206, 209). The first seven interviews were conducted by telephone due to quarantine, while the last two of them were conducted live.

3.3. Limitations of the research

In the present study a first constraint stems from the fact that most of the data was collected by telephone. Although its implementation was imposed by the circumstances, it nevertheless creates research limitations related to the impossibility of recording non-verbal frameworks and actions (Bergmann, 2004, p.301).

Our research deals with a phenomenon (the refugee crisis), which is quite recent. As a result, there are not enough references to ensure high levels of quality, such as books or scholarly articles. The use, mainly, of early-stage material creates another limitation in our research (Creswell, 2016, p.86).

Taking into account the above limitations we can say that the results obtained from the present study cannot be generalized. The present research recorded a reality at a given time in a given place. The results compose an interpretation, which, however, cannot be arbitrarily transferred to different contexts (Matt, 2004, p.328).

4. Results and Discussion

4.1. Financial and organizational inadequacy

Despite the efforts of the Greek state to meet the learning and educational needs of the existing minority population, the recent sweeping and continuous influx of immigrants and refugees highlighted the (until now) inability of the state to build an organized plan for the refugees' education. This weakness was also recorded through the interviews of the participants in our research. Specifically, the trainers mentioned the state's reluctance to finance and take initiatives and the complete deposition of adult refugee education in voluntary organizations and private initiative, a fact that is confirmed by the literature (Kantzou et al, 2017).

As the first participant informs us, *"things could have been done before the start (in the field of training)"*, with which the third participant agrees, stating that *"training programs are definitely something that the majority of participants want"*. The seventh participant adds to the above, as he states that *"they could definitely provide us with training"*.

Some believe that the situation would improve if the state provided better accommodation structures to the trainees. The third participant emphasizes that *"the state could possibly do something more in all areas, including hospitality"*. The fourth participant agrees that the best infrastructures will help their teaching work as well (*"...to meet the basic needs of these people. D: Yes. All this, okay, affects us and bothers us all, of course"*).

From the above, it seems that the areas of training of educators and hospitality of refugees are identified by the participants as the most basic parameters for improving the conditions of the teaching process.

One argues that the state should use the knowledge and talents of refugees. Specifically, the second participant highlights the fact that *"no one has bothered to see [...] there are too many people who have knowledge and practices, I mean they know some art with their hands, they can be barbers or tailors or whatever, there are too many who are theoretically trained"*. According to her, the Greek state could "take advantage" of the talents, knowledge and skills of these people, thus offering them a decent job.

Finally, three participants answered that they do not know what extra could be provided by the competent bodies.

The fifth participant states that *"for the state I am not able to tell you if it provides sufficient support"*. Respectively, the eighth participant states that *"I do not know and it was not in my object to know it"*. And the ninth participant claims that *"maybe there were things offered by the municipality or the state that I did not know"*.

4.2. Lack of training

Studying the results of the present research, we find that very few of the trainers had some training and/or experience in adult education and in particular, in the education of vulnerable groups. In fact, as some characteristically stated, they were completely unprepared to cope with the task assigned to them. An important finding is the fact that a significant part of the sample realizes the need for additional training to enrich his teaching, a fact that is confirmed by the research of Brinia, Fotakeli & Vasileiou (2019).

The participants' responses show that only 2 out of 9 have attended some kind of training in teaching vulnerable groups. In more detail, the first participant argued that: *"I did not have such teaching experience before I started work, the truth is"*. The next participant said the same thing: *"in general, I have not done any training, I have not been taught how to teach"*. The following participants were also involved in this with phrases such as: *"no, and I am sure it would help a great deal"*, *"no, unfortunately and it is something I would like to do"*, etc.

The only exceptions were one participant (5th interview) who stated: *"I have done, but not on the subject of music"* and one participant (6th interview) who stated that: *"yes, let's say. Elderly, because they are in fact considered (vulnerable group) and I have also received EOPPEP certification"*.

4.3. Communication

In addition to the lack of adequate training, participants face other obstacles in practicing their work. The most important thing is communication, as there are no translators or interpreters to facilitate communication between the educators and the trainees. This obstacle is not mentioned in the literature.

More specifically, communication was stated as a problem. The first interviewee states that a serious problem *"is the language of communication, of course. We don't work with translators."* And the second participant argues that: *"the biggest problem I face in teaching is first and for all language"*. The same is pointed out in the third interview (*"another big problem is that many people don't speak a word of English"*). The fourth participant states that: *"in the work of teaching percussion I do not deal with..., let's say the problem of language"*. And the fifth participant stresses that the problem is *"the language, which is difficult to communicate with them"*. In the same vein, the sixth participant states that *"the greatest degree of difficulty is the language"*, but also the seventh participant who adds that *"the part of communication is very basic, because there are no interpreters and not everyone knows English"*.

4.4. Psychological and living conditions

Another significant difficulty is the psychological state in which the trainees find themselves, the difficult, and often inappropriate, conditions in which they live and the constant mobility from place to place. In fact, the majority of the sample claims that the above have an impact on their own psychological state. The aforementioned difficulties are noted in both domestic and international research (Vergidis, 2008, p.29· Richardson et al, 2018· Walters, et al, 2009).

In more detail, it was said that the psychology of learners is a very important barrier to teaching. The first participant stated that a serious problem *"is also the psychology of students, which changes too easily, [...] if he/she has problems or psychological trauma (may) prevent someone from being as receptive to education as we would like."* And the third participant acknowledges that *"what makes our work difficult is the psychological part"*. Similarly, in the fifth interview there is talk of the difficulty arising from *"the psychology that many of them are"*, as in the seventh, it is stressed that *"something that makes the situation very difficult is the psychological part"*. In the same vein, the eighth participant underlines the need to transform negative psychology because of difficult experiences into learning opportunities (*"this was also a goal, which would be done if there was a continuation, their own experiences to change them and transform them into something more creative and through this time to have a very good time and collect for themselves some positive things in these difficulties that they had gone through and passing"*).

Some recognize the difficulty arising from the living conditions of refugees. As the third participant states: *"we see every day what these people have been through, that is to say, since the difficulties are not over after they have crossed the sea, continue to live with such conditions of residence, insecurity and concern about how their "adventure" will end, and this affects not only them, but us as well"*. The fourth participant points out the same, which highlights the obstacles caused by the lack of daily, personal hygiene in the teaching process (*"in the summer students come unwashed [...] And you're about to pass out because of the stink"*).

4.5. Composition of the group

At the same time, additional issues that complicate the educational work are the unstable composition and the heterogeneity of the group, which are, also, confirmed by the literature (Blackledge & Hunt, 2004, p.266).

It is considered by some participants that the mobility of trainees makes their work difficult. The second participant states that *"another problem we face is the ability for refugees to attend all classes, because learning cinema is, they have to watch everything. [...] And the fact that [...] sometimes call them [...] for interviews or they are suddenly kicked off the island, they completely lose the peace, i.e. there can be no continuity"*. The same problem is identified by the third participant who informs us that *"whenever one can leave for the hinterland in other hotspots completely unannounced without having made any progress"*. The fourth interviewee stressed the state's responsibility for the problem of refugee mobility (*"why, say, who are the ones who take so long to prepare for them the triptych, a triptych, which asylum seekers take, to move on, to go to the next structure, etc?"*). Similarly, the 7th participant highlights the problem of mobility (*"something else is that at any time they may have to leave Leros without having any notice, so this does not help and have a follow-up to the course"*).

4.6. Lack of experience

Although they were not mentioned in a large percentage, it is worthy to refer the admission of using wrong practices due to lack of experience and the existence of stereotypes, as they are extensively mentioned in the research of Simopoulos (2014) and Gözpinar (2019) as barriers in the educational process.

The problems arising from the lack of knowledge and experience in the education of vulnerable groups (inexperience, ignorance of different cultures, stereotypes) were also highlighted. In particular, the sixth participant states that: *"I too heard from various people that they (the migrants) were violent, that they were generally misbehaving, and I panicked"*, which proves that she maintained negative stereotypes towards her trainees.

The ninth participant stressed that she faced *"problems that had basically to do with the fact that it was my first time involved with adults, they were adults of different ages and coming from a very special and different culture, which although it enchanted me, nevertheless made me have many qualms if I do it right and have many fears not to offend or escape their own limits"*.

4.7. Lack of teaching materials

One participant also mentions the lack of teaching materials (English books) as an obstacle (*"there is no corresponding material in essence"*), which, on the one hand, is identical with the results of the research of Kantzou et al (2017), and on the other hand, conflicts with other participants who claim to have at their disposal all the necessary equipment. This contradiction may be related in part to the differences between teaching English (formal classroom, using traditional supervisory material) and teaching cinema or theater (freer and more spontaneous teaching, using alternative teaching and supervisory tools).

4.8 Open courses

Some interviewees highlighted the difficulty resulting from the operation of open courses, resulting in the unstable formation of the group. Specifically, the first participant informed us that: *"at the school that we operate in Leros we have made the decision to keep all our courses open. This means that a refugee can enter the course by registering if he or she feels he or she has the appropriate level at any time [...] and this means that the teacher may have prepared a lesson plan, which at any time may not work that day, because he or she has a different audience than he expected."* The eighth participant told us that: *"the problems mainly were with the formation of the group. In other words, while at first they all came with enthusiasm and in some of the countries where they came from theatre was an unknown word, certainly in their daily lives it was not one of their first choices. Mostly it was the formation of the group, i.e. different ages, of course they were all adults, but the different countries from which they came..."*. The ninth participant argued the same, which stressed that: *"the*

other difficulty that came in was that the formation of the group was not stable. The persons changed, the number of people we knew and could understand their limits changed [...]. The recommendation was changing, so we were going back to the beginning."

In the above interviews it seems that the problem is the formation of the team either because of different levels of language proficiency or because of the large divergence in age and ethnocultural interests, which at the same time changes from course to course, making the work of trainers even more difficult.

4.9. Overcrowded classrooms

Although there are overcrowded and inappropriate classrooms in the literature (Walters, et al, 2009), this is not confirmed by the present study, as none of the educators mentioned anything similar.

4.10. Support

Maybe this is why the participants seem to be completely happy with the NGO they work for, as it provides them with full support. However, this does not seem to be the case for the competent bodies of the state. More specifically, they seem to want the state to take care of both their education and the improvement of the living conditions of their trainees. At the same time, they seem to prefer the existence of an organized plan that will be funded by the Greek state. The above results are also mentioned in the theoretical part, as they are findings of other researches (Pottakis & Nikolopoulos, 2017).

More specifically, the first participant states that *"our NGO has offered me everything I have asked for, but [...] I would like the training and the offer to be more general, to meet the needs"*. Respectively, in terms of providing support, the second participant emphasizes that *"the NGO (supports us) 100%. And financial support sometimes if needed. [...] Now we had no other support, neither from the municipality nor from the state"*. In the same spirit and the third participant emphasizes that *"ECHO100PLUS (the NGO) help us a lot. The state could perhaps do more in all areas."* The 4th participant agrees with the fact that the NGO has a school that produces work and offers support (*"Ok, EKO has a second chance school"*), but at the same time highlights the lack of support from the state mainly through the lack of incentives for training to the refugees (*"could, say, the first reception or the police, etc., tell them, you know something, your case will be examined after 8-9 months, make it sure you'll know English to communicate"*). And the sixth participant considers that *"the NGO I work for [...] provides full support. [...] That is, the state, I am not telling you about the refugees, does not even care"*. Similarly, the seventh participant informs us that *"I have no complaints from ECHO100PLUS. Now surely the state could have taken more care of both the hospitality and education, so that such an important part as education is not based on the good will of some."*

Of course, some participants claimed that they did not know if the state and the relevant bodies provide sufficient support. The fifth participant states that *"for the state I am not able to tell you if it provides sufficient support. For the NGO you asked me, I think they are flawless"*. Similarly, the eighth participant stated that *"from the NGO we had the full support [...] I do not know with other competent bodies"*. Like the ninth participant, she stated that *"basically we believe that we cooperated with the NGO, anyway. So they were always by our side [...] But only the NGO, no one else"*. The specific participants acknowledge that the support for their work came from the NGO, but they do not know if the state supports ECHO100PLUS financially or otherwise, as the ninth participant typically states: *"I guess in relation to the NGO there may have been things offered by the municipality or the state that I did not know."* For this reason, they were reluctant to respond with certainty that the state, for its part, did not provide sufficient support.

4.11. Local community and trainees

Moreover, the participants claim that both the local community and their trainees view their work positively, as they recognize that the work produced is a deterrent to unpleasant episodes and improves everybody's life.

Nevertheless, most of the participants find the practice of their work mentally and emotionally exhausting, mainly due to the experiences and living conditions of the refugees. These are two areas that the state could take care of on the one hand by upgrading the accommodation structures, on the other hand by hiring psychologists and social workers, who would consult both the refugees and their educators.

The local community of Leros seems to maintain a positive attitude towards the work of educators according to the majority of the sample. Some state that the local community views their work neither positively nor negatively. The rest of the sample states that the local community is hesitant. More specifically, the first participant states that *"Leros is considered one of the islands that has dealt with the refugee issue in a relatively good way in relation to other islands."* The same is stated by the second participant, who claims that *"the majority of us are treated very well"*. The third participant emphasizes that: *"I have very positive impressions from the locals"*. Likewise, the fourth participant believes that *"they treat us very positively"*. The 6th participant informs us that *"I have not heard much negative (comments)"* and that *"the good thing is that at least here in Leros that we are very peaceful [...]. Most are happy"*. The seventh participant agrees with the above (*"Positive. Very positive."*). But also the ninth participant, who judging by the reactions of the members of the theatrical group distinguishes a positive attitude, full of interest (*"we had the reactions of the members of our own group, who found it extremely interesting "*).

The fifth participant observes that the local community is neither positive nor negative, as it is divided (*"there are those who applaud it and there are those who are on the other side"*).

And the eighth participant identifies a hesitation of the local community towards the work of the educators, judging by the reactions of his circle (*"I do not hide from you that in the beginning they were a bit advisory"*).

In general, it seems that the majority of the local community has a positive attitude towards the work of the participants, because, as the educators themselves characteristically state, *"the community of Leros for the most part [...] realized that it is good that we employ adult refugees and are busy during their day, otherwise more problems could be created if they had zero employment "*.

5. Conclusions

According to the information gathered, it seems that, although the cooperation with the NGO, the relations with the local community and the trainees are at a very good level, problems such as the lack of training, the difficult conditions of the hospitality structures, the lack of appropriate teaching materials, the constant movement of the trainees and the unstable composition of the teaching group greatly complicate the work of the trainers.

In participants' point of view, the creation of an organized plan that will be funded by the state and will take care of their training, will improve the living conditions of the trainees, but also will utilize the already existing knowledge of the refugees, would improve significantly their working conditions and would make their work less exhausting. This is a conclusion reached by a recent research by the Citizen's Advocate (Pottakis & Nikolopoulos, 2017). Of course, because, as already mentioned, the refugee issue and especially the issue of adult refugee education is relatively recent, little research has been done in this area. Very important would be the results of research that would explore the views of educators in another NGO or another place with refugee accommodation structures.

To conclude, the role of adult refugee educators is multiple and difficult and their work extremely demanding. In Leros, the education of adult refugees has been undertaken by people who, for the most part, had neither the experience nor the theoretical knowledge, nor the support of the official state. However, working with passion and pure humanity, redefining their own values and breaking down pre-existing stereotypes, they managed to overcome difficulties and produce work that is recognized by both the local community and the refugees themselves.

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Students' Academic Achievement in Secondary-School Quantitative Economics: Effect of Feedback with Remediation

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Abstract

Empirically investigated in this study is the effect feedback with remediation has on academic achievement in quantitative economics among students' of secondary school. The design of the study was quasi experimental. 164 Senior Secondary 3 (SS3) students offering economics in the three co-educational schools consisted of the study sample. The three schools were purposely selected from Nnewi Education Zone of Anambra State in Nigeria and allocated to 2 experimental groups and 1 control group. Students' responses to two instruments titled Diagnostic Quantitative Economics Skill Test (DQUEST) and Test of Achievement in Quantitative Economics (TAQE) constituted relevant data used in the study. ANCOVA was used for data analysis. Results show that feedback with remediation has a significant effect in enhancing students' achievement in quantitative economics. Nevertheless, gender and treatments did not interact to influence achievement in quantitative economics. Teachers need to focus not just on continuous testing but going further to assist students using feedback with remediation on any type of test given to them.

Keywords: Achievement, Feedback, Quantitative Economics, Quantitative Skill, Remediation

1. Introduction

Mathematics and statistics are a prominent part of the economics curriculum. Economics as a subject involves mathematical and theoretical analyses, requires thinking, and reasoning especially in relation to the aspects that involve calculations. Though an increase in the number of economics students was noted, achievement in economics has dropped since more features of mathematics were integrated in the economics syllabus (quantitative economics) (Adu, Ojelabi, & Hamed, 2009; Ugan, 2017). Facts and figures for May/June 1996 – 2010, Senior School Certificate Examination (SSCE) results in economics of which less than 50% of the candidate had credit and above (A1- C6) serves as a backing to this claim. This situation can be attributed to the negative views or feelings which students have for mathematics or subjects requiring quantitative skill.

Furthermore, the West African Examinations Council (WAEC) Chief Examiners noted that most economics candidates could not attain high marks on questions involving calculations (mathematical/quantitative aspects of economics) (WAEC, 2012; 2013; 2014; 2015; 2017; 2018). Specifically in 2010, the Chief Examiner's report revealed candidates' weakness to be inability to carry out simple substitution of variables into an equation. In 2012 and 2013, the Chief Examiners' report showed that some examinees are not able to compute values from graphs. This weakness resulted in their poor achievement especially in questions where such analyses were required. Also in 2014 and 2015, the Chief Examiners' report showed that the greatest part of the examinees who recorded low grades in the economics questions is deficient in simple quantitative skills. This deficiency is displayed in their incompetence to carry out simple statistical applications. In WAEC 2017 and 2018, most candidates could not obtain the high marks in questions involving calculations (WAEC, 2012; 2013; 2014; 2015; 2017; 2018). The Chief Examiners noted that only few of the candidates could interpret demand function answers and that most candidates who attempted the question on balance of trade were unable to calculate it; hence they could not obtain high marks. This situation has actually drawn the attention and interest of economics educators, scholars, psychologists, school administrators and parents from WAEC participating countries like Nigeria (Ajayi, & Muraina, 2011; Amuda, Ali, & Durkwa, 2016).

As averred by Anazia (2019) and Ugan (2017), the poor achievement of students at WAEC causes a lot of curiosity to the general public as to the prospect of education in these West African countries. Different researchers (Adu et al., 2009; Chudi, 2013; Ugan, 2017) have identified so many factors as accountable for the low achievement of WAEC candidates particularly in economics. These factors include among others a lack of skills in quantitative economics (Adu et al., 2009; Anazia, 2019; Chudi, 2013). Quantitative economics is the aspect of economics that involves mathematical/statistical analysis. It requires solving problems involving numerical economics quantities. Whereas, quantitative skills are mathematical skills, it involves capability to use figures and mathematical signs analytically; to interpret the meaning of numbers in mathematics (Varian, 2013; Williams, 2011). Quantitative skill is a student's capability to use the understanding of mathematical perceptions and codes and associate mathematical words (Boyle, 2019; Wilder 2020). The skill of using numbers to represent the values of attributes. Quantitative skill is manifested by a student's capability to answer arithmetical questions easily. It also consists of arriving at numerical solutions to a question, as well as the ability of adding, subtracting, multiplying and dividing of numbers (London School of Economics and Political Science (2016). In order to develop their skills, knowledge and understanding in quantitative economics, secondary school students need to have acquired competence in the quantitative sub-skills that are relevant to the subject content (Riley, 2015).

Several studies in education literature had established the importance of quantitative skills in aiding students to be successful in their study of economics as a subject. In 2003, Bachan and Reilly proved that mathematics test scores had a significant effect on achievement in the economics subject. They posited that students' achievement in SSCE mathematics has a solid impact on their achievement in economics. They also noted that secondary school students' quantitative skill might be a sign of success in university education. Later research by Chudi (2013), Joyce et al (2006), Pozo and Stull (2006), and Wilder (2020) indicated that a link exists amid students' accomplishment in completing economic subjects and mathematics/quantitative proficiency as well as students' numeracy abilities in learning accounting. Lacking quantitative economics skill has resulted in economics

students' inability to answer SSCE questions involving calculations. This is evident in WAEC Chief Examiners' reports of 2012, 2014, 2017 and 2018. The Chief Examiners of WAEC suggested that candidates of all gender need to be stimulated to develop quantitative skills in economics prior to examinations.

Students' low performance in economics was also attributed to the current trend or pattern of constant testing with no feedback, and or feedback without remediation by classroom tutors during the evaluation process. Additionally, students are sometimes given test feedback when final examinations on the subject have been written (Ajogbeje & Alonge, 2012; Boyle, 2019). Such delayed test feedback barely has an impact enhancing the student's achievement in economics. It then turns out to be vital for tutors of economics to have sufficient understanding of quantitative economics and teach it with the required sequence, steadiness and assimilation to their students' specific strengths and weaknesses. The present pattern of constant testing with no feedback and no feedback with remediation by quantitative economics teachers needs to be replaced for an improved achievement in quantitative economics. Economics teachers could seek a comprehensible instructional assessment procedure which comprises diagnoses of students' specific errors in quantitative economics, provision of feedback of students' results and a corrective measure-remediation.

The effectiveness of feedback and remediation in the evaluation process has been emphasized by different researchers. In the study conducted by Ajogbeje and Alonge, they observed that students do have the opportunity to go through the correct answers when given feedback, or feedback with remediation. Students thereby have additional insight on the test content which in-turn can enhance their performance in future attempts. Consequently, a student may develop interest in a subject and may like to discover new ways he/she can do better in future tests if the information of his/her previous successful test result is provided to him/her. Knowledge of a negative test result can also influence a student positively. It may motivate the student to try to do well on future tests (Boyle, 2019; Silva, 2020; Zhao, 2013). Boyle, Silva and Zhao argued that if test feedback can diagnostically describe a student's strength and weakness in a subject, it will go a long way to advance teaching and learning outcomes. Non feedback (lack of knowledge of test result) has been linked with partial learning of what was taught, and low in recalling what was learnt (Haghani, Khorami & Fakhari, 2016; Silva, 2020). On his part Boyle claimed that lack of knowledge of test results can increase nervousness in a student, as the student could not assess his or her capacity and know-how on the test.

It is therefore hoped that when quantitative economics teachers provide students with the knowledge of their test result in quantitative economics and proper remediation of their weak learning points given their skill in quantitative economics will improve. It can as well lead to an improved performance in the quantitative aspect of economics. Therefore, this current research is intended to examine how students' academic achievement in secondary school quantitative economics is affected by feedback, and or feedback with remediation. Furthermore, studies have equally indicated that gender influences student's academic achievement (Ajogbeje and Alonge, 2012; Amuda, Ali, Durkwa, 2016; Atsumbe et al, 2018; Dania, 2014). In this study, the possible effect of gender on students' achievement in quantitative economics was also determined. To carry out the study, the researchers tested the following formulated research hypotheses for rejection or otherwise at 5% level of significance:

1. There is no significant difference amid the mean achievement test scores in quantitative economics of students in experimental groups and control group.
2. There is no significant effect of gender on students' achievement in quantitative economics.
3. There is no significant interaction effect of treatment and gender on students' achievement in quantitative economics.

2. Conceptual Framework

The conceptual framework for this study proposed that there are key components - achievement test, diagnostic test, feedback and remediation which academic achievement of students in quantitative economics could be improved. Generally, application of diagnostic test as pointed out by "Evaluation and enrichment" (n.d) provides feedback which is to direct the teacher in preparation of materials for remediation of different specific learning weaknesses faced by the students. While application of diagnostic tests aids the teacher to investigate student's

learning difficulties and the reasons for this, its follow up leads to remediation. That is, actions that may help to circumvent reoccurring of students' learning difficulties. The teacher undertakes this kind of probe or diagnoses into the performance of students to ensure the quality of learning and to know what specific action should be taken to obtain the desired learning outcomes and to facilitate goal attainment. This specific action to be taken is in the form of corrective measure, termed remediation.

In using feedback and remediation, the students should be compelled to do exercises in the relevant area of difficulty as indicated in the feedback until mastery is achieved. Then an achievement test should be administered to ascertain the current state of students' mastery or to assess the impact of remediation. This framework is what this study is built on as it seeks to find out the effect of feedback and remediation on students' achievement in secondary school quantitative economics. The framework of the study is illustrated further in Figure 1.

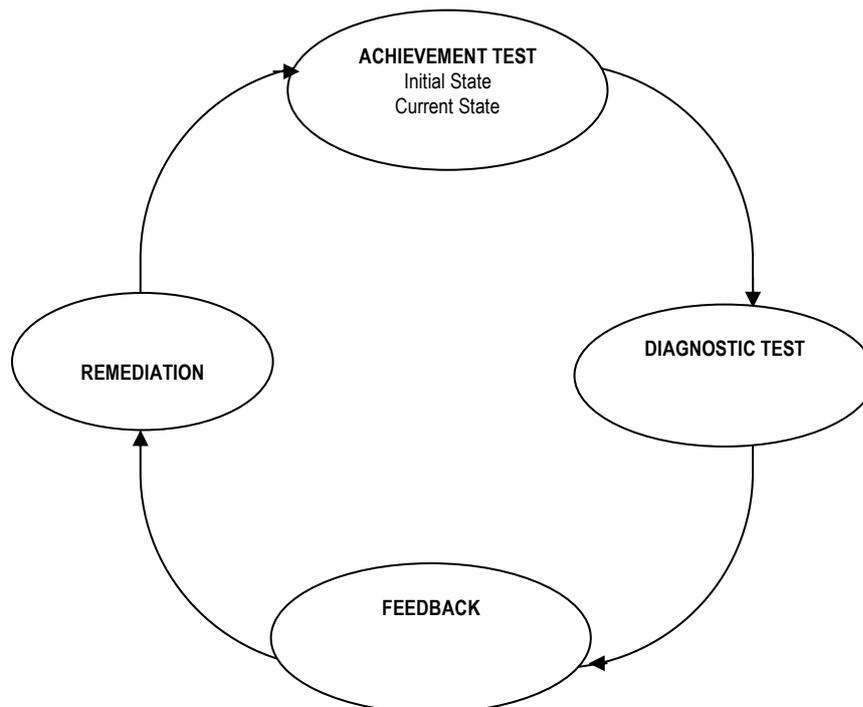


Figure 1: Framework showing the relationship between diagnostic test, feedback and remediation in evaluation process.

3. Method

This study is quasi experimental using 2x3 factorial pretest-posttest designs. The 165 Senior Secondary 3 (SS3) economics students -62 males and 103 females- from three coeducational secondary schools in Nnewi education zone, Anambra State, Nigeria constitute the study sample. These three schools were selected from different Local Government Areas using purposive sampling technique while simple random sampling technique was used to allocate the three schools to the three experimental groups. Group I was given a diagnostic test with feedback and remediation, Group II was given a diagnostic test with feedback treatment, and the control group - Group III was given diagnostic test only treatment.

Instruments for data collection were Diagnostic Quantitative Economics Skill Test (DQUEST) and Test of Achievement in Quantitative Economics (TAQE). The two instruments were existing instruments developed by Esomonu and Eleje (2017) and Eleje and Esomonu (2018) respectively. In this study, DQUEST which consisted of fifty multiple choice questions from the nine sub-skills of secondary school quantitative economics contents was divided into four sections and used as treatment. The twenty multiple choice questions of TAQE served as pretest and posttest to the study. The collected data were subjected to Analysis of Covariance (ANCOVA) to test

the rejection or otherwise of the stated hypotheses at 5% level of significance. When a null hypothesis was rejected, Bonferroni's Post Hoc analysis was conducted to determine where the significance lies, that is the treatment condition that caused the rejection.

3.1 Experimental procedures

The entire process lasted for 10 weeks. The first week was for training the research assistants (economics class teachers), the second week for pretest, then seven weeks of 14 sessions for treatment proper, and the last week was for posttest.

3.1.1 Training of research assistants. The experimental procedure involved the identification and training of three research assistants one for each school so as to evade class disturbance and remove the Hawthorne effect. The researchers organized three days training for the three research assistants, a day for each research assistant. These research assistants were normal economics teachers in the selected experimental schools. The aim of the training was specially to instruct them concerning the conception, purpose, relevance and guidelines for application of diagnostic quantitative economics skill test, feedback and remediation. Feedback is but part of the teaching, learning and evaluation process and is that which occurs second after a student has responded to initial instruction or task (Silva, 2020; Hattie & Timperley, 2007). Thus, feedback in this study was a consequence of performance in a diagnostic test. The use of feedback in this study was to affirm the correctness or incorrectness of students' responses to the test given, and to reinforce students' learning outcome in quantitative economics.

The trained economics class teachers administered the pretest (TAQE) to the three experimental groups to determine the level of students' achievement before starting the treatment on the experimental groups. The treatment was systematically implemented for seven weeks during the school normal periods by the research assistants with the researchers monitoring and supervising. One week after the treatments, posttest (TAQE) was administered to the students. The pretest and posttest were similar except that posttest item numbers were reordered. Posttest was administered to the students at the same time.

The experiment did not include the teaching of quantitative economics, since the quantitative economics sub-skills in secondary school are embedded in SS1 first term to SS2 third term curricula. Thus, SS3 economics students used in this study had completed more than 90 percent of the teaching and learning of quantitative economics by the end of their third term in SS2. The treatment packages that were used for the three experimental groups are described as follows.

3.1.2 Treatment package for diagnostic testing with feedback and remediation group (Experimental Group I).

Each section of DQUEST was administered to the students, followed by the knowledge of their test result which was offered to them during the session subsequent to the test administration. Students' knowledge of his or her test result helps them to affirm a correct response, pinpoint and correct mistakes. After feedback comes remediation. That is, (I) after feedback was provided; (II) items were divided into two or three, based on the number of sub-skills in a section; (III) any of the students with good performance in each sub-skill of DQUEST sections were allowed to lead the class discussion; (IV) students engaged in class discussion to solve and to detect the key to each item of a sub-skill in the section; (V) students were allowed to query on hard part; (VI) the research assistant asked inquisitive queries; (VII) students were encouraged to offer responses to the queries amid themselves; (VIII) a new student was named to lead the following sub-skill. The steps in (IV)–(VI) are repeated; (IX) the research assistant (economics teachers) offers assistance wherever needed; and (X) the teacher solves more examples on students' weak learning points in a sub-skill. That is, learning points in which forty percent (40%) of the students have poor performance.

The remediation given to students in this study was to adjust, correct or improve their deficiency in quantitative economics. That is, to close the gap between what a student know and what a student is expected to know in quantitative economics. After the discussion (remediation), answer scripts were gathered from the students before progressing to testing of DQUEST next section. The remediation exercise for each section was carried out before the administration of DQUEST, feedback and remediation for the next section. In providing the testing of each section of DQUEST, there existed no stiff law about the time permitted for the testing of each section in each

group. This was necessary since there were differences in abilities within the group. Thus there occurred an adequate treatment in each group. The treatment in each group was given by the research assistant (i.e., the economics class teacher) in each school in accordance with the guidelines in the treatment manual. The research assistant was also closely monitored by the researchers.

3.1.3 Treatment package for diagnostic testing with feedback group (Experimental Group II). After application of each section of the DQUEST, the knowledge of each students' test results were offered to them during the session subsequent to the test administration. That is, before starting the testing of DQUEST in the next section. Although in the class with the students, the research assistant did not attend to any queries from the students while giving the feedback. Immediately the feedback ends, answer scripts were gathered from the students before progressing to testing of DQUEST, feedback and remediation for the next section. No provision was made for any remediation.

3.1.4 Treatment package for diagnostic testing only group (Experimental group III -control group). Each section of DQUEST was administered on the students. They received neither feedback nor remediation.

4. Results

The data collected based on the stated hypotheses were analyzed and the resulting outcomes presented. The purpose of hypothesis 1 was to ascertain the effect treatment had on quantitative economics achievement. To achieve this aim, ANCOVA was calculated. The gains in mean scores in TAQE are shown in Table 1. The Table 1 presents the gains in mean scores in TAQE of students in experimental groups I, II, and control group.

Table 1: The Gains in Mean Scores in TAQE for the Three Treatment Groups

Groups	N	Pretest Means	Posttest Means	Gains in Means Scores (Difference in Means)
EXPG I	60	5.88	8.55	2.67
EXPG II	62	5.08	5.98	0.90
EXPG III (Control group)	43	5.14	5.67	0.54

Note: EXPG = Experimental Group

As seen in Table 1, posttest means for the three experimental groups improved, but the gain in mean scores for students in group one who received feedback with remediation treatment was greater when compared to that of the other groups. The result of the ANCOVA is shown in Table 2.

Table 2: Summary of ANCOVA Result for Comparing Posttest Mean Scores in TAQE Based on Treatment and Gender

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Squared	Eta
Corrected Model	348.485 ^a	6	58.081	15.042	.000	.364	
Intercept	461.491	1	461.491	119.515	.000	.431	
Pretest	65.390	1	65.390	16.934	.000	.097	
Treatment	191.667	2	95.834	24.819	.000	.239	
Gender	2.513	1	2.513	.651	.421	.004	
Treatment * Gender	.912	2	.456	.118	.889	.001	

Error	610.097	158	3.861
Total	8670.000	165	
Corrected Total	958.582	164	

R Squared = .364 (Adjusted R Squared = .339)_a

The ANCOVA result as seen in Table 2 shows that the difference between the mean achievement test scores in quantitative economics of students exposed to treatments (DQUEST, feedback and remediation, DQUEST and feedback, and only DQUEST) remained significant ($F(2, 164) = 24.819$, $p\text{-value} < 0.05$). Therefore, we rejected the null hypothesis. It then means that main effects of treatments on students' achievement in quantitative economics were significant. Bonferroni's Post Hoc analysis was conducted to decide which treatment condition triggered the rejection of the null hypothesis, and the result is presented in Table 3.

Table 3: The Pair-wise Comparison (Post hoc) of the Treatment Main Effects

GROUPS (I)	GROUPS (J)	Mean Difference (I-J)	Std. Error	Sig. ^b
EXPG I	EXPG II	2.331*	.387	.000
	EXPG III	2.609*	.417	.000
EXPG II	EXPG III	.277	.394	1.000

Note: EXPG = Experimental Group

As seen in Table 3, DQUEST with feedback and remediation treatment provided to the experimental group I caused the rejection of hypothesis 1. It then means that, test together with feedback and remediation was significantly effective in improving students' achievement in quantitative economics. Also, Table 3 indicates a non-significant difference between the posttest mean scores in TAQE of students given tests with feedback alone, and tests only (control group).

Hypothesis two aimed at ascertaining whether gender significantly effects on students' achievement in quantitative economics. Thus, male students and female students' posttest mean achievement scores were compared using ANCOVA. The ANCOVA result for comparing their posttest mean scores in TAQE is displayed in Table 2. The summary of the ANCOVA result reveals that gender did not significantly affect students' academic achievement in TAQE ($F(1, 164) = 0.651$, $p > 0.05$). Thus, the null hypothesis is not rejected.

Hypothesis three intends to check if treatment interaction with gender to affect students' academic achievement in quantitative economics. The ANCOVA result gotten from checking the interaction is also displayed in Table 2. The result reveals that ($F(2, 164) = 0.456$, $p > 0.05$). The null hypothesis is therefore not rejected. This implies that there is no significant interaction between treatment and gender to influence students' achievement in TAQE. This means that gender did not associate with treatments to increase or decrease performance in quantitative economics.

5. Discussion

The findings of this study reveals that only students exposed to feedback with remediation treatment had a significant improvement in their achievement in quantitative economics. This significant progress in quantitative economics could be attributable to the feedback with remediation which the students received after the testing. Application of feedback gives the students the chance to do an evaluation of the information in the feedback (Boyle, 2019; Haghani, Khorami & Fakhari, 2016; Silva, 2020). It also enables the students to observe and identify any error in their responses to the initial test given. Also, it builds in the students the hunger to

understand the correct response and the reason for it. No wonder Zhao in 2013 pronounced that once students are aware of their successful achievement in a test, they would start to cultivate interest in that subject. They can even try to discover possible ways to perform better in successive tests. Consequently, the student needs adjustments to their relevant knowledge, self-efficacy, interests, and goals, hence the need for remediation.

With remediation given to students in this study, they were probably able to adjust, correct or improve their deficient quantitative skills in quantitative economics, unlike the other two experimental groups where remediation was not administered. Thus, the finding of this study supports the role of remediation in the evaluation process. Accordingly, it is in line with an earlier conclusion drawn by The Understood Team (2017), which stated that remediation helps the low achievers to bridge the gap concerning what they should know and what they already know. Feedback together with remediation can help economics students develop their skills in quantitative economics prior to external examinations as suggested by WAEC Chief Examiners in their reports. It then means that for an increased achievement in economics examinations conducted by WAEC, economics teachers should endeavor to administer feedback together with remediation in teaching, learning and evaluation of quantitative economics, since evaluation methods adopted by the teacher in the teaching and learning of quantitative economics is one of the factors for poor achievement in economics (Anazia, 2019; Chudi, 2013; Ugan, 2017).

The non-significant effect of gender on students' achievement in quantitative economics gotten in this study was in disparity with that of Amuda, Ali and Durkwa (2017). They observed that male students consistently outperformed the female students in the SSCE conducted by WAEC having recorded a higher percentage of A's, B's and C's than their female counterparts. Nevertheless, some researchers found no gender differences or mostly a minor difference. A study by Atsumbe, Owodunni, Raymond, and Uduafemhe (2018), revealed that gender made no significant difference in students' educational achievement. The result of a study investigated by Ajogbeje and Alonge (2012) also shows no gender difference in junior secondary school mathematics achievement. The results of his study also revealed that male students did not perform better than female students in their posttest scores. Consequently, in this study too, the probable effects of gender on the students' achievement in quantitative economics were not significant.

Furthermore, a non-significant interaction between treatment and gender was obtained following the analysis of covariance of students' mean posttest scores in TAQE in response to hypothesis 3. This result implied that gender had no significant interaction/association with treatment to influence the achievement of students in quantitative economics. In consonance with this finding is that of Ajogbeje and Alonge (2012). Although their results revealed a significant main effect of treatment on students' achievement in mathematics a quantitative subject, they recorded no significant interaction effect of gender and treatment on achievement in mathematics a numerical subject like quantitative economics. This study results are also in line to that of Okeke in 2018. Okeke's results revealed that there was no significant interaction effect of gender and treatment on student's retention.

Conversely, the outcome of the current investigation contradicts some earlier research results on the interaction effect of treatment and gender. Example is the study by Adeoye in 2010. His results show that females would attain superior than males once test items are built on subjects that entail little quantitative ability whereas the opposite occurs when the test is constructed on contents that need high quantitative ability like quantitative economics. Also the findings of Dania (2014) recorded that gender interacted with treatments in favour of boys to achieve significantly more than girls if it comes to numerical subjects like mathematics and quantitative economics. The findings of this study was surprising since in recent years more female students than male students in senior secondary 1, 2 and 3 choose economics as a subject (Eleje, 2019). The researchers expected female students to significantly outperform male students in quantitative economics since they are greater in number. The non-interaction effect could have arisen from constant testing experienced by all the students which had an equal impact or stimulation on both genders.

6. Conclusion

Based on the findings of this study, the researchers conclude that feedback with remediation has an important effect in improving students' achievement in quantitative economics. Teachers should therefore focus not just on continuous testing but going further to assist students with feedback and remediation on any type of test given to them. Also, gender and treatments did not interact to influence achievement in quantitative economics.

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Training Needs of Primary School Theater Teachers: A Greek Case Study

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Abstract

Aim of this paper is to investigate the training needs of theater educators who work in primary education. The fact that triggered the inception of this research was that studies concerning aesthetic education in Greece refer to all specialties (musicians, visual artists, theater educators). Consequently, the educational needs of the above specialties may converge in some areas, but, depending on the specialty, they differ in others. Additionally, the in-job-training of theater educators has been at least a minor issue. For this reason, it was considered important to study more specifically the specialty of theater educators. In this context, therefore, a qualitative research was designed and conducted using a sample of thirteen theater educators, who work in primary schools in the prefecture of Heraklion, Crete. Semi-structured interviews were used to collect data and the results were analyzed by topic. The thematic analysis showed that there is an urgent need for training programs in certain areas.

Keywords: Theatrical Educators, Professional Development, Education, Training

1. Introduction

The rapid development in social, political, economic, cultural and scientific level, create a new reality in the field of education (Sakkoulis & Vergidis, 2017; Wee, 2009). The personal and professional development of a teacher is an important factor for the upgrading of education while its role has been recognized internationally because it affects the effectiveness in the educational process (Kapsalis & Rampidis, 2006; Dawson et al, 2014; Roland, 2010). This new reality creates an even more intense need for training and professional development of the teachers, in order to be able to cope with their difficult task.

The role of art, and specifically of theater in education, has been proven to be absolutely important in the educational process (Cachia & Ferrari, 2010). In the Greek educational system, this important recognition began to appear from 1990 (Sextou, 2002), a year when the introduction of specialized teachers in the field of theater

initiated. However, despite the long-term presence of theater educators in schools, the competent carriers that undertake the training programs, provide a wide range of options for teachers, but not for the specialty of theater educators.

2. The importance of teachers' professional development and improvement

Nowadays, knowledge is produced, diffused, evolved, supplemented and replaced by another with such a speed that makes training an integral part of the professional and personal career of every person, every industry and every society.

Having knowledge of the real needs of the staff in an organization or in a professional field, training programs can be organized with targeted educational strategies, improving the professional performance. The most effective improvement of a current performance or the correction of a deficiency in the knowledge or skills of the workforce is achieved when five key questions have been answered. These are: why should a training program be done, who is involved in the training, how can a lack of training improve, what is the best way to achieve our goal and finally, what is the best time to conduct the training program (Moore & Dutton, 1978; Gould et al., 2004; Barbazette, 2006).

Education, is by definition interrelated with knowledge, and therefore inextricably linked to the institution of training. The rapid development of pedagogical science, the need for introduction of new approaches in the field of learning (Vallack, 2015) and the enrichment of older ones, the introduction of ICT (Giavrimis et al., 2010) and management (Anagnou, 2017) in education are a few of the reasons that make teacher training a great undertaking.

In Greece, research results (Sfontouris, 2019; Kotsioris, 2017; Tsarmopoulos, 2018) showed that training needs vary not only depending on the field and specialty, but even depending on the University someone graduated. Moreover, it seems that even for teachers of the same specialty, the training needs differ depending on the elective courses offered at the undergraduate level (Vergidis et al., 2010; Kapsalis & Rampidis, 2006).

Given the above, training is called to play a very important role, as teachers must be supported and clearly participate actively in the educational and social changes they are experiencing, so that they are able to meet the needs of the time, to understand student and school needs and take initiatives. (Katsimbras & Gelameris, 2018).

3. Aesthetic education

The past few years many formal education programs in many countries have begun to place more emphasis on the role of art in education. As mentioned by Weitz (1972), art and education are bridged through the concept of aesthetic education and its benefits are widely recognized.

The role of arts in the process of education is an important qualitative renewal, because it develops critical thinking, creativity, social, aesthetic and emotional cultivation of young people (Schonmann, 2006; Calderhead & Shorrock, 2005). Flannery (1973) emphasizes that a person, in order to be complete, must develop values of life so that he is not alienated from the human side and art is a means to succeed.

In the Greek educational system, the subject of aesthetic education entered the curriculum of primary and secondary education, since 1990 due to changes in educational policy. The reason, however, for the introduction of these courses in the school curriculum, was an ambitious training program entitled "MELINA". The multiple benefits of the program gave a new impetus to the didactic objects of music, visual arts and theatrical education (Vergidis & Tourkaki, 2005). Despite the efforts of the Greek educational system for the development of the arts in education, there is still a long way to go towards this direction. As early as 2002, Sextou (2002) had referred to the importance of integrating the subject of aesthetic education in schools and its teaching by properly trained teachers. After 13 years, research by Zormpala et al (2015) showed that, prospective teachers in universities are not trained in the effective use of art.

4. Theater in education

Aristotle with his work "Poetry" is one of the first ones to approach the definition of theater and drama. Since then, the words "theater" and "drama" can be interpreted in many ways. Bolton (1985) states that in the United Kingdom, the first one to introduce theater through theatrical play in schools was Peter Slade in the 1930s and 1940s. For Bolton (1985), drama differs from all other arts, as it is a collection of experiences and observations, but not of those that differentiate us from others, but of those that we share with others.

In the United States, Wright (1985) states that the main textbooks for drama teaching were those of Heinig & Stillwell (1981), McCaslin (1984) and Siks (1983). Analyzing the different approaches of the above textbooks, including the method of Heathcoate, she concludes that teachers should use drama from many aspects and, as animators, start teaching ways to act and react to different situations.

O'Toole (2005) states that drama in education depends to a large extent on the respective group of students that take part in it and the external conditions that take place at the given time in the given space. Control in these conditions is limited, with the result that participants have to constantly renegotiate how they can manage and manifest the basic elements of the dramatic form. Therefore, drama in education is an ongoing process.

4.1 Theater in education in Greece

The pedagogical application of theater enables students to benefit from it. This view has now been substantiated by many research projects in the field, affirming that theater in education is a powerful learning tool in the hands of teachers (Brown, 2017).

Theatrical education consists mainly of experiential activities. This nature of the lesson helps students develop and function with humanistic values (Dewey, 1986). They learn to collaborate, share ideas and improve their behavior. The release of creativity is a basic condition for the course of theatrical education.

In the Greek educational system, there is no prescribed curriculum as the course is not aimed at a predetermined right or wrong attitude, ability or knowledge. An experiential awareness is attempted in order to develop a personal attitude towards issues that each person faces as a member of a team. This experiential character aims at cultivating the expression and familiarization of the student with the theatrical act. The curriculum for primary school, before its abolition from the fifth and sixth grade, was divided into three axes each of which consists of two grades. In the first and second grades the lesson focuses on the physical and kinesiological expression of the students. In the third and fourth grade, it focuses on the general awareness around the theater. Finally, in the last two grades, the course can offer opportunities to process stimuli of individual expression, through the use of practices that students know from previous years. In high school, the course of theatrical education aims to cultivate critical thinking and a deeper approach to the history of theater. Dramatization, free improvisation and analysis of dramatic texts are offered as means to achieve this goal.

However, although the way in which the theatrical education course should be taught is described in detail and some activities are suggested to help teachers, these are not enough, making the whole procedure a matter of personal research.

5. Research methodology

5.1 Research questions

The main three research questions were:

- 1) What are the views of theater educators, according with their academic background?
- 2) Which are the problems and difficulties theater educators deal with their profession?
- 3) What are the views of theater educators according to their training needs?

5.2 Research Method – Strategy – Research Tool

The data collection method was qualitative. The decisive factor was the harmonization of the method with the research problem. The purpose of the research was to investigate and understand a central theme through a detailed description (Creswell, 2016; Bell, 2005; Robson, 2010). The research used a case study, since it concerns the theater educators of a particular prefecture, that of primary schools of Heraklio Crete during the school years 2019-2020. This strategy was chosen because the research aims at a deeper understanding and interpretation of personal perceptions and experiences of participants about the type and preferences regarding their professional development.

The data production and collection technique was the personal semistructured interview. Such tool enables the sequence of questions to be modified (Bell, 2001), there is great adaptability, as the interviewer can at any point add ideas, explore deeper motivations and views. Also, there is room to clarify the answers of the respondents and there is better control of the interviewer over the information he will receive since he can ask specific questions (Robson, 2010; Creswell, 2016; Bell, 2005). Therefore, this tool has been chosen as the most appropriate to highlight the views of the participants.

5.3 The sample of the survey

The participants of the survey (convenience sampling) were 13 theater educators working in primary schools in Heraklion Crete during 2019-2020. As for gender, 3 educators were men and 10 women. The average age of the participants was 33 years and the average working experience was 8 years. Undoubtedly, the participants in this survey do not represent the entire population of theater educators in Greece, and consequently, the research results are not generalizable.

5.4 Data analysis method

Thematic categorization was used as a procedure for analysis of data collected from the interviews. In thematic analysis, the focus is on concepts, meanings or themes, which refer to the phenomenon under study and how it is perceived by the participants in the research. Boyatzis (1998) summarizes the thematic analysis in four stages. Clarke, Braun & Hayfield (2006, Cit. In Smith, 2015) are moving in the same direction, but adding important details on thematic analysis.

6. Results

At the stage of information analysis, the following topics were selected and used.

- Academic background.
- Professional experience.
- Training needs.
- Educational preferences.

6.1 Academic background

Regarding their academic background and whether it was proper enough for their professional career, theater educators report data about proper academic preparation, remarkable academic accouterments and shortages in academic education.

The majority of the participants find that their academic preparation was sufficient.

...certainly academic preparation offers you a lot of basic knowledge but for a career it does not give all the necessary ingredients for the... suitable preparation of the teacher (I3)

...there was a preparation, due to the fact that half the lessons from the study guide were practical. Of course there was no internship at school (I6).

All of them mention that lack of practical courses was the most important deficiency in their academic curricula.

There was a lack...how to say it now... we did not do an internship at school, we did not go into school to do on-site training. (I6)

...the problem I basically faced was that I did not know what to expect, how to deal with 25 children in a classroom without space many times (I7)

Though, when it comes to practical courses (different theater techniques, directing, acting, improvisation, movement and music), they are presented as the most valuable accouterments.

...definitely helped that we had done a lot, some pedagogical lessons at university. The theatrical play I did also helped. Beyond that (also helped), acting lessons I had taken in university, movement, music, things like that. (I7)

...some practical lessons we had. I remember it was during the last semester. It was very interesting. From those lessons I learned a lot of things because it was all experiential (I8).

6.2 Professional experience

Regarding their professional experience, participants were asked to answer questions about challenging incidents in school, adequacy of knowledge regarding their profession, ways of professional development and improvement, general professional difficulties and professional support.

Concerning challenging incidents, participants focused on issues of special education and classroom management.

A demanding incident...I think what made it difficult for me, was at the beginning, classroom management. In a lesson that is not 'Sit behind the desks, take a paper and a pencil and write or do that exercise now'. (I11)

....in relation to colleagues, there is sometimes (difficulty in communication and cooperation). Certainly not in a large percentage. There was probably, (but) now things have changed a bit, I think, I do not know if you agree. There was a kind of devaluation, that we (theatre educators) are deputies (I6)

Meagerly, demanding incidents are identified in matters of organization and school life. Concerning the adequacy of educators' knowledge and whether they feel that they are capable of coping with, two evaluation questions were formed. The first issue, in relation to their adequacy, is towards the school and the second towards the students. Towards school, they feel confident about what they have to teach. This of course, is a result of their professional experience. Towards students, they show a moderate attitude. They emphasize on the importance of their personal improvement and development.

Participant: You used the word knowledge.

Interviewer: Yes

P: Yes. Knowledge. Yes. I have the necessary knowledge. I believe that one hundred percent....but knowledge alone is not enough to stand in a classroom. (I5)

I think so(having the necessary knowledge). And even more. (but) if you asked me this at (20)'10, when I first started, I would say no, because I really did not know in the first year what I was doing and if I was doing it right. But now with the study I have done and the discussions that I have taken part, I believe that I have entered good waters. (I12)

...for the students...well... for them I have enough (knowledge), but certainly for me no, and since school is constantly changing and students change their interests, this lesson (drama in education) in order to keep interested the students, it should follow the changes. So I would say that I have the necessary knowledge but they certainly are not enough. (I8)

In relation to professional development and improvement, 4 categories emerged: experience through the classroom, personal research, relationships with colleagues, training programs. Most of the participants revealed that they managed to develop professionally through their daily engagement with the lesson itself and the students.

...time (in classroom) somehow (should be spent) and I had to find solutions many times in chaos I faced and did not know what to do. (I7)

Probably children's need for more play, which necessarily leads you to...to read, to invent different ways. (I6)

Regarding general professional difficulties, the main problem seems to be the lack of a suitable classroom and the lack of appropriate equipment that makes the teaching of theatrical education particularly difficult.

Difficulties... Too many. Like I told you, I do not have a classroom. there is not a separate classroom for theatrical education. So I do my lesson in teacher's classroom, where there is no computer, there is no projector, of course, there is no sound system, there is nothing but desks and chairs. (I11)

Finally, about professional support, participants answered that the most valuable role is that of their colleagues, and especially the principal. The latter role, determines the quality of the relation between theater educator, school and other colleagues.

...there are definitely several colleagues who are always by your side no matter what you ask them in whatever you need, of course it is not necessary that you will always find this.... (I3)

Hm... If you are lucky to be with a good manager you may be able to manage some of the problems. Solutions are given very rarely (I6).

6.3 Educational preferences

Regarding their participation in training programs, theater educators expressed by answering questions about their reasons for participation, the effectiveness of the programs in which they participated and their expectations.

In general, theater educators emphasize on the lack of information they have about training programs. The main way to be informed about training programs is through the internet, through discussions with colleagues but also via relevant posts on the page of PESYTH.

Theater educators choose to participate in a training program due to personal interest, professional development and professional obligation.

...I am a person who is always interested in improving my professional knowledge. (I5)

Because I want to grasp piece by piece whatever has to do with my work and see exactly what is happening and watch the changes in order to improve my job. (I13)

Half of theater educators answered that the effectiveness of training programs enriched their knowledge.

Yes. Yes, it always gives you new ideas. You can take some elements alter them and integrate them in your own program. Not as they are but to differentiate them. Certainly keeps you awake a seminar or a training program. It does not allow you to swamp, which is a risk when you do this profession for several years. (I11)

Finally their expectations seems to be the acquirement of new knowledge.

My expectations are that, when you attend a seminar, I want in the end to go back look and see that I have learned something more, and that new knowledge I want to apply either directly or indirectly in the classroom. (I3)

...when the program is over it has to learned me something that has changed the way I think, in the way I approach my lesson, in the way I manage my students and the classroom. With one word it should be inspiring. (I5)

To improve the way I work. To learn more about how to better manage your subject. (I12)

6.4 Training needs

Theater educators' training preferences were expressed by answering questions about the content of training, the host implementing the training, appropriate time to attend a training, form of training (live, distance or mixed) and appropriate time to complete a training cycle.

As far as the content of the training programs, theater educators referred to both practical and theoretical issues. ...practices on how to teach theatrical play, creative ideas, em...how to deal with some difficulties in the classroom. (I6)

The content I would like to have some lesson plans. Because in 45 minutes you have to fit everything. This always makes it difficult for me. (I12)

...I think lessons that have to do with psychology. These are something that would interest me and I would attend it with great pleasure. (I4)

They choose a public host to implement training programs, because they consider that it will be possible for all theater educators to participate without any financial cost.

...definitely free from the ministry and to be within the school, i.e. as the training programs are done for other teachers. (I7)

The Ministry. Yes, because it is something objective, something that is offered to everyone. Because I may have to give the money to go to Athens to do the training. But if a colleague does not have, the ministry must provide, and train the educators. Yes, it is his own work entirely (I11)

The most appropriate time period for implementing a training program was captured, by the participants, with quite interesting variation. The data obtained, show a preference for the implementation of on-the-job training during the morning hours.

At school time. Because it is considered school training. The name says it all. I think it is perfectly fruitful to do it in the afternoon, but I do not think it is right since the legal framework says that everyone else does 8 to 1 training so do we. If everyone else does training in the afternoon I will be happy to do it in the afternoon too. (I2)

But there was 3 participants who think that ideally they should be done overtime because there is far more free time.

Okay, it should definitely be off-schedule and I would say maybe weekend. Yes, days that are more relaxed (I3)

I think morning hours or something that starts Friday afternoon to Saturday or Sunday morning is something that is accessible to everyone or at least to most. (I4)

The form that an education program should ideally have, is the one with physical presence. Most of the participants prefer to participate in various programs with workshops and experiential exercises.

...not in the same way that they are done for teachers. Our lesson has a different nature, it cannot remain in a theoretical context. What I want to say is that for us it would be better to have experiential trainings. Okay, theory is good but it is better when you have something learned firsthand. (I8)

On the other hand, none of the participants showed interest in training, only from distance.

However 2 participants prefer a mixed model.

...to create a public organization or company of teatrologists who will organize training seminars that will be accessible to all or electronically due to long distance. (I4)

...in all ways and via the internet and better the physical presence. Via the internet would be useful. For those in remote areas. (I9)

Finally, the appropriate time to complete a training cycle, the data obtained showed a wide range of answers. The minimum duration is 2 to 3 months and certainly not just a few days. The duration of two or three months offers confidence in the successful acquisition of new knowledge.

...If it's something I do not know I could stay in training 2 or 3 months, maybe all year, depending, I do not know... it matters who will do it and what it will have as content. (I8)

On the contrary, the maximum ideal duration is 2 to 3 years.

...Difficult question because as we know most seminars are done now in half or a year. I would say that ideal training should be time consuming. 2 or 3 years. But without, of course, having daily lessons. It should have more sparse lessons, but to be in a longer period of time. In order to have time between the meeting lessons to immerse yourself in what you learned in each session. It should not intended that you take one lesson at a time to finish. You will not be able to (I3)

An important element of the answers is that all participants believe that the training process should be ongoing.

We certainly should not be talking about one-week or three-day seminars that will stop later. It should be an ongoing training, maybe two or three weekends a month for two months or at least something more. It should be continuous, not to be a fragmentary event like a firework (I4)

7. Conclusions.

In conclusion, theater educators' view of their academic background is that there is a lack of internships within the school and classroom. This can't help them cope with school reality and provide them with basic situation management tools in a classroom with students. An appropriate training program such as Flynn & Carr (1994) could be a good practice.

As a result of lack of internship the main problem occurs in classes with students who have special educational needs. Participants report that, because they do not have the necessary knowledge to manage such students, they feel that their efficiency get more difficult. The supplies they have to deal with such situations come from the experiences they gained over the years of service. However, this does not seem to be enough for them as they

consider scientific knowledge in the field to be necessary. They also, state that they have the same problem in matters of classroom management which are treated in a similar way.

As society constantly evolves, theater educators consider themselves as part of this evolution and they have to offer to their students more learning opportunities. This view is identical with that of Vergidis et al. (2010) at the point where professional development is mentioned as absolutely necessary. The importance of comprehensive human development, which is achieved through the involvement of art, is emphasized by both Flannery (1973) and Dewey (1958). The course of theatrical education and consequently the profession of theater educators contribute not only to the quality renewal but also to the comprehensive education since the main component is art. This position is also supported by Weitz (1972).

By acquiring the appropriate supplies, theater educators will be able to lead students to what Bolton (1985) and Brown (2017) articulate about educational drama, which is, learning through dialogue, collaboration and creative problem solving. When it comes, though, to professional development, the results showed that the information they have about the programs implemented by public carriers is incomplete. An important element is that all participants have taken part in a program so they can have an opinion on what suits them in terms of content. This view of the content and effectiveness of a program is also reflected in the research of Gokmenoglu et al. (2016). It is also important that they consider that the trainings enrich their knowledge and improve their teaching practices. Furthermore, as Dewey (1986) points out, engaging in the art of theater is essentially experiential. The nature of the theatrical lesson is similar and thus unleashes creativity. So the practical part of the training that theater educators mention is the one that will give them the necessary supplies.

As for the implementing carrier of these programs, the highest position is held by a public carrier so that all theater educators can participate without financial cost. A private carrier is preferred by the participants in cases where it is directly related to their interests but also when there is no other solution. To summarize, we would say that theatrical education is a basically experiential lesson, which contributes to the comprehensive educational process. Teaching this subject by properly trained teachers improves students' abilities in such a way that they develop better relationships not only with themselves but also with all the people they meet. The profession of theater educator emerges as a valuable aid of education. Therefore their professional development should be in line with that of other teachers. For this reason, more emphasis should be placed on the educational needs that theater educators have and want to meet.

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How Nature Walk Program Affects the Behavior of Children with Learning Disabilities

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Abstract

Experience with nature is particularly known to influence a person's health and wellbeing. This case study identified behavioral changes in children with learning disabilities who underwent the Nature Walk Program. An intervention tool designed to let the participants experience nature activities. The study's participants have cases of mild autism and down's syndrome. Undergoing the Nature Walk Program resulted in the increased positive desire to participate in succeeding intervention sessions, improvement in their memory level, and awareness and sensitivity to the natural surroundings. All of these led to positive behavioral changes. Another important factor found in the success of the program as an intervention tool is the facilitators' knowledge in handling the activities, which helps in the success of this endeavor. The study's intervention tool hopes to be a model and instrument in affecting participants' awareness of themselves with the aid of the natural environment through carefully selected outdoor activities. As a conclusion, utilizing the natural environment can also affect emotional behavior, social relationships, and the actual state of mind of children with learning disabilities.

Keywords: Adapted Physical Activity, Natural Environment, Nature Activity, Intervention

1. Introduction

The conduct of outdoor activity utilizing the natural environment as a tool to develop the students holistically is an important element in the school setting (Floresca, 2015; 2019). Both physical endeavors and exposure to nature are known individually to have positive effects on physical and mental health (Pretty et al., 2005). As physical activity can affect both physical and psychological well-being (Scully et al., 1999), Pretty et al. (2005) hypothesized that there might be a synergistic advantage in doing physical activities while being directly exposed to nature. Hayashi et al. (1999) call it the 'green exercise'. It is more established that the natural and built features of the environment affect behavior, interpersonal relationships, and actual mental states (Frumkin, 2001). Lewis and Booth (1994) also mention that it can be therapeutic or pathogenic. Encounters with adjacent nature help

alleviate mental fatigue by relaxing and restoring the mind. Indoor built environment parks and green spaces are settings for a mental break, as it reassures social relationships and removing stress through exercise or conversation and provide therapeutic settings. Wolf and Flora (2010) stated that play and exercise are an essential part of both children's and adults' physiological development and brain function. For children, these activities can help develop cognitive thinking and reasoning abilities (Kirby, 1989).

According to Alter (2013), healers in Japan and Germany have long heralded the benefits of natural therapy. He mentioned that the Japanese version of natural treatment through forest bathing, involves patients walk for prolonged periods through forested areas. While inhaling the scents of nature in an area shaded by trees has helped in the healing sessions. Alter (2013) also mentioned German Kneipp therapy, which similarly requires that patients perform physical exercises in forest clearings. These alternate therapies are not just another cultural coincidence, and researchers in the field have found that people who need to elevate their health status enjoy various benefits, compared with people who walked through urban areas.

The American Association on Mental Retardation (AAMR) recognized people who have mental delay has an IQ of about 70 or under, coexisting disadvantages or impairments in adaptive functioning in two areas (communication, self-care, home living, social or interpersonal skills, the use of community resources, self-direction, functional academic skills, work, leisure, health, and safety), and onset before age 18. Petrenko (2013) stated that children with developmental disabilities are at higher risk for internalizing and externalizing behavior problems than children in the general population. Having effective prevention and treatment programs are necessary to reduce the burden of behavioral issues in this population. Research has documented the presence of higher rates of behavioral problems in children with developmental disabilities as early as 3 to 4 years of age (Tonge, 2007). These findings highlight the need for early intervention to prevent and treat behavioral problems in this population, which may prevent or lessen the emotional and financial burden of individuals or families with members who have such cases.

Specific to this study, the definition of learning disability or others call it learning difficulties (or mental disability) is a condition of known or unknown origin that impairs various areas of a child's functioning and is expected to be life-long. This definition was used for this study referring to its child participants who are suffering from mild autism (AU) spectrum disorder and down's syndrome (DS).

From a public health perspective, prevention is more effective than intervening after problems have already emerged. Wherein the delivery of preventive interventions can be in a variety of formats (individual, family, group, and self-directed) and settings (in-home, school, community center, mental health clinic, among others).

Given the nature of risk and protective factors facing young children, the two most common types of delivery methods include parent training and school-based interventions. Parenting interventions stemmed from research on family interactions (Petrenko, 2013). While childcare centers and schools are often optimal settings for interventions with young children (Doyle, 2018). Since curricula can be integrated naturally within the school day and can reach the majority of children in this age group. School-based interventions have the potential to contribute to children's competent development by providing nurturance, teaching cooperative social skills, and enhancing cognitive and emotional growth in this manner. Diamond and Lee (2011) have proven that applying diverse activities helps in improving children's executive functions used in their daily lives.

There are already new educational styles utilizing the concept of the natural setting to educate a child. The idea of the 'Forest Schools' has gained acclaim in the United Kingdom as well as in Asia (Harris, 2017; Maynard, 2007; O'Brien and Murray, 2007). Also introduced in Scandinavia, where children spend much of their school mornings in the outdoor classroom. Kennedy R. (2014) stated that the benefits of the forest classroom for children include full-body movement, rich sensory experiences, improved cognitive activity, mental acuity, and concentration. Taking children outside of the classroom to the outdoors can transfer their learning to the physical space allowing for more physical mobility (Harris, 2017). Areas for learning connects with practices, norms of behavior, objectives, and goals for learning (Peacock & Pratt, 2011) so that new learning spaces can provide different contexts and environments for children's learning (Harris, 2017).

A growing movement in the western world where most pediatric medicine and occupational therapy (Hanscom, 2014) prescribe the use of outdoors for treatment. The practitioners of this movement view nature as the ultimate sensory experience for all children and an essential form of prevention for sensory dysfunction. In this type of program, they see playing outdoors as therapeutic in design (Coon et al. 2011). Hence, they do tree climbing, bird watching, nature walks, building forts out of materials seen in the playground, and many more. With the aid of several partner organizations and many volunteers, the practitioners of this movement also know its importance. The use of outdoors must also be clean, safe, available, and with different options in activities that best match the interests of the patient or their family and their schedule.

Because of these ideas presented above, this research attempts to introduce the concept of bringing children with learning disabilities to the natural environment and make it a tool for alternative educational strategies. Thereby, the Nature Walk Program was adapted to let the children experience what nature can offer to their actual state.

2. Methodology

This study's research design utilized a qualitative case study of children diagnosed with (2) mild autism spectrum (AU) and (2) downs' syndrome (DS). Through the Nature Walk Program, this intervention technique that uses environmental exercises as the primary tool investigated the possible effects on the participants' areas of development. It aims to identify behavioral changes brought about by exposure to the natural environment of school-based children who have learning difficulties. By exposing these children, it hypothesized that it would likely result in the possibility of positive behavioral changes.

The main objective of the study is to provide reports on the behavioral changes of the participants brought about by the intervention tool, which is the Nature Walk program. These changes are in terms of their emotional and social behavior, perceived physical exertion, mental ability based on the memory test. Lastly, to answer if the tool is useful in improving the participants' social, emotional, intellectual, and physical parameters.

2.1. Participants. The study has four (4) participants with mental states that are mild (educable) to moderate (trainable) with a mental age between 5 to 11 years old. They have a hard time learning academic subjects in school. With the approval of their guardians, the research was able to gather four (4) Filipino school-age children, three (3) males with a biological age ranging from 11 years old to 14 years old and one (1) 15 years old female, 2 are with cases of mild autism and 2 with down Syndrome. Participants' mental retardation falls into the moderate classification. Children with mild autism cases are being academically trained by their Special Education teachers to move into a higher-grade level in their school. At present, all four participants belong to lower primary grade, a second-grade level class designed for students who have mental retardation based on clinical standards.

2.2. Procedure. The procedure for the research started with a pilot study that took place in the school vicinity for an introductory phase — followed by selecting the actual participants using the criteria set for the study. Upon the completion of the number of participants and also asking the parents of their consent for their children's participation, they were all gathered for a pre-orientation and pre-assessment. Upon initial orientation and selection of participants, the guardians and teachers were asked of their mental age vis-à-vis their biological age. The determination of the participants' mental age was through a clinical assessment done by a clinical psychiatrist- a procedure which the children must undergo for the school to identify teaching methods and grade level assignment.

The interventions took place on sites that met the criteria for the selection for the study. Such as, having abundant flora (plants and trees) species, secluded from the urban setting, abundant avian species, mountain range view, and very accessible to the participants (a decision made due to some of the participant's condition). These places were: 1). Camp John Hay Eco-Trail, Baguio City Philippines with a Latitude of 16.3999419°N, Longitude of 120.6134033°E, and with an elevation of 4878.609 ft. (1487 Meter Above Sea Level). 2). *Mt. Cabuyao*, Tuba Benguet Philippines with a Latitude of 16.33492472°N, the longitude of 120.56076765 °E, and with an elevation of 7273.622 ft. (2217 MASL). 3). *Avong Nen Romy, Wangal La Trinidad Benguet Philippines* with a Latitude of 16.462359 °N, the longitude of 120.569516°E, and with an elevation of 4573ft. (1393.85 MASL).

To check for the improvement of the participant's memory, we introduced them to the memory recall game. This is to ask about the things they have seen during the intervention. A memory game or others call it brain games (Heiman, 2014; Smith et al., 2009) was devised to find out the participants' possible development in their intellectual ability. This memory game is designed specifically for the intervention; it contains sets of pictures taken in the field during the activities. These are random pictures of anything the participants will come across as they venture to the sites. We ask the participants to tell what those in the photographs are. At the end of the presentation, the participants must draw everything they could recall, using paper, color, and pencil. Later, they are asked to tell about their drawings.

In finding out the perceived level of exertion of the participants, the study utilized the hard activity chart in the form of a pictogram based on the Borg scale 10-point level Rating of Perceived Exertion (RPE) as an assessment tool. RPE is a broadly used and dependable indicator to monitor and guide exercise intensity (Borg, 1982; Williams, 2017). The scale allows individuals to subjectively rate their level of exertion during exercise or exercise testing (American College of Sports Medicine, 2010). But since the participants of the study cannot express themselves in words, they were carefully observed and, at the same time, occasionally asked how they feel through their guardians.

Outside of the intervention sessions, it was the children's guardians, who served as key informants and provided the information on their emotional and social behavior. Studies show that parental perceptions of children with mental health problems play an essential role in the determination of services for intervention (Abera et al., 2015; Nock and Photos, 2006). Because of these, the study understands that the participants could not say directly what they are thinking; therefore, it is appropriate that it was their guardians who answer questions regarding the survey. Information was gathered through open-ended interviews and focus group discussions. Also, the researcher took field notes and videos coupled with photographic documentation.

The participants were engaged in an activity unusual to the Education curriculum in the Philippines— inspired by the events mentioned in the conduct of forest schools (O'Brien, 2009, O'Brien and Murray, 2007; Maynard, 2007; Lam, 2018). Where forest school is defined by Harris (2017) *as a practice sometimes described as 'alternative education,' but it is increasingly incorporated into normal school activities even though not a part of the national curriculum. It operates at a common interest in reconnecting children with nature, increasing the provision of outdoor education, and the development of play-based learning and child-centered pedagogies.*

The definition of the Nature Walk Program as an Adapted Physical Activity (APA) in this study is a set of events that will immerse the participants in nature. For this specific exercise, participants were not only asked to walk, they also perform the following in no particular order:

- Practice listening to the sound of nature.
- Look for anything at the site of intervention that would be of interest to them.
- Find any specific object in the vicinity that would help them solve a particular 'problem set' by the teacher (researcher).
- Look for any insect that would be of interest.
- Watch out for birds and tell if they were able to see some while in the vicinity (bird watching).
- Practice counting by the aid of plants (trees, flowers, leaves, branches) found in the sites of intervention.
- Put up tents with their co-participants and be able to perform tasks at hand.
- Look for different shapes in the ground or sky or branches of the trees that would look like anything.

The participants, together with their guardians, were brought to the different sites – during the weekends on various locations. Taking into consideration their health background and their medical history, which was a basis for designing activities.

The study implemented Burns and Groove's (2001) statement in the observance of ethical principles being relevant to the study.

The principles of respect for persons in the community, beneficence, and justice; Principle of respect relates to the right of the respondents for self-determination and freedom to participate or not. The principle of beneficence requires the researcher to 'do good and above all do no harm,' and the law of justice- wherein this study will treat the respondents fairly (Belmont report).

Consent was obtained from school authorities at the proposal stage. The guardians were also asked for their consent to conduct the research and those who agreed, were also asked for permission to document through photograph and videotaping. The participants' identity was dealt with the utmost respect.

After two (2) months of weekly intervention, the program was handed to their guardians, where they were asked to continue the activities during their free time. They were asked to take note of their child's behaviors and possible improvement in their academic work.

3. Results

Observations, field notes, interview results together with photo and video documentation were transcribed and analyzed through a qualitative analysis; thus, the results.

Before the staging of the study, the children are undergoing training for Independent Living (IL), a form of occupational therapy offered by a Non-Government Organization (NGO). The other participants do not have formal training it is only whatever their guardians teach them in their own homes.

The participants are enrolled in the Individualized Educational Program (IEP) of the Department of Education for Special Children. Teachers expressed that because of the children's cases, they are mentored separately in reading and basic mathematics. With the ratio of teacher to students with 'special' cases (8-10 students per teacher), the teacher expressed that it is hard for them to teach the children. At the time of the study, there is also a limit of Adapted Physical Activity (APA) for the children. This is partly because of the lack of facilities for the APA program and those that will teach them. Some participants are familiar with each other since they attend the same class but do not share the same interests, for some, they just met during the interventions.

Participant A can communicate but must be asked continuously about what he feels because he cannot easily express his feelings. He is very conscious about time and always motions that everyone is lazy and slow. He likes to do things fast. He feels easily bored more than the other participants and likes to count everything in his sight.

Participant B has echolalia wherein he always repeats the words he hears and does not speak unless he feels repeating the words or sounds, he hears. He conveys his emotion by the manner of facial expressions and body language. When he is enjoying something, he sings and walks around gleefully with a smile on his face. And when he is sad, he clings to his mother and does not leave her side. He always holds his towel, serving as his 'security' and acts undisturbed by his surroundings. He follows instructions only through his mother.

Participant C does things on his own, enjoys listening to music on his cellphone through an earphone. At times he makes fun of the other children in the program and likes to tease his fellow participants. He does not readily abide by any instructions given to him and wants to keep on roaming around the vicinity alone.

Participant D only gives her attention to people whom she is familiar with, bosses everyone, and tends to raise her voice if not being followed on what she likes for others to do. She wants to be the focus of attention and gets easily irritated on matters to her dislike.

The participant's reactions and behavior towards others were observed during the conduct of the activities in the Nature Walk Program. These are the following:

The changes in the participants' emotional behavior upon exposure was evident through their facial expressions as they proceeded with the activities during the interventions. As seen from the start of the first session, all children

were displaying worried expressions. But as the intervention program went further (after two weekends), and with the aid of facilitation, the children were becoming excited. In every intervention activity, the children displayed an enthusiastic attitude, especially when they look for species of plants and birds. According to the guardian of participant A, the child becomes excited every time he learns that they will attend a session. Participant B display his eagerness to join by waking up earlier than usual, getting ready by himself, and even choosing his clothes to wear. Participant C hurries his guardians to move out of their house and always asks his mother when the day is to meet his friends. Participant D prepares her clothes and always makes sure that she is ready with it a night before the day of the activity. It was noted that all of them display an eagerness to be with the facilitators in the research sites. And every time they arrive at the meeting place will immediately smile upon seeing the team.

During the sessions, the participants display their interest in the newfound things in the intervention sites. They were very stern to know about the things they found and kept on asking about it, may it be through words, hand signals and for one participant, he will continuously look at a member of the team until he is given attention. The participants' attitude towards the other member of the group has developed into being distant and not caring to become fond of and being responsible towards each other. The children's change in attitude towards each other has been observed immediately upon the introduction of the intervention. Due to the limitation of time, the participants long for additional sessions; it will also lead to the children displaying sadness when they learn that the activity is finished.

The social aspect has become distinct in the second session of the intervention. In the initial phases of the intervention program, the children have been observed as aloof with each other. They just do whatever they are asked and did not have a closer interaction. As they display shyness, they tend to do their activities separately. According to their guardians, it was because they are not classmates, and they belong to different groups at school and never that they engage themselves together in any activity. But as the program proceeded, after two separate sessions, the children have developed camaraderie and, as such, have learned to work together. The AU cases have learned to mingle with those with DS and started calling each other's names.

The children developed a sense of belonging to a group. It was evidenced by calling out to each other and staying together even during their free time in school. This occurrence was reported by their guardians. Some children in the program have developed a sense of awareness of the people in their surroundings (mostly neighbors). Participant A started to be friendly and mimic the greetings that have been taught and shown to them during the sessions. Participant B started smiling with his father's workmates every time they ask him what he did during his nature walks. Participant C's conduct towards the other members of the family changed considerably and started to reach out towards them, making the activities in the intervention sessions an excuse for small conversations. Participant D became friendlier with her older sister and tells stories about their activity with the research team. Their sense of attachment to the facilitators became prominent and became friendly towards other people as the intervention sessions progress. The observation in the changes in social attitude became more prominent after the second session. An example of these changes was their immediate compliance as a group in performing the task given to them in the duration of the activities during the third session. According to the guardian of Participant B, he continuously mentions the names of the facilitators in his stories to other members of their family during dinner time.

During the initial intervention, the participants went to a site that would let them walk for at least a kilometer (km) on trails. Occasionally the group will stop for an inspection of the ground and the plants. Rest took place every 100 meters or less, depending on the participant's capabilities. During the first two sessions, the walks take long to be completed, because the participants are distracted, and they tend to complain of tiredness. But during the succeeding sessions, they displayed endurance on the walks and the time for every activity became more extended, as the participants are already craving for more time at the trails on the sites. They experienced enjoyment from the programmed activities and do not complain of being tired. Instead, after the sessions, the participants who can communicate will always ask when is the next meeting.

The physical condition among the participants has been limited to having a relaxed state and could keep their energy to communicate while performing the activities. As a result, the children do not have physical discomfort

associated with their medical condition. All participants in the study have energy during the activity and after which they were tired but very relaxed. Some of them take a casual nap after the exercises, which were manifested during their travel while riding the car going back to their homes.

The observed changes in the participants' mental ability made a significant impact on the results of the study. The memory game devised for the research has brought valuable information regarding their ability to recall. All the participants were able to remember the essential things they encountered- from the trees, flowers, animals, mountains, people, and birds seen from most visited sites. They often compare notes, every time we ask them to identify the pictures shown to them. They help each other out, especially Participant C, who seems to have developed an attitude during the program. He keeps on answering for his co-participants. Another fact on the improvement of their mental capability is their ability to recite to a higher number when counting the plants, flowers, and any materials found on the sites-this is specifically observed with Participant A whose counting ability went beyond his usual number. A similar report was also told by their classroom teacher at their school, and when asked about it, Participant D mentioned the flowers she counted during the sessions. Participant B became aware of the birds and flowers in their backyard and started pointing and mentioning the names of those he sees to other members of the family. According to his mother, every time he sees a bird perched on the plant in their backyard he will immediately jump up and down. Participant A recited the name of the flowers and shape of the leaves and the constant mention of the names of the research team during his conversation with another member of his family.

It was also worth noting that the children have developed an 'inquiring mind,' where some of the children (participants C and D particularly) will always ask about anything they find during the activities. This behavior became prominent in every intervention session. Their awareness of their surroundings, especially if they saw or hear something similar from their experience during the intervention sessions, was also reported by their guardians during their family trips.

4. Discussion and Conclusion

The study found out that the intervention brought behavioral changes in the children. Manifested thru their ability to convey what they feel. This is by way of facial expressions, display of attitude during the sessions, and their guardians report. Their show of excitement every time they knew that the group would meet for activities and other significant changes in attitude at home and school were also notable. These findings make similar statements (Alter, 2013; Pretty et al., 2005; Kirkby, 1989) regarding the use of the natural environment on behavior. Wherein utilizing the natural environment, increasingly well established that the natural and constructed features of the environment affect emotional, mental state, and social relationships (Wolf and Flora, 2010; Frumkin, 2001; Hayashi et al., 1999; Lewis and Booth, 1994;). Various Activities in the program facilitates, the inclusion of different types of conditions against a regular school curriculum which differentiates children with disability. Through the activities, the children find it as an avenue to express themselves. It paved the way for the children to show their affection towards their co-participant, other members of the family and other individuals outside of their family. By performing tasks instructed to them, the children even though having physical challenges but do not show difficulty due to their excitement towards the activities. Similar results were also found in studies using the natural environment as an intervention (Bjorge et al., 2017; O'Brien, 2009), where there are improvements in the children's self-confidence, motivation and concentration, communication, and physical skills. Of course, the changes seen take time to occur for the cases in this study. Putting importance on the need for frequency of visits and activities with the natural environment. Because of the design of the activities in the program catered for the participants, they find it amusing, thereby, do not mind being outdoors for a specified period.

It was also worth noting that the children have displayed the liking not only of the activities but also towards the research team. This finding made a firm stance that the role and attitude of the facilitator are as important as the tool for intervention (Cranley et al. 2017). Hence, they will only submit themselves upon recognizing the facilitators' ability or knowledge, behavior to handle such a program and attitude towards under her or his care (Baraldi and Farini, 2013; Petrova et al. 2010). The role of the facilitator in this study gear towards innovation and the ability to influence and link gaps between the school setting and other factors, notwithstanding the ability

to learn everything about those under her care. The attitude of the facilitator goes beyond the knowledge and implementation of the program, but also to the outside stakeholders who can make changes in the program.

The study was limited in the number of participants due to the guardian's approval for the participation of their wards. The locations were pre-arranged based on the participants' physical ability. Logistics was limited because of limited funding, but it was successful in bringing out the results mentioned above. It may not speak of the general population for cases such as the conditions of the participants, still, it could give a significant contribution to the academic discourse.

The success of the program does not only entail the design of activities but also spans from the selection of the site for intervention to the logistics and travel, organizing, and linkages established beforehand, the cooperation of the guardians of the children. With the results seen from the study, it can say that support is necessary for these types of programs, especially that it is not common in the regular educational setting in the country. This study therefore highly recommends that there will be a possible adaptation of the Nature Walk Program for educational purposes as well as for intervention purposes in the school setting for children with learning disabilities as the need arises.

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An Ecological Discourse Analysis to the Chinese Slogans during the Major Economic Stages since the Foundation of PRC

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Abstract

Slogan has a sound mass base in China for thousands of years, functioning as guidelines for civic practice. Even today, Chinese slogans are often employed by the government to promote policies and socio-cultural values. This paper, adopting an ecolinguistic approach, explores the development of Chinese slogans during the four economic stages since the foundation of PRC (People's Republic of China) to find out how slogans influence the relationship between men, and man and the ecosystem. It is discovered that Chinese slogans in the recent decades have experienced great changes in terms of discourse type, the beneficial degree of discourse and the ecosophy they carry. They changed gradually from destructive discourse to harmonious discourse and they reflect the transition of Chinese ecological philosophy—from 'anthropocentrism', 'growthism', and 'classism' to 'harmonism'. It is hoped that this study can shed light on the eco-discourse analysis to policy language and will bring insight into its future creation.

Keywords: Chinese Slogans, Ecological Discourse Analysis, Destructive Discourse, Beneficial Discourse, Ecosophy

Introduction

Slogans are a form of concise hortatory discourse that conveys ideas and values, often as prods or guides to action (Denton, 1980; Shankel, 1941). It is a world cultural phenomenon and is pervasively used in China (Han, 2008). The use of slogans in China can be dated back to about 3000 years ago, when *the Book of Changes* wrote "A gentleman should constantly strike to become strong just like the evolution of the universe; A gentleman should generously cultivate to become tolerant just like the earth bears everything on it. (天行健，君子以自强不息；地势坤，君子以厚德载物)" (The Book of Changes, 1046–771 BC). Carrying such humane and enlightened

values appreciated by the Chinese, this slogan has been influential ever since and has become inspiring mottos for many universities and individuals in China today.

Slogans in China, as an important form of institutional language, function as promotions for policies, values or actions advocated (or disapproved) by governments. They aim to encourage, appeal, persuade or engage people in certain actions according to the sociopolitical values of the state (Song and Gee, 2020). Slogans have a widespread base in China (Kim, 2011) which not only reflects the social and cultural outlook of China, but also affect people's life (Zhou & Xu, 2017, Han, 2008). Studies on Chinese slogans at different stages are important means for us to understand the changes of the public behaviors, values both socially and politically as well as the causes behind.

Ecolinguistics is the study of the impact of language on the life-sustaining relationships among humans, other organisms and the physical environment. It is normatively orientated towards preserving relationships which sustain life (Alexander & Stibbe, 2014). Discourse analysis is the primary concern of ecolinguistics. Halliday (2003:145) claims that language not only reflects reality but constructs it as well. Language influences our construe of the things and events in the world and the stories we live by. It influences our behavior and helps us to construct reality, society and the relationship between us and the rest of the world (Huang & Chen 2016).

Ecolinguistics contributes to CDA in that it not only expands the issues to be addressed but also offers new insights into how language constructs society (Stibbe, 2014). Eco-discourse analysis provides us a framework to inspect the preservative or destructive effect of human values on ecology. Huang & Zhao (2017) proposed that the main principle for Eco-discourse analysis should be in agreement with values such as, integration of man and the universe, human peace, social harmony and ecological preservation, beliefs that have been followed by us throughout human history. Ecolinguists should take social responsibilities to reveal the interrelationship between language and reality, explain the social influences certain discourses bring and thereby create harmonious social ecology by disclosing those destructive discourses and being supportive to the ecology-beneficial discourses. Stibbe (2014) suggests that eco-discourse studies, though differ in ways and perspectives of study, have five general characteristics in common. First, it focuses on influential discourses between men, and their interaction with the ecological system as ecolinguistics is normatively oriented towards the sustainable relationships of life. Second, it uncovers the world views or cultural regulations of in a particular context by interpreting discourse features. Next, the criteria for judging the world stem from a particular ecological philosophy. People or society that hold different values or ecosophies may view things or events differently which leads to different behaviors correspondingly. Moreover, the purpose of eco-discourse analysis is to reveal destructive discourses and seek beneficial discourse. It then naturally leads to the practical feature of eco-discourse analysis –to evoke the public attention to the effects that language generates on ecology and thus, brings consideration to policy making and educational development and helps reconstruction or improvement of discourses in future.

Discourse analysis involves lots of information behind the words, including the world view and philosophy held by the speaker. Analysis of ecosophy not only helps us preserve nature (Naess 1973, Stibbe 2015) but also helps us bring natural concern and environmental thinking into politics, hence building green political practices (Wang & Qu, 2008).

The talk of ecology and ecological civilization in China is closely related to the economic development (Huang & Chen 2018:4). In recent decades, ecological civilization has always been emphasized in the work reports of Chinese central government and governments of all levels. Researchers found that what was written in the government report would be reflected in their action (Shi, et al, 2019, Xu & Liu, 2017) and will navigate the public behaviors of Chinese people. The aggregate tone of the environmental protection discourses in the government report do lead to an increase in actual environmental investment (Shi, et al, 2019:7).

As is mentioned before, China has a long history of slogan application. It has been integrated as part of Chinese culture and is considered to be a crucial potential unifying force in Chinese society. The CPC (Communist Party of China) has made the slogan a leading form of political communication (Fitkunaga and Zhang, 2007; Liu, 2011; Lu, 1999). Slogans propagandize authoritative values and policy practices. They reveal the direction of social

development, people's attitudes toward the world, and the changes of social values and ecosophy. Therefore, in this paper, by analyzing the most influential slogans during the major economic stages since the foundation of PRC, I will elaborate on the changes of ideological values of the country as well as the ecosophy people take toward life and our ecological environment. The slogans quoted in this paper are from *People's Daily*, the official newspaper of the central committee of the CPC, and some authoritative conferences, such as the National Congress. These slogans are considered to be the most authoritative and influential institutional discourses that guide people's thoughts and practices in real life.

Slogans during the major economic stages since the foundation of PRC

Since the foundation of PRC, China has been through several major economic stages, namely, the recovery stage (1949-1957), turmoil stage (1958-1978), reform stage (1979-1992) and market economy stage (1992 till now). For each stage, there were widespread slogans, which functioned as statements of government policy, conveying expectations and suggestions of governments to the public. These slogans guide people's way of understanding the world, and to a very large extent, influence their practices in real life.

Stage of economic recovery (1949-1957)

Right after the foundation of PRC, domestic productivity was stagnant with deficient material resources and the regime was threatened by both internal and external forces. The top priority of the government, at this stage, was to stabilize the society and meanwhile recover economy as soon as possible. The most frequently shown slogans were:

1. Suppress the anti-revolutionists! (镇压反革命!) (1950)

The most widely spread economic slogans were

2. Machine is weapon, and factory is the battlefield! (机器就是武器, 工场就是战场!) (1950)

3 Love the country; sell the cotton, not leaving any for personal use! (爱国家, 卖棉花, 家中不留一点花!) (1951)

Slogans at this stage mainly concerned about economy and politics and expressed the mobilization with very aggressive tones. Either political or economic targets connoted in the slogans were viewed as 'war' or 'battle' that should be won with resolution. Words such as 'suppress', 'battlefield', and 'enemy' indicated that though the war (against Japanese and Kuomintang) was over, the country was still under a warlike environment. On the one hand, such expressions reflected the strong determination of the government to stabilize the regime and recover economy. On the other hand, these slogans were strongly aggressive, very harmful for social relationships. Moreover, slogans like 'Love the country; sell the cotton, not leaving any for personal use!' view personal/family interest as an impediment of the country's economic development. It was believed that individual interest and family benefit should be ignored or even sacrificed in front of the need of national prosperity. Individuals were not given full respect and regarded as part of the ecosystem, which in the long run, would demotivate their effort in constructing the nation. It also should be noticed that some important fields like education, culture, art, and social life were not given much attention, as few slogans concerned about them, an indication of an unbalanced social development mode at this stage.

Stage of turmoil (1958-1978)

During these two decades, the government made big mistakes in policy decisions which led to disastrous campaigns of 'the big leap' and Cultural Revolution. Slogans were posted everywhere, from public places to private houses. The 'big leap campaign' initiated by the central government aimed to satisfy the urgent need of economic recovery. However, it turned out to be a blind pursuit of unrealistic goals when policies were executed by the local governments. Slogans at this stage reflected the general desire to change the backward situation of the economy and culture but exaggerated the role of human's subjective initiative in economic development (Song &Gee, 2020:207). For example,

4. As bold you are, as much the land will yield! (人有多大胆，地有多大产!) (1958)
5. Five thousand- kilogram of rice production per acre! (亩产万斤!) (1958)
6. Surpass the United kingdom in three years and the United states in five years! (三年超英，五年赶美!) (1958)

On top of that, nature was put on the rival side of mankind. It was regarded as resources and at the same time, as obstacles that got in the way of human development. People were encouraged to play as heroes to conquer nature so as to obtain resources without limit for the quick growth of economic development. These potent slogans turned into the public actions of overexploitation of natural resources. Some of the most widely displayed slogans are:

7. Let the mountain bow to us and the river make way! (让山河低头，让河水让路!) (1958)
8. No fear for cold or hunger. Let the barren mountains realize their faults. (不怕冷，不怕饿，要叫大荒山向我们认错!) (1958)
9. Only green trees on the mountain are allowed. No permission for flood! (只准山上绿树遮满天，不准洪水再泛滥!) (1958)

The ten-year Cultural Revolution was a crazy period of national campaign. The government was determined to 'purify' the country by 'clearing' the potential risks/enemies. Class struggle became the guiding ideology and the whole country was mobilized to engage in it. Slogan reached its peak time and was posted everywhere. For example,

10. Down with the capitalists who are hidden in the Party! (打倒党内资本主义当权派!) (1967)
11. Smash all the monsters and demons! (横扫一切牛鬼蛇神!) (1968)
12. Class struggle is the guiding principle of our work! (以阶级斗争为纲!) (1958)

The slogans were filled with very strong hostile feelings. They mobilized a whole nation into an irrational campaign. This process caused restless feelings among people as they were worried about being identified as 'internal enemy' since there was no clear dividing line for it. As a result of the social turmoil, development of the country in all aspects came to a stop.

Stage of economic transformation (1979-1992)

After the chaos and economic setbacks of the Cultural Revolution, the CPC realized the catastrophic influence of internal struggle. Consequently, class struggle was called to stop and the work focus of the government was switched to the construction of socialist modernization. The shift of the ideology was represented in the slogans, such as,

13. You plant cotton, I spin. Farmers and workers are family members! (你种棉，我纺纱，咱们工农是一家。)
14. Agriculture ensures stabilization; industry guarantees flourishing; and commerce supports survival! (无农不稳，无工不富，无商不活。)(1991)

As the class struggle and revolutionary ideology faded, there arose the appeal for unification and emphasis was made on the connection and interdependence as the basis for the nation's prosperity. It was suggested that in the cycle of economic activities, agriculture is the first step, producing materials and industry follows it by making the materials into products. After that comes business activities that get profit by selling products. The importance of business to the economy was gradually recognized. Private business was no longer considered conflictual to the public benefit. Instead, it was believed to be a feasible solution to the problem of poverty.

In 1978, the central government adopted the Open-Door Policy for China, introducing a more market-based economy. Deng Xiaoping proposed

15. Let some people get rich first. (让一部分人先富起来。)(1978)

Under the reform and opening-up policy, individuals were encouraged to engage in economic activities. It was believed that only when people are materially better off can the nation get economically strong. Those who get rich first serve as a trigger as well as a model for the rest to strive for fortune. And the overall increase of living standard will naturally lead to a prosperous country. Chinese people then moved from political life to a new era of more realistic and material way of life.

Meanwhile, the central government also realized education as a crucial part of modernization construction. In 1977, College Entrance Examination was restarted across the nation for the selection and cultivation of talents for the country. And in 1985, the National Congress put a ‘nine-year compulsory education’ policy in law to ensure all the school-age children have equal opportunity for education. Across the nation, slogans encouraging children receiving the compulsory education were seen on all kinds of media, even on walls of both urban and rural areas:

16. The ‘nine-year compulsory education’ policy should be implemented fully. (全面实施义务教育。)(1985)
17. No matter how poor (the family is), education cannot be ignored and children should not suffer. (再穷不能穷教育，再苦不能苦孩子。)(1991)

Such slogans were widespread and deeply rooted as a Chinese belief ever since. Till today it is still widely accepted that education is the most important opportunity to change one’s destiny. And the overall level of civic education decides the destiny of the country.

Environmental problems came along as economy boomed. It is the result of quick consumption of natural resources. To deal with problems such as deforestation, decrease of farmland, and desertization, the government advocated:

18. Plant trees for the benefit of our offspring! (大善大德，植树造林，福荫子孙。)(1991)
19. Want to get rich? Plant more trees! (要想富，多种树。)(1984)

Planting trees was considered as a solution to satisfy both personal and national needs—need to solve environmental problems and need for becoming better off.

The rising attention on education and environmental problems indicated a realization of the government that social development involves more than political and economic aspects. This is the start of the society developing in a more balanced and ecological mode.

Stage of fast development of market economy (since 1992)

By 1990s, the living standard of Chinese people has been greatly improved and the slogans undertook more responsibility in the promotion of social and ecological civilization. For example,

20. Everyone is responsible for environmental protection. (保护环境，人人有责。)(1992)
21. Love environment the way we love our life. (像爱护生命一样爱护环境。)(2002)

As is revealed in the above slogans, environmental issues are considered to be of vital importance and everyone is under the obligation to take protective measures. The public awareness of environmental protection keeps rising and in 2014, the National Congress proposed

22. We not only in need of mountains of treasures but also mountains and rivers (既要金山银山又要绿水青山)(2014)

To deliver a clear message that economic development should not be achieved at the cost of ecological environment. In 2005, when Xi Jinping was inspecting in Zhejiang, he put forward:

23. Mountains and rivers are mountains of treasures. (绿水青山就是金山银山。)(2005)

suggesting that the environment is equally important as wealth. This slogan was repeatedly proposed on many important conferences and occasions and later it was further improved to and

24. We would rather have mountains and rivers than mountains of treasures. (宁要绿水青山, 不要金山银山) (2017)

As the importance of environmental protection keeps increasing, the public attitude toward nature gradually changes. Natural resources are no longer taken for granted as means for man to get profit from but as essential existence in the world.

What is also improved is the relationship among people. After the 16th National Congress in 2003, the government proposed an ideology of 'scientific development' and 'building a moderately better off and harmonious society'. The most typical slogans are:

25. When one gets ill, the others help. Cooperative medical care guarantees our health. (一人有病众人帮, 合作医疗保健康。)(2015)

26. Construct a resource-saving, environmental-friendly society. (建设资源节约, 环境友好型社会。)(2007)

Words such as 'cooperation', 'co-construct' and 'friendly' were frequently shown on slogans, reflecting the general aspiration for a harmonious society. It also displays the government's ideology of sustainable development (Zhang, 2010).

Discussion

Chinese slogan has experienced great changes with distinctive features marked by the historical stages. When viewed from an ecolinguistic perspective, these slogans changed not only in terms of discourse type but also varied in their beneficial degree to the ecology, demonstrating a continuum of discourse spectrum. Meanwhile, they also outlined the changes of social values in Chinese context through all these years, another continuum in terms of ecosophy. All of the changes took place as results of the changes in China's economy, political ideology and culture, etc. The following part will give an account of how slogans and social background interact with each other in China in the recent decades.

Change of discourse type

According to Stibbe (2014), discourses may run along a spectrum in terms of their 'fit' with the ecosophy, with one end to be discourses that explicitly carry meanings against the ecosophy while the other end are discourses that resonate with the ecosophy. The former are destructive discourses that function similarly as the red traffic light. In contrast, discourses that align with the ecosophy are considered as beneficial discourses, ones that get a green light. Discourses that seem to be beneficial to the ecosophy but do not actively contribute to it, as if getting an amber light, are ambivalent discourses.

Chinese slogans, in the early years after the foundation of PRC, expressed very strong aggressiveness with words like 'eradicate', 'fight against', and 'enemy', etc. Even economic production was considered as a war-like activity and workers were called upon to work hard as if they were fighting in the battlefield. In addition, individual interest and welfare were reckoned as less important/unimportant and should be sacrificed for the country's development. These slogans, hurting the welfare of individuals, ignoring them as part of the whole, belong to the category of destructive discourse. Such slogans were reflections of the need of the CPC at that particular historical stage. After years of war with the Japanese and Kuomintang (KMT), the CPC had the urgent need of stabilizing the regime (by completely removing the influences of the previous forces), and establishing a new ideology (by erasing the old one). Slogans with formidable words worked well in inspiring the majority working class and the peasants (who had just been set free from the feudal landlords) to defend the new country and their new identity as independent individuals. However, it cannot be denied that such slogans caused intense social relationships and the value that personal benefits could be ignored was anthropologically incorrect.

The 'Big Leap Campaign' period is a time of blind pursuit for economic growth. To boast their productivity, the local governments kept revising their production plans and goals to unrealistic levels. Accordingly, slogans taking the greatest mission for propagandizing such idealistic ideology, (such as slogan 5, 6 and 7) were seen everywhere.

To inspire the public morale, slogans often described nature as inferior existence to be conquered by human. That is why there were always expressions like ‘let mountains...realize their faults’, ‘...allowed’, ‘Let River...bow to us’ in the slogans. These were typical destructive discourses that misled the public to the rival side of nature and encouraged unlimited exploitation of natural resources, resulting in catastrophic destruction of the ecological environment.

The next ten-year Cultural Revolution period was the darkest era in recent Chinese history as internal struggle became the working guideline of the whole country. Destructive words like ‘down with...’, ‘fight’, ‘severely critique’, and ‘smash’ were in the highest word frequency in slogans. Guided by the class struggle ideology, there emerged lots of clashes and conflicts across the country. Slogans in the ‘Big Leap Campaign’ and those during the Cultural Revolution period were extremely destructive as they caused unprecedented damage to the nation ecologically and socially.

After the Cultural Revolution, China started an economic reform. The blind pursuit of unrealistic production goals was prohibited and cooperation was called on among industries. As was analyzed in the slogans in the previous section, slogans mainly expressed the ideas of ‘taking care of both private and public benefits’ and interdependence between different walks of life. This is the turning point of slogans changing from destructive discourse to a beneficial style that promotes the sustainable relationships.

After China opened its door to international businesses, China’s economy boomed. Environmental problems kept occurring as natural resources were over exploited. Realizing the environmental issues such as pollution, desertion and greenhouse effect, etc, brought along by the quick marching of economic growth, Chinese government proposed slogans that aim to raise public awareness or offer alternatives for making fortune. However, slogans like ‘want to get rich? Plant more trees’, though encourage people to increase their revenue by planting trees rather than cutting them, still treats nature as a means of material provider, source to be served for human use. It is, as was described by Stibbe (2014) ambivalent discourse as half of it carries meaning that is friendly to ecology while the other half bears indication that is destructive to nature. At the early stage of ‘call for environmental protection’, slogans (such slogan 22, 23) seem to care about the use of natural resources, but give not feasible solutions or reconsider the general consumption, are ambivalent discourses as well.

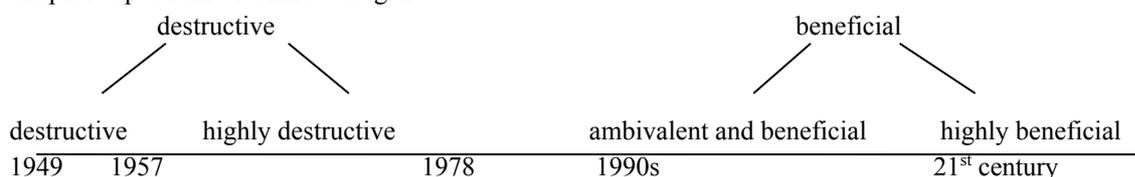
After the proposal of scientific development by the Chinese government at the beginning of the 21st century, ‘building a harmonious society’ became the national theme. Slogans at this stage (as were shown in the earlier section) were beneficial discourses which aim to promote harmonious relationships between men, other species and the ecological environment. What is worth noticing is that it is at this stage that exclamation marks became rare in the slogans, indicating that Chinese slogans no longer function as request that carry potent tones but suggestions and proposals that could be better received and more willingly followed by the public.

Change on the discourse spectrum

Discourses, though belonging to the same category (beneficial or destructive) may differ in their degrees of beneficial or damaging effects on the ecosystem. Instead of dividing them into three groups (beneficial, ambivalent, and destructive), it might be more reasonable to put them on a continuum (Huang, 2018).

When viewed from the eco-discourse approach, the slogans display a continuum with discourses standing on different points of the line according to their ‘fitting degree’ to the ecosophy.

Graph 1: Spectrum of Chinese slogans



As is shown in the above graph, generally, Chinese slogans after the foundation of PRC, has been developing from one end of the eco-discourse spectrum toward the other. From the birth of ‘new China’ to the end of Cultural Revolution, Chinese slogans were ecologically destructive but occupying different destructive positions on the eco-discourse spectrum. Slogans in the early years after the foundation of PRC were destructive discourses as they created warlike atmosphere to appeal resolution and hard work to help the government stabilize the regime and meanwhile mobilize people to take part in the ‘battle’ of economic activities. The ‘Big Leap Campaign’ period produced slogans that were even more ecologically damaging. Expressions like ‘allow...’, ‘... not permitted’ and ‘request...’ treated nature as inferior existence to be conquered by human being. Similarly, slogans during the Cultural Revolution period were highly destructive as they formed two hostile parties—the working class and those ‘anit-revolutionists’. Discourses like

30. Fighting against all monsters and devils’ (打倒一切牛鬼蛇神) (1967)

31. ‘...punch him to the ground and tread with our feet!’ (...打倒在地, 再踏上千万只脚) (1967)

caused extremely tense relationships in the society. The whole period was pervaded with panic and turbulence.

The economic transformation since the adoption of the opening-up policy serves as a turning point to the nature of slogans. Instead of mobilizing internal struggles, slogans at this stage encouraged cooperation and interdependence among industries as well as individuals.

With regard to the ecological environment, there was no more mobilization for fighting against nature, deforesting mountains and cutting rivers to suit the needs of mankind. On the contrary, environmental protection became a highlighted issue in government’s agenda. To stop deforestation, government of all levels proposed ‘Planting trees’ as an alternative for farmers to make their fortune. However, natural resources (trees) were still considered as means to satisfy human need, which was critiqued for representing nature and other species as objects or resources of instrumental rather than intrinsic value (Stibbe, 2012a). Such slogans were defined as ambivalent discourses as they were partly eco-beneficial and partly eco-destructive. Ambivalent slogans were also found in the early 1990s with the purpose of protecting the environment that was increasingly polluted by industrialization. The typical ambivalent slogan (slogan 22), as was displayed earlier, though aims to raise public awareness of environmental preservation, offers no specific measure or suggestion for achieving the goal. Another example is slogan 23--‘Use resources economically and decrease environmental pollution’. It seems to be ecologically constructive in motivating using less natural resources so as to reduce pollution, but actually fails to work actively toward this principle, as it does not tell the public ‘how’ and ‘what to do’.

The ‘scientific development’ proposed by the Chinese government in the early 21st century put forward ‘constructing a moderately developed country’ based on ‘harmonious relationships’. Later, ‘harmonious relationships’ became the core socialist value and was repeatedly shown in slogans.

After the 12th National Congress in 2014, the stress on ‘harmonious relationships’ moved from human relations to relations between human and the environment. And the eco-beneficial degree kept growing as was demonstrated by the three slogans (Slogan 25, 26 and 27) concerning choices between wealth and the ecological environment. The rising degree of the beneficial discourses reflects the growing eco-awareness of the Chinese people.

Change of ecosophy in China

The term ‘ecosophy’ was proposed by Naess (1996) which means a philosophy of ecological harmony. It contains norms, rules, postulates, value priority announcements and hypotheses concerning the state of affair and offers a worldview against which discourses are judged. Hegel suggested that ideology is indispensable from language and language is a reflection of ideology. Slogans, as well, mirror the changes and development of social value and ecosophy in that particular context. Generally, Chinese ecosophy develops as if along a spectrum, from growthism, anthropocentric and classism toward highly harmonious.

Graph 2: Spectrum of Chinese ecosophy

Growthism, anthropocentrism, classism	cooperation	harmonism	highly harmonious
1949	1957	1978	1990s
			21 st century

In terms of the relationship between human and the environment, Chinese slogans demonstrate a process where the public ecological awareness grows from none to highly ecological. In the first few years after the birth of new China, the ecological environment was not much a concern of the country since the priority work of the government was on economic recovery and political activities. The 'Big Leap Campaign' drove the whole country for a blind pursuit of economic growth and displayed a period of 'extreme growthism' which considered economic growth as the foremost target for all social activities. Accordingly, numerous slogans motivated people to explore natural resources to satisfy human need, treating nature as inferior existence. This anthropocentric belief put human in the center of the world while other living organisms functioned as source of material and service for mankind. It led to tremendous damage of the natural environment. It was in the early 1990s when environmental issues came to the agenda of Chinese government, that the eco-friendly attitude was gradually shown in the slogans. Instead of being 'conqueror' and 'controller', people were encouraged to play the role of 'protector' to the environment. Gradually, as the ecological awareness kept rising, it became widely accepted that man and the nature should not be 'a major role and a weaker role' in the world, but 'equal existences' that live in a sustainable ecological system.

Slogans also reveal the change of social relationships. In the early years after the birth of new China, the warlike slogans served as a declaration of the government's resolution to eradicate the old national ideology and establish a new ideological system in which people would live as masters of the country. The social relations were tense as a lot of attention was paid to the fight against any force that may put the new power at risk. When the national focus was switched to economic construction in the late 1950s, there was a strong unification among people and industries. For nearly ten years, people all over the country were called on to join the 'Big Leap Campaign' and worked together for building socialist economy. However, in the Cultural Revolution, as the central government want strengthen the dictatorship of the proletariat, people were divided into classes. Those capitalists, 'anti-revolutionist' and 'right-winged' became targets of 'class struggle'. This 'classism' ideology intensified the social relations, bringing endless worries and panic to the public. It also caused catastrophic results to the national economy and other aspects of life. After the opening-up, people were encouraged to 'emancipate the mind and seek truth from facts (解放思想, 实事求是)', which marks the end of the old ideology and the start of a new one. The intensified atmosphere was eased as the notion of 'the whole nation is a family' was brought to mind. This is the time when people in China were called to create a harmonious relationship and a time when the relations between China and other countries were greatly improved. As a result, international cooperation increased to an unprecedented level. In 2004, the CPC proposed 'construct a socialist harmonious society' and it became the government's strategic task since then. 'Harmony' became the new social ideology. Workers, farmers and intellectuals are all considered as the primary pushing force for social and economic development. Developing needs from both developed areas and underdeveloped areas should be taken into account. The government also emphasized the importance of solving conflicts between different times, different places, and different interest groups. The common goal of the country now, is to build a society with a friendly relationship between humans and other humans and a harmonious coexistence between human and the ecological environment. This 'harmonious society' ideology makes the sustainable development possible.

Conclusion

Slogan is a cultural phenomenon and is particularly pervasive in China. It plays such an important role in the way that perhaps few other countries have ever experienced. China has a long history (thousands of years) of slogans. Back to Qin Dynasty, slogans were adopted to declare the emperor's achievements and mobilize the public to participate in particular activities. Chinese slogans are poetic-short and brief with rhyming terminal sounds. They are easy to pronounce, catchy, and easy to remember and therefore always employed by rulers for unifying the public and spreading values. Slogans mirror the social changes. The analysis to Chinese slogans presents the politic, economic and other changes that take place during a certain period of time.

The ecolinguistic approach offers a new perspective to language study. Ecolinguistics analyses discourses by critiquing those encourage ecologically destructive behaviors and seeking out those encourage respect and care for the natural world (Stibbe, 2014: 117). In terms of slogan analysis, it examines how slogan, an important institutional language, influences the public behavior and therefore social relationships as well as the relationship between man and the environment.

There are four major economic stages since the foundation of PRC, namely, the recovery stage, stage of turmoil, stage of economic reform, and stage of fast development of market economy. Each stage produced slogans for political, economic or social purposes. Generally, the Chinese slogans developed along an eco-spectrum either in terms of discourse type, beneficial degree of discourse or ecosophy. They changed, as if along a discourse continuum (Huang, 2018), from extremely destructive discourses to ambivalent discourses and then beneficial discourses and later highly beneficial/ harmonious discourses. The ecosophy held by the Chinese developed from anthropocentric that was marked with 'growthism' and 'classism' to cooperation and 'coexistence' that supports the peaceful relationship between man and other species and later, to 'harmonism' that sustains the long-term development of the whole ecological environment.

Chinese slogans were marked with epochal features that convey important policies and ideologies of the government: warlike slogans in the recovery stage, grandiose slogans during the 'Big Leap Campaign' period, and feverish in the Cultural Revolution, etc. At the sight of a slogan one can easily recognize the stage when it was written (Han, 2010).

One thing that needs to be noticed is that discourse analysis should take the historical and cultural background into consideration (Huang & Zhao, 2017).

Take Chinese slogan for example, only when it is along with the political as well as economic and social background that we are able to understand the reasons of the birth of such slogans and thereby better understand the shaping influences these slogans bring to the behaviors of the people and the ecosophy held by them.

In the long run of human history, there were periods when man's survival and social development depends on the consumption of natural resources, either it to be hunting activities or farming on grasslands or industrialization that causes green house effect. There are periods and stages when damages were made to the ecological environment and other species and organisms were not respected as equal existence with men. These were the results of given situations, either it to be extremely poor living condition, or short of replaceable resources or lack of ecological awareness. Even today, there are societies that are by far economically underdeveloped and people there can hardly find shelter or food. To them, it is the urge of survival rather than ecological awareness that drives their everyday practice. Therefore, discourse analysis should undertake the responsibility to (a) raise ecological awareness, (b) share lessons and experiences (as countries and areas are not developing at the same pace), (c) not only reveal the shaping functions of language on the ecosystem so as to seek better alternatives for a more sustainable ecological environment, but, more importantly, work on more practical frameworks for countries or areas that are under different stages or situations.

This paper, by revealing the changes of discourse features along with social background, hopes to bring a comprehensive understanding of the development of the Chinese slogans and the eco-effects they brought to this country. It is also hoped that the eco-thoughts on slogans can shed light on the creation of policy language so that they may not only be able to achieve the mission of unifying the public but to guide public actions toward a more ecological and sustainable way. It is a win-win solution.

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Teaching English through Drama to Tribal Students of Undergraduate Level at Remote Area of South Gujarat Region in India

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Abstract

Aim: To investigate how learning of English becomes easier through drama, in tribal classroom for learners and how it contributes towards nurturing their creative thinking. **Methods:** Pre and post tests were taken and Torrance Creative Thinking Test, form (A) was used. The students in control and experimental group were given TTCT form (A). In this study through TTCT form (A) it was tested to what extent teaching through drama nurtured creative thinking of tribal students. It tested the ability of student's individual competence, to be fluent, flexible and original. **Results and conclusion:** There is a statistically significant difference in mean scores of the pre and post test of the experimental group. The mean of post grades of experimental group is more than the mean of pre grades of experimental group. It indicated that there are statistically significant differences in students' pre and post grades of experimental group. It means teaching English through drama is effective and it fosters creativity of tribal students. **Practical application:** Teachers in other tribal/rural/urban colleges can teach using drama in their classes to make teaching-learning of foreign language effective and for fostering the creativity of the students. The Torrance test can be used in other research to investigate the influence of teaching subjects other than English. Further research is needed to investigate the influence of teaching English language using drama on teacher's performance in tribal classroom. Further research can be done to investigate the influence of teaching subjects other than English using drama on the development of tribal students' achievement. Further research can be done to investigate the influence of teaching subjects other than English using drama on the development of tribal students' creative thinking. **Originality/Cognitive value:** Draws attention toward the effectiveness of teaching English using drama and nurturing students' creative thinking specific for tribal students. Provide teachers with applicable teaching situations using drama for teaching in tribal classroom. Provide results which may be applicable in teaching other subject to different level of students in different eco systems.

Keywords: Drama, Creativity, Torrance Test of Creative Thinking, (TTCT)

Introduction

While studying the profile of tribal students there is a constant striving to find practical ways to value and manage the disparity to facilitate the learning of English in our tribal classroom. Endeavors are to minimize the learning difficulties and create a bonding between teacher – student and English language learning. Here it must

be mentioned that in this study drama as a teaching technique does not mean any big end-of-term play. This subject matter is worth studying because drama as a teaching technique encourages students to learn language in a very effective way.

Since we are in the age of digitalization and creativity language learning is a precious opportunity to develop creative thinking, as language learning class is full of different life like situations and full of characters and dialogue. Teaching foreign language using drama can be effective in developing students' language skills and creative thinking.

Most of the ESL students want to be fluent in English. This ability means connecting fragments of language and making them sound natural so that everyone could understand them. The problem with is not in the learner's level of knowledge. The reason for difficulty in speaking can lie in the fact that fluency involves a skill in 'performance' because there is no time for preparation in communication. A lack of this skill frustrates a speaker that is the reason why he/she cannot communicate with self-confidence. Drama is a very good way of practicing real fluent discourse in friendly environment. Drama gives satisfaction not only to students but even to the teachers, as teachers enjoy teaching in this way, because they see students learning with joy and excitement. Without any doubt this form of teaching practices most of the language skills at the same time. Students work on speaking, expression and listening and much more while they perform. It is easy to include reading and writing in these activities. Drama is a very good teaching method, which expands the inventory of every professional teacher. It puts emphasis on meaningful communicative activities instead of rote learning and mechanical drills.

The first part of the paper is theoretical and presents reasons for including drama in teaching English in tribal classroom from various points of views. Furthermore, it reveals how drama techniques are useful for teaching and deals with clues on how to succeed with drama in teaching English in tribal college classroom of final semester Arts students. The later part of the work is practical experiment; techniques are incorporated into classroom activity, which are based on the scenes from plays of Shakespeare. Experiment lead students to develop not only the language skills but also unfolding of divergent TTCT factors like fluency originality, flexibility, cooperation, form moral attitudes, toleration, imagination and creativity.

Drama also differs from the other teaching techniques. That is probably the reason why both teacher and student, especially those in the traditional classrooms, feel insecure in this area. It is necessary to ensure everyone that these drama techniques are different from drama on stage. Drama in a classroom avoids the distinction between the performers and the audience as during the lesson everybody is involved and each one can participate. Everyone can get a role which will suit him/her best. There is usually a group of students who like performing in public, on the other hand there are introvert students and they prefer observation. In teaching-learning through drama teacher can ask the students to choose suitable tasks for themselves. Some may write script, some may design costumes and sets, some may give background music and some may create the ambiance in the classroom so on and so forth.

Drama is a unique tool to explore and express human feeling. Drama is an essential form of behavior in all cultures; it is a fundamental human activity. Here we are investigating the benefits drama can have on teaching English classroom, when applied functionally within a tribal college classroom. Drama has the potential, as a diverse medium, to enhance cognitive, affective growth and foster creative thinking. While experimentation of teaching English through drama in tribal classroom, it has become apparent in this research that apart from teaching methods or curriculum, a language must be experienced, experience lessens the gap between the learner and the language. This does not mean that grammar, reading, writing and speaking do not matter, but it means that along with these skills the language must be experienced before it can become a part of person's being.

In order for a person to be truly skilled in a language it must become a part of his or her being or in other words, a person must live the language, to speak it effectively and correctly enough. It is a great challenge, as a

language teacher, to try to give students various kinds of opportunities to live the language, but it is also very rewarding to be able to see a student enliven the language in his/her communication.

Literature Review

One of the second language learning theories which become very well-known was that of Krashen's mentioning the hypotheses on language acquisition and learning. He says there are two kinds of language learning: Language acquisition; that is, the individual acquires the mother tongue or first language subconsciously which is not concerned with the rules of the grammar but for the communication; on the other hand, the child learns the target language consciously with the learning of rules enabling them to describe the rules of the language but may not necessarily use in communication. Second, the Natural Order Hypothesis is the systematic process of the child's learning; that is, he is learning some of the primary rules of the language such as singular and plural, -ing form before learning subject-verb agreement and apostrophe. Learning the language enables the learners to use the language in different situations. Research over the last decade has confirmed that a variety of affective variables relate to success in second language acquisition. Most of those studied can be placed into one of these three categories: (1) Motivation - performers with high motivation generally do better in second language acquisition (usually, but not always). (2) Self-confidence- performers with self-confidence and a good self-image tend to do better in second language acquisition. (3) Anxiety- low anxiety appears to be conducive to second language acquisition, whether measured as personal or classroom anxiety (Krashen, http://www.sdkrashen.com/content/books/principles_and_practice.pdf).

Disclosed that the progressive education was to oppose the traditional one which focused on the content with the rote learning style and lack of societal linkage, the main purpose of this educational philosophy is that education is to develop learners not just for mental ability but also the relationship of the society since they have to live and adapt themselves in the society happily (Sinlalat, 2009).

Dramatic activities provide the opportunity for learners to use their personal characters in speaking skill; they can role-play via gestures, facial expression, imagination, memories and potential experience in the past to act the roles assigned. In addition it is mentioned that dramatic activities, if the teachers know how to use them effectively, they will help reinforce the individuals to develop their communicative skill through the dramatic activities and the role plays (Davies, 1990). Everybody in the world is an actor or an actress. Everybody has to represent his/her everyday roles. These roles are e.g. the role of student, mother sister, father, teacher etc. Later they become employees and have to interact with their colleagues and customers. Beyond these examples of some big roles there are many situations where people have to react according to their positions and situations.

Drama in education uses the same tools employed by actors in the theatre. In particular, it uses improvisation and mime. But while in the theatre everything is contrived for the benefit of the audience, in classroom drama everything is contrived for the benefit of the learners (Wessels, 1987). One of the advantages is that drama is the opportunity to enter another world and explore various situations. It offers to escape from our everyday selves and to put on a role. It is easier to speak as somebody else. It is like hiding behind the mask. It gives a person freedom to express his/her feelings easier and without anxiety. This means that people feel free to scream, cry, laugh, dance and do other things that they do not usually do without the 'mask.' The 'mask' is great opportunity for shy people. It helps them to do the activities listed above and obviously it helps them improve their speaking skills (Cockett and Fox, 1999). This point is especially useful in college classes because students at this young age do not want to reveal anything about them. The role gives them a chance to speak and disclose their feelings as actors.

In foreign language classroom, drama is an effective method it allows the teacher to present the target language in an active, communicative and contextualized way. Dramatization helps the teacher address the four skills of language learning (speaking, listening, writing and reading), and it also favors and facilitates the study of some often neglected aspects of language such as pronunciation and body language (Mattevi, 2005).

It is also said that the two elements of drama are action and dialogue, and both have a place in the foreign-language learning experience. They may be introduced into the classroom by means of a drama lab, a learning activity that permits students to act out foreign language materials such as tableaux, poetry, ballads, folklore, and plays. Drama allows the student to express his individuality, and the material, if it is culture-related, brings to life the cultural context of the foreign language (Blanch, 1974).

Drama also approved its effectiveness on developing creative thinking. Drama enables students, in all levels of education, develop their intellectual skills such as creativity, problem solving, communication, socialization and empathy and it gives individuals the opportunity for self-actualization, group work and sharing their responsibilities. A number of studies of the effects of drama on individuals' cognitive and affective characteristics have been carried out recently. These studies revealed that drama had positive impact on students' development of communication skills, socialization levels, development of emotional intelligence, social skills, empathic skills and empathic tendencies regardless of the grade levels of the students (Özdemir and Çakmak, 2008). Many studies revealed the effect of drama on creativity such the study of Ortiz-Seda (1984), Dupre (2006) and Taskin (2013).

Using of drama in foreign language class has many advantages. Drama is an under-exploited resource in the foreign language classroom for promoting intercultural competence and developing an awareness of the interpersonal dimension embedded in the language we use. Drama also offers ample opportunities to explore nuances of the foreign culture as well as conflict situations and emotions which are seldom encountered in textbook dialogues and material, thus opening up to the students a world which is often denied to them in the foreign language classroom (Cunico, 2005).

In drama-oriented English as foreign language (EFL) classrooms, teachers often ask questions to shape the story, unveil the details, sequence the scenes, create a beneficial linguistic environment to elicit student output and promote meaning negotiation in the target language." Therefore, for more than 30 years drama has been promoted as a valuable teaching tool for language learning. Recent research results have reinforced this position (Dunn & Stinson, 2011).

Seven reasons are identified to incorporate drama in the second language classroom (Burke and O'Sullivan, 2002):

1. Teachers and students can concentrate on pronunciation.
2. Students are motivated.
3. Students are relaxed.
4. Students use language for real purposes.
5. Risk-taking equals heightened language retention.
6. Community is created.
7. Students and teachers can approach sensitive topics

The impact of integrated drama/ESL lessons on second language learners' language skills was investigated. The dual focus of the study was to use drama to support the listening, reading, speaking and writing skills of the language learners, and to examine issues of 'Immigration, Canadian Identity and Multiculturalism' through drama in an ESL/humanities first-year university course. Drama education strategies were designed to create a context for reflecting the narratives of ESL learners' own lived experiences. The ESL students negotiated between fictional and actual experiences, past and present, and made use of in-role and out of role reflection throughout. The use of both verbal and non-verbal communication, collaboration, interpretation of information, imagination and risk-taking in the safety of fiction supported students' significant engagement through drama. The research findings suggest that the integration of drama helped students cross borders of cultures, identities and literacy in the multicultural second language classroom (Ntelioglou, 2006).

The use of creative dramatics in the teaching of drama with Special Application to the Teaching of English as a Second Language was investigated. Since performance is the main difference between drama and fiction, it should be included in drama instruction in order to give students a complete view of what drama really is. Accordingly, a series of theatrical techniques to teach four elements of drama--plot, character, setting, and mood--were elaborated. Improvisations, pantomimes, extrapolation or expanding a character, and role playing

are included among the activities, on the premise that the use of performance techniques should be incorporated with the standard methods of literary analysis and taught simultaneously to help students better comprehend plays. This theory is illustrated with exercises used to teach two plays, William Shakespeare's *The Tragedy of Romeo and Juliet*, and Thornton Wilder's "The Matchmaker." These plays were chosen because they presented concrete characters and situations that the students could recognize as real. In addition, genre, historical period, technical devices, and audience were considered in making the choices. These suggestions and exercises are well suited to ordinary high school students and/or freshman college students who are learning English as a Second Language (ESL). Guidelines for teachers who would like to use the activities in their classrooms are included (Ortiz-Seda, 1984).

The very fundamental benefit is that drama gives a chance to use the language. Students are satisfied that they are able to communicate in different roles and situations. This builds the self-esteem. It helps shy students overcome their fear of speaking. Teacher can find a suitable role for every student to give him/her an opportunity to succeed. This achievement encourages everybody to go on, improve and speak more. Learners can use all. The other reason for including drama in lesson is a change of atmosphere in the class. Drama is learner-centered so that teacher can use it, in contrast with the more teacher-centered parts of the lesson and transfer the responsibility for learning from teacher to learner. (Praputkit, 1983).

There are numerous benefits of teaching English through drama and fostering creativity. The acquisition of meaningful, fluent interaction in the target language can be achieved. Students assimilate of a whole range of pronunciation and prosodic features in a fully contextualized and interactional manner. They of knew vocabulary and structure. Higher sense of confidence is developed while learning English through drama (Wessels, 1987).

Drama puts the teacher in the role of supporter in the learning process and the students can take more responsibility for their own learning. Ideally, the teacher will take a less dominant role in the language class and let the students explore the language activities. In the student centered classroom, every student is a potential teacher for the group. Drama for second language learners can provide an opportunity to develop the imagination of the students. The students can go beyond the here and now and even 'walk in the shoes' of another. It provides an opportunity for independent thinking (McCaslin, 1996).

Students are encouraged to express their own ideas and contribute to the whole. Creative drama will offer exercises in critical thinking and the chance for the students to be creative. A good example of this is role-plays in small groups, where students will have many situations where they can develop their own ideas as well as skills of cooperation when interacting with each other. Drama gives an excellent method for studying human nature and working in harmony. The play acting provides the opportunity for a healthy release of emotion in a safe setting which can work to relieve the tension of learning in a second language.

Most teachers see the value of drama in offering training in speech. What is not obvious is how even abstract learning is easier when acted or demonstrated. Drama can also be used to bring literature to life for the students. It is more dynamic than simple text and helps the visual learners as well as recycles new vocabulary. While drama does have a characteristic of recreation, the fun aspect should not be under-estimated. When the students are enjoying an activity, they are learning and letting their guard down. The shyness and fear of using English very often blocks learning. When the students are submerged in an active fun activity, they are more open to new concepts and learning will occur. When the students are having fun, they let their second language guard down and become less inhibited. The student will tend to relax and stop blocking out the new language. They will forget how hard it is and start absorbing the ideas presented. Changing the students' perception of the language learning from a negative to a positive is a huge plus for the learning process. A good example of the attributes of drama being used outside the classroom is the game of theatre sports (Johnstone, 1999).

In the English teaching classroom, role-playing is a powerful tool. It teaches cooperation, empathy for others, decision making skills and encourages an exchange of knowledge between the students. These aspects alone make role-playing beneficial because the students are learning from each other. Yet, there are many other

positive aspects to the role-playing. Apart from the obvious development of communication skills, it encourages leadership, team work, compromise, authentic listening skills and practice with real life situations. However, it does not stop there. It teaches cooperation, empathy, develops decision making skills, promotes the exchange of knowledge, builds confidence and self-esteem, refines presentation skills, encourages self-acceptance and acceptance of others, features of empowerment, pride in work, responsibility, problem solving, management and organizational skills, begets creativity and imagination. The teacher can use the practice with role-playing to contribute to the self-esteem of the students, build their confidence in using the target language (English) as well as develop many of the skills mentioned above which will carry over to real life. It is certain that self-acceptance can be encouraged in subtle ways and acceptance of others.

Drama has the potential to empower the students, give them many opportunities to have pride in their work, it teaches them responsibility, problem solving, management and directing proficiencies. The many activities of team work force students to develop organizational skills and to think and foster creativity. These skills can be used in all aspects of their lives. The improvisation enables the students to flex their emotional, mental as well as physical muscles in a safe and controlled setting. These skills will be useful in the future job market when the students need to work with others or even in the future job interview when the potential employer asks an unexpected question and you need to respond quickly.

The benefits of drama to develop the communication and imagination should not be undervalued. In our rote school routines of memorization and compulsory subject matter, we sometimes do not spend enough time on encouraging our students to use their imagination. It is the spark that makes the ordinary into something incredible. Creativity is the wonderful force that is beyond facts, figures and techniques which can inspire new ideas. It is with creativity that the ordinary is transformed into something significant. There is a need to cultivate this trait in our students. We need creativity to make a better world. All of this leads me to believe that there are many subtle benefits to drama in the tribal classroom.

Wan Yee Sam, talks about the communicative approach drama techniques, value of drama in education, advantages and disadvantages (Sam, 1990). Alan Maley and Alan Duff are classic sources for the benefits of using drama techniques; how it helps to learn new vocabulary, builds confidence, motivates the students and helps shift the focus from the teacher to the students (Maley, 1982).

We can sum up the benefits of English through drama in tribal classroom are the acquisition of meaningful, fluent interaction in the target language; the assimilation of a whole range of pronunciation and prosodic features in a fully contextualized and interactional manner; the fully contextualized acquisition of new vocabulary and structure; an improved sense of confidence in the student in his or her ability to learn the target language (Wessels, 1987).

Creativity is distinctly a human attribute. We Homo sapiens evolved from Stone Age to the supersonic space age. We are gifted with power to think and think innovatively and differently. We innovate to create, we nurture cultures and civilizations, and we build communities and core theories and exhibit unsurpassed practices through our creatively challenging potentialities. Long bequest of research on creativity asserts that creativity tends to be original but at the same time it must be effective and productive for global wellbeing.

The importance of creativity is being emphasized not only as a representative intangible asset contributing to the enhancement of quality of individual life, organizational growth, and national advancement, but also as the spirit of the times which guarantees the sustainable development of the history of mankind. In spite of a great interest in creativity by people of all social strata, scientific reports on the neural mechanism of creative processing are rare. In particular, the domestic academia immersed in the psychometric approach by investigating the complex relationship among factors and assessing the validity of a task, yielding relatively insufficient researches on the neural basis of creativity (Park, S. H., Kim, K. K., & Hahm, J. 2016).

Torrance is the pioneer in creativity research, he defines creativity as sensing problems, searching for probable answers to problems, drawing hypotheses, testing, evaluating, and communicating results to others. Moreover,

Torrance described the creative process as including original ideas, different points of view, breaking out of the mold, recombining ideas, and seeing new relationships among components as different ways creativity can be assessed. The present study, creative thinking refers to students' scores in Torrance test for creative thinking related to the main skills of fluency, creativity and originality.

We know that an individual will attempt to induce the audience to see them in a certain way. The more convincing we are in our own roles only help to create the persona that we wish for. The better we are at communicating our ideas helps ourselves to become who we want to be. Therefore, it makes sense that dramatic skills can help us become the person we want to be. In this way, drama has a wider reach than simply making us more fluent in a second language. It has the potential of making our lives better as we will be better understood and may help us become the people we want to be. Drama is all about how we present ourselves. If the student can communicate better, the more likely others will see him/her as he/she wishes to be seen. Therefore, the skills of drama can help the student become the person that he/she wants to be.

The ability to act in creative and innovative ways is almost always cited as one of the most important 21st Century Skills or competencies for learning humans need to thrive in modern society, regardless of nationality, owing to the ubiquity of technology, fast communication, and collaborative social networks. Skills tied to creativity and innovation, such as critical thinking, problem solving, collaboration, and multimodal literacies, are required to keep up with technology and an increasingly connected world. These skills support learners in their life and career, help them acquire knowledge, and provide them with the flexibility to adapt and learn in shifting workspaces. For these reasons, it is more important now than ever to gauge to what degree students are able to demonstrate creative thinking skills and examine the ways in which these talents and skills are demonstrated cross-nationally. (Dishke & Gulliksen, 2015).

Since its publication in 1966 TTCT is having six versions. It was reframed in 1974, 1984, 1090, 1998, and 2008. But the content did not go through any variation (Kim, 2006a, 2006b, 2011). Creative thinking was initially believed as a talent possessed by special extraordinary persons, and much research was conducted concluding this type of talent could be identified and nurtured. Torrance is readily identified with his eponymous tests of creativity, but assessment of creativity was not one of Torrance's goals. Torrance's main focus was in understanding and nurturing qualities that help people express their creativity. The tests were not designed to simply measure creativity, but instead to serve as tools for its enhancement (Hébert, Cramond, Neumeister, Millar, & Silvian, 2002)

Suggested uses of the tests were: 1. To understand the human mind and its functioning and development. 2. To discover effective bases for individualizing instruction. 3. To provide clues for remedial and psychotherapeutic programs. 4. To evaluate the effects of educational programs, materials, curricula, and teaching procedures. (Torrance, 1966, 1974).

Nature and Type of the Study

The present study investigates the benefits of teaching English through drama activity based on TTCT, form A. The sample is final semester students of tribal area college in Gujarat, India. The sample of the study comprises two groups selection of 42 students in tribal belt of south Gujarat, of Shri M R Desai Arts & EELK Commerce College, Chikhili. One group of 21 students which is taught by traditional method has been assigned to be control group. The other group which is taught English through drama comprising of 21 students has been assigned to be experimental group. Scenes from Shakespeare's play were chosen for performance with setting costume and dialogue delivery. The control group was taught by traditional method whereas the experimental group was taught using drama. The end of teaching through drama the data was statistically analyzed. Results have been discussed based on results recommendations and suggestions have been given. Student's age was between 20 to 21. Students at this level were preferred because they were completing their BA with English literature degree course. Moreover, despite their mixed feelings about difficulties in English, most of the students were interested in studying language through drama activity and they exhibited their creativity.

To investigate how drama eases learning of English, in tribal classroom for learners and contributes to their development, the data was collected through pre and post-test. Performance of the drama was video recorded. During 4-weeks-drama activity beginning from reading of the play, preparation of the script to the final performance, the students kept notes which gave creative insights into the effects of drama activity on their learning. I as the teacher video-recorded the drama performance and took notes on their reflections. The parts were enacted with setting and costumes. Scenes from Shakespeare's *The Midsummer Night's Dream* were chosen. General observations made in the beginning were as follows:

- The tribal students are reluctant in the beginning when the proposal to enact scenes from Shakespearean play from their syllabus was put forth.
- As they begin to discuss it among their groups after reading the text line by line in the class they prepare the script from the scenes exactly word to word from the text.
- They decide among themselves the part to be played by each one of them.
- Initially each one of them carry the photocopy of the script to deliver the dialogues.
- They decide the setting and the costumes they design and prepare it themselves.
- They practice regularly with dialogues and expressions and finally perform it with zest.
- They share their experiences and give feedback to junior students and ask them to carry forward the legacy of performing drama and learning through it.

Context of the problem / Statement of the Problem

The problem of the study can be stated in the main question: How the use of drama makes teaching English effective in tribal classroom and how it helps in nurturing their creative thinking?

Questions and sub questions of the study

The present research seeks to answer the following main question:

Can teaching English through drama to the tribal students lessen their difficulties and make learning of English effective and at the same time do the activities foster their creative thinking The following sub- questions are derived from the main question:

Is there any statistically significant difference between the achievement of control group (those who study using the traditional method of teaching) and the achievement of experimental group (those who study using drama) according to the pre creative thinking test?

Is there any statistically significant difference between the achievement of control group (those who study using the traditional method of teaching) and the achievement of experimental group (those who study using drama) according to the post-creative thinking test?

Objectives of the study

- Investigating the benefits of teaching English through drama and fostering the creativity of students. Investigating relationship between students' achievement of control group, (those who study using the traditional method of teaching), and the achievement of experimental group, (those who study using drama) according to the pre-creative thinking test.
- Investigating relationship between students' achievement of control group (those who study using the traditional method of teaching) and the achievement of experimental group (those who study using drama) according to the post-creative thinking test.

Significance of the Study

It draws the attention toward the effectiveness of teaching English using drama and nurturing students' creative thinking. It may provide teachers with applicable teaching situations using drama for teaching in tribal classroom. It may provide results which may be applicable in teaching other subject to different level of students in different eco systems.

Delimitation of the Study

Academic delimitations is that the study investigates the effectiveness of teaching English through drama and observes difference in creative thinking of only those participating in the performance. Secondly experiment and study is carried out only in single tribal area college in South Gujarat. Time: sixth semester of the academic years. The unit has been taught over 2 weeks 3 lectures per a week. Each lecture comprises of 55 minutes. Here time is absolutely a limited resource. Experiment of teaching through drama is done since 2009, over years but the study and analysis is done in year 2020 after long repeated practice.

Tools of the Study

TTCT is widely used test on understanding and nurturing qualities that help students express their creativity. TTCT is the widely used test of measuring creativity (Torrance, 1974). The test includes figural and verbal subtests. The TTCT-Verbal has two parallel forms, A and B, including asking questions and making guesses (subtests 1, 2 and 3), where respondents write out questions and make guesses about possible consequences of situations based on a drawing of a scene; improvement of a product (subtest 4), where the participants list ways to change a toy elephant so that they will have more fun playing with it; unusual uses (subtest 5), where the examinees list interesting and unusual uses of a cardboard box; and supposing (subtest 6), where the examinees are asked to list all the consequences should an improbable situation come true (Torrance, 1962; 1974). The TTCT-Figural consists of two parallel forms A and B, with three subtests, namely, compose a drawing, finish a drawing, and compose a different drawing parting from parallel lines (Torrance, 1974). The TTCT figural form A was used in this study. The test involved simple sub tests of divergent thinking and the present study uses the verbal tasks using verbal stimuli subtest. The students' answers were scored in three scales: fluency (the total number of interpretable, meaningful, and relevant ideas generated in response to the stimulus), flexibility (the number of different categories of relevant responses), and originality (the statistical rarity of the responses). Scenes from Shakespeare's drama prescribed in syllabus for Final semester were enacted. Each dramatic scene comprised objectives; context, characters, dialogue, peer work and group work.

Procedures of the Study

Review of related literature and previous studies. Performance of dramatic scenes from Shakespeare's play prescribed by the university for the final year English students. The students in control and experimental group were given TTCT form (A). The experimental group engaged in performance of play, while the control group did not take any such activity. After four weeks the of pre test, the two groups took same test as post. Performance of Shakespearean play involves in activity of understanding, expressing, delivering, acting, it deals with set of rhetoric process and expression of creative abilities employing costumes, dialogue delivery, poetry, costumes, background music, setting, costume designing. In this study through TTCT form (A) it was tested to what extent teaching through drama nurtured creative thinking. Testing the ability of the student's individual competence to be fluent, flexible and original. The fluent acts were identified through the outcome of various creative ideas about particular theme at particular time. The flexible acts were sorted by ability of individuals to generate ideas in pertinent situation, and whenever there are inventive ideas that are varied. The original acts were identified through their distinctive experimentation of solving their problem of learning foreign language, English in nontraditional manner, that through drama.

Data Analysis and Interpretation

The first question: How the teaching- learning of English using drama in tribal classroom is effective and how it fosters creative thinking? Data was treated by the statistical program "SPSS" using t -test. Data treatment reveals that there is a statistically significant difference in mean scores of the pre and post test of the experimental group, the mean and Standard Deviation of pre and post grades of the experimental group is as follows:

Table 1:

Experimental Group	N	Mean	Std. Deviation
Pre	21	19.52	4.71
Post	21	37.57	4.67

Table (1) indicated that the mean of post grades of experimental group is more than the mean of pre grades of experimental group. Paired samples T- test was used as in the following table:

Table 2:

Experimental Group	T	Df	Mean Difference	Sig. p-value
Per-post	12.4791	20	18.05	0.0

Table (2) indicated that there exist statistically significant differences in students' pre and post grades of experimental group because of the p- value is less than 0.05.

The second question: To answer it. Is there any statistically significant difference between the achievement of control group (those who study using the traditional method of teaching) and the achievement of experimental group (those who study using drama) according to the pre-creative thinking test?," Data of the pre-test was treated by the statistical program "SPSS" using t-test. Data treatment reveals that there is no statistically significant difference in the mean grades of control and experimental groups as the mean scores of experimental group was 19.48 and the mean scores of the experimental group was 19.52 . Std. Deviation of pre-test of control and experimental groups is as follows:

Table 3:

Groups	N	Mean	Std. Deviation
Control	21	19.48	4.63
Experimental	21	19.52	4.71

Table (3) indicated that the mean of degrees of control group is nearly equal to the mean of degrees of experimental group. To test the statistically significant difference between the fostering of creative thinking of control group (those who study using the traditional method of teaching) and the creative thinking of experimental group (those who study using drama) according to the model test TTCT form (A), independent samples T test was used as in the following table:

Table 4:

Pre test	T	Df	Sig. p- Value
Experimental x control	0.0331	20	0.97

Table (4) indicated that there are no statistically significant differences between the creative thinking of control group (those who study using the traditional method of teaching) and the creative thinking of experimental group (those who study using drama) according to the model test, because the p-value is more than 0.05.

To answer the third question Is there any statistically significant difference between the achievement of control group (those who study using the traditional method of teaching) and the achievement of experimental group (those who study using drama) according to the post test ?, data was treated by using the statistical program "SPSS". Data treatment reveals the mean and Std. Deviation of post- test of control and experimental groups as follows:

Table 5:

Group	N	Mean	Std. Deviation
Control	21	25.81	3.72
Experimental	21	37.57	4.67

Table (5) indicated that the mean of degrees of experimental group is more than the mean of degrees of control group.

To test the statistically significant difference between the teaching trough drama and lessening student's difficulties and fostering creative thinking of control group (those who study using the traditional method of teaching) and of experimental group (those who study using drama) according post-creative thinking test, independent samples T test was used as in the following table-6 :

Table 6:

Experimental Group	T	Df	Mean Difference	Sig. p-value
Per-post	9.0291	20	11.76	0.0

Table (6) indicated that there are statistically significant differences between the creative thinking of control group (those who study using the traditional method of teaching) and the creative thinking of experimental group (those who study using drama) according to the post-creative test, because the p-value is less than 0.05.

As shown by the results, there is a statistically significant difference in mean scores of the pre and post test of the experimental group. The mean of post grades of experimental group is more than the mean of pre grades of experimental group. It was indicated that there exist statistically significant differences in students' pre and post grades of experimental group because of the p- value is less than 0.05. That means teaching English subject using drama is effective and it fosters creativity of tribal students'. This is consistent with the results of Ortiz-Seda (1984), Dupre (2006) and Taskin (2013) studies. On the other hand, data analysis revealed that there is no statistically significant difference in the mean grades of control and experimental groups according to the pre creative thinking test as the mean scores of experimental group was 54.40 and the mean scores of the mean scores of the experimental group was 52.36 (i.e.) there are no statistically significant differences between the creative thinking of control group (those who study using the traditional method of teaching) and the creative thinking of experimental group (those who study using drama) according to the pre-creative thinking test because the p-value is more than 0.05.

That means the two groups have the same level of creativity and ready to start the experiment. No previous differences will affect the experiment. Results also revealed that there are statistically significant differences between the creative thinking of control group (those who study using the traditional method of teaching) and the creative thinking of experimental group (those who study using drama) according to the post-creative thinking test because the p-value is less than 0.05 and this show the effectiveness of teaching English using drama on the students creative thinking. Thus, results of the present study are consistent with the study of Barreto (2014), Gomez (2010), Baraldi (2009) and Uddin (2009).

Student Feedback:

Feedbacks taken from the Experimental Group students are reflected in Table (7)

No.	Question	Agree	Partial Agree	Neutral	Partial Disagree	Disagree		Rank	Chi Square
1.	Was the drama practice in your creative zone and was the teaching through drama effective?	14	4	2	1	0	4.48	2	30.96
2.	Were you bored by the drama activity or was it fostering your creativity?	0	1	3	3	13	4.19	4	30.49
3.	Did you feel something innovative in learning through drama?	13	4	2	1	1	4.29	3	24.77
4.	The drama practice added to your enthusiasm and was it effective in decreasing difficulties in learning English?	11	5	2	1	1	4.00	8	16.20
5.	Did you put your heart and soul in drama activity was the exercise a self-learning creative process for you?	10	5	4	2	1	4.14	6	19.54
6.	Do the drama through education makes the learning process more focused?	10	4	4	1	1	3.86	10	13.35
7.	Is this type of activity motivating in increasing your self confidence and effective communication in English?	9	8	3	1	0	4.19	4	16.20
8.	Did the learning through drama arouse curiosity and inspire you to think differently?	8	8	3	2	1	4.10	7	14.30
9.	Can you do this activity without the aid of the teacher ?	8	7	3	2	1	3.90	9	16.20
10.	Would you like to continue such experiment in the future and would you inspire others?	15	4	2	0	0	4.62	1	37.63
11.	Was there lack of result oriented approach in the learning through drama activity?	1	2	2	7	8	3.76	11	15.73

The student feedback from experimental group was collected and analyzed. In the student feedback (experimental group) in the video recording and oral discussion, they said that they feel comfortable, excited, anxious, frightened or happy, showed that most of the students were anxious, frightened, or excited while speaking English in the first drama session, during rehearsal hours. However, when the last week arrived, no students felt this way. Some students also stated that their self-confidence had increased. In the first week, while half of students observed that their friends liked to speak English, after sometime, all students agreed that their friends enjoyed speaking English. Moreover, after the four-week-drama application, students compared their thoughts and feelings towards English speaking situations with the ones they had before the drama application. The responses demonstrated that there is a great difference after four weeks. Participant students stated that they used to have problems with pronunciation. Almost half of the students stated that they used to abstain from speaking English lessons while some students expressed that they used to be afraid of making mistakes while speaking English. Similarly, some of the students said that they used to get excited while speaking; however, some complained about that they used to have poor vocabulary. Yet, these negative situations turned into positive thoughts and feelings with the help of drama application. Many of the students stated that they are not afraid of making mistakes while speaking English. Most of the students expressed that their pronunciation has improved, their creativity fostered and nurtured.

Experiment of teaching Shakespeare through drama in tribal classroom makes the teacher in me believe that drama is a must in foreign language teaching. After experiment of teaching through drama, I conclude that

drama helped my students to discover themselves; it enhanced their understanding they started thinking variedly and creatively, they discovered new way of learning. They were able to see their strengths and weaknesses; face their fear or nervousness. It is clearly seen in their responses in Video recording. The students who were always abstaining from speaking English and acting, started to raise their hands when I asked for a volunteer. After the performance students weren't afraid of making mistakes while pronouncing a word. On the other hand, such an experiment also had a significant effect on lowering speaking anxiety levels. During rehearsal and practice hours, both the students and I enjoyed the language training experience.

We acted, danced and sang out loud. Everybody laughed at each other which appeared to help students overcome the fear of being laughed at. After the drama activity, it was clear that their friendship became stronger. There was no distant grouping among the students any more. All of them wanted to share a scene with a character who they really don't know very well. This also helped students to overcome their fear of making a mistake in front of their friends. Drama had many positive effects on students. Among the most important ones, we can count the improving communication, self-confidence; increasing motivation; decreasing the level of their fear of being laughed at; and being called on in English class.

Conclusion

The students appreciated the use of drama in the classroom. Learned the content of the literature and language unit; for example the dialogues included in performance helped them to solve the reference to context questions. They would use drama in other subject areas. Students expressed an interest and desire to use drama and theatre techniques to learn English. The activity fostered their creative thinking. They said if some of them go to teaching profession in future then they would also like to teach through drama in their classroom it was such exhilarating experience for them.

Teaching through drama engaged students in conversation. It encouraged cooperative learning. They formed groups which promoted creative thinking in activities like writing script, role play, performances, preparation of charts, keeping accounts of expenditure on performance, preparing report of performances etc. The participants' experiences suggested that combining each field's similar teaching tools can benefit both language and content learning.

Based on the findings of the study, the following recommendations and suggestions are made: Teachers should be trained on how to teach using drama in their classes to make teaching-learning of foreign language effective, fostering the creativity of the students. The Torrance test can be used in other research to investigate the influence of teaching subjects other than English. Further research is needed to investigate the influence of teaching English language using drama on teachers' performance in tribal classroom.

Further research is needed to investigate the influence of teaching subjects other than English using drama on the development of tribal students' achievement. Further research is needed to investigate the influence of teaching subjects other than English using drama on the development of tribal students' creative thinking.

Photographs of the performance





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The Mediating Effect of Affective Commitment on the Relationship between Human Resource Management Practices and Turnover Intentions of University Employees

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Abstract

In this study, we explored the mediating effect of affective commitment on the relationship between human resource management practices (HRMPs) and the turnover intentions of university employees in Uganda using the theoretical lens of social exchange theory. The study was instigated by reportedly persistent increase in the cases of employee attrition in higher education institutions in Uganda in spite of Government's attempts to improve the working conditions of the university employees. Using the cross-sectional survey research design, data were collected with the use of an adapted self-administered questionnaire from a sample of 722 academic and non-academic employees of three public and three private universities in Uganda. The results of structural equation modelling (SEM) indicated that HRMPs were significant positive predictors of affective commitment (rewards: $\beta = .225$; $p < .001$), promotions: $\beta = .228$; $p < .001$; and job security: $\beta = .141$; $p < .001$). However, HRM practices were negative predictors of turnover intentions (rewards: $\beta = -.228$; $p < .001$; promotion, $\beta = -.215$; $p < .001$; job security, $\beta = -.138$; $p < .001$). Furthermore, affective commitment was indeed a significant mediator of the relationship between HRMPs and turnover intentions of university employees. These findings made us draw the conclusion that when university employees perceive the institution's HRMPs to be favourable, they will not only become committed to the organisation but also desire to remain working longer for it. Therefore, we recommend that the university managers in Uganda and similar countries should formulate and practise human resource management styles that do not only spur employee commitment but also enhance staff retention.

Keywords: Affective Commitment, Human Resource Management Practices, Turnover Intentions, Universities

1. Introduction

Ideally, every work organization needs a stable workforce. This is aimed at, among others, cutting down on its cost of hiring replacements as well as maintaining stability in its production of good or services (Mobley, Griffeth, Hand, & Meglino, 1979). Unfortunately, many organisations usually experience difficulties in preventing neither the voluntary nor the involuntary turnover of their employees. This scenario is not any different with university organizations in Uganda. According to the Auditor General's reports of 2014 and 2016, public universities in

Uganda have been losing in the past two decades a large number of their senior employees to other sectors of the economy or to other countries altogether. This has not only left the delivery of quality university education in the hands of junior staff, but it has as well curtailed the contribution of the universities to the achievement of the country's national development goals. To make matters worse, private higher education institutions in the country - including universities - have also not been spared from this rising employee turnover challenge (Nabawanuka, 2011). Yet, no one seems to be certain about the factors that are responsible for the persistent increase in the turnover as well as turnover intentions of university employees in the country; thus, the need for this sort of investigation.

Historically, several researchers have attempted to look at the effect of human resource management practices (HRMPs) on the turnover intentions of university employees (see Eisenberger, Huntington, Hutchison and Sowa, 1986; Panaccio, Verdenbergh & Ayed, 2014). Some of these studies suggest organisational commitment as a potential mediator in the relationship between HRMPs and the turnover intentions of university employees (Mostafa, Gould-Williams & Bottomley, 2015; Chang, Nguyen, Cheng, Kuo & Lee, 2016; Dhar, Rahouma, Masruki & Absar, 2017; Kooij & Boon, 2018). Unfortunately, many of these studies were conducted in the context of developed nations. The current study was undertaken among university employees in Uganda – a developing country. This was premised on the belief that the difference in contextual factors could yield different findings.

Theoretically, this study was anchored on Blau's (1964) social exchange theory (SET) which states that when two parties are involved in a social relationship, the beneficial acts of one party towards another must be reciprocated by the other party. In the event that the second party does not reciprocate the beneficial acts of the first party, then the social relationship between the two parties is bound to weaken (Gouldner, 1960). In the case of this study, we looked at the employee and the organization (or the university) as the two parties that are involved in some sort of mutual relationship in order for the institution to function and serve its purpose. In this case, we hypothesized that if the university (or organization) performs some beneficial acts towards her employee, this will create an obligation on the part of the employee to favourably reciprocate with an action equally beneficial to the organization. However, if the employee negatively perceives the action(s) of his/her employer (the university), this is likely to draw an equally negative reaction(s) from the employee; thus, jeopardizing the social exchanges that will take place between the organization and the employee. In this case, the employee may decide to quit the organization altogether or increase his/her commitment to the organization depending on his/her perception of the treatment received from the employer (Guchait & Cho, 2010). Therefore, staff turnover intentions will always tend to be high in a work scenario where the employees perceive the actions of their employers to be less beneficial to them and low where the employees perceive their employers to perform things that are beneficial to them (Allen, Shore & Griffeth, 2003; Kehoe & Wright, 2013). It was this kind of assumption that prompted us to anchor this study on SET.

Conceptually, there were five key concepts in this study, namely: turnover, turnover intention, human resource management practices (HRMPs), organizational commitment and affective commitment. According to Chang, Wang and Huang (2013), the term turnover refers to an act of employee leaving an organisation. This is not any different from the way Lambert and Hogan (2009) who defined turnover as the actual behaviour of an employee leaving employment in an organization. In this study, however, our focus was not in studying employee turnover itself but the turnover intentions of university employees.

The second key concept in this study was turnover intention. In human resource management, the term turnover intention is variously referred to as 'intention to quit' or 'intention to leave' or just employee 'turnover intention'. According to Chang et al. (2013), turnover intention refers to an employee's wish to leave an organisation; that is, an employee's wish or desire to leave the organisation even though the intention may not turn into actual turnover. According to Lambert and Hogan (2009), turnover intention refers to the last part of a sequence of cognitions in the withdrawal process that culminates into actual turnover. This means that turnover intention is the most proximal precursor of actual turnover; and therefore, a good measure of actual turnover. In this study, turnover intention was looked at in terms of the employee's desire to leave the current job and his/her searching for a new job.

The third major concept in this study was human resource management practices (HRMPs). According to Schuler and Jackson (1987), HRMPs refer to a system that attracts, develops, motivates, and retains employees to ensure the effective implementation and the survival of the organization and its members. Meanwhile, according to Wright and Kehoe (2013), HRMPs refer to the ways through which the management of an organization enhances employee ability, motivation and opportunities by increasing employee job satisfaction, organizational commitment; and thus, reduced labour turnover intention. In this study, HRMPs were looked at in terms of the way by which the university employees were rewarded, promoted and made to feel secure in their jobs.

Finally, the key concept in this study was organizational commitment. According to Mowday, Steers and Porter (1979), organizational commitment is a uni-dimensional construct characterised by one's: (a) strong belief in and acceptance of the organization's goals and values; (b) willingness to exert considerable effort on behalf of the organization; and (c) a strong desire to remain in the organization. Meanwhile, Allen and Meyer (1990) defined organizational commitment as an employee's emotional attachment, connection and sense of belonging to the organization for which he/she works. The two authors characterized organizational commitment in terms of affective, normative, and continuance commitments. Whereas affective commitment refers to the voluntary desire by an employee to remain in his/her current job, normative commitment meanwhile refers to an employee's sense of obligation to remain in the current job while continuance commitment refers to the situation where the employee is forced to remain with an organization due to the perceived costs associated with leaving to work with that organization (Rahman, Ferdousy & Karan, 2015). In this study, we focused on exploring the mediating role of affective commitment on the relationship between HRMPs and the turnover intentions of university employees in Uganda. Specifically, affective commitment was looked at in terms of the way by which each employee expressed his/her senses of belonging to his/her work organization. As a result, it was characterized by one's belief and trust in organizational values and goals, and his/her willingness to invest extra effort on behalf of the organization.

Generally until 1990, Uganda had only two public universities (Makerere and Mbarara University of Science and Technology) and one private university (Islamic University in Uganda). At that time, university employee turnover as well as turnover intentions were reportedly low. However, after the liberalization of the economy as well as the higher education sector in the early 1990s, the number of both public and private universities in the country exponentially grew rapidly to the current 53 universities. According to the national council for higher education (NCHE, 2019) by 2018 there were 53 universities in Uganda: nine public universities and 44 private universities. In addition there were 9 private and one public other degree-awarding institutions. Unfortunately, with this development, the problem of employee turnover and turnover intentions equally grew. This has caused many universities in Uganda to suffer from the shortage of qualified academic and administrative staff. According to Ssali, Onen and Gyaviira (2019) [while citing Kajjubi,1990], a total of 18 professors and 34 PhD holders left Makerere University within a period of just three years between 1986 and 1989. Unfortunately, this kind of trend did not stop. According to the Auditor General's reports (2014; 2016; 2019), several public universities in Uganda have continued to lose some of their best staff through staff turnover. In fact, some of these universities are reportedly currently operating at less than 50% of their staff establishment (Nabawanuka, 2011; Office of the Auditor General; 2019). Yet, the enrolment of students in these institutions has been on the increase over the past two decades (Uganda Bureau of Statistics [UBOS], 2018). This means that if the current scenario of rising rates of staff turnover and turnover intentions continues, the universities will not have the capacity to sufficiently contribute to the realization of Uganda's Agenda 2040 as well as the goals of the National Development Plan [NDP 3] 2020-21/2025-26. Yet, if universities employed effective HRMPs, their staff will not only become committed to their jobs but also wish to stay and work longer for them, This was why we decided to explore the effect of affective organizational commitment on the relationship between HRMPs and the turnover intentions of university employees in Uganda.

1.1. Study Objectives.

The overall objective of this study was to explore the mediated effect of affective commitment on the relationship between human resource management practices (HRMPs) [rewards, promotion, and job security] and the turnover intentions of university employees in Uganda. Specifically, the study was intended to achieve the following objectives:

- (a) Explore the relationship between HRMPs and affective commitment;

- (b) Determine the relationship between HRMPs and employee turnover intentions;
- (c) Establish the relationship between affective commitment and employee turnover intentions; and
- (d) Explore the mediating effect of affective commitment on the relationship between HRMPs and employee turnover intentions.

2. Literature Review

2.2. Theoretical Framework.

As we stated in the introductory part of this paper, this study was underpinned by the theory of social exchange theory (SET). According to Cropanzano and Mitchell (2005), “SET stipulates that certain workplace antecedents lead to interpersonal connections, referred to as social exchange relationships (Cropanzano, Byrne, Bobocel, & Rupp, 2001). Such relationships emerge when employers ‘take care of employees’, which thereby engenders beneficial consequences. According to Blau (1964), when two parties are in a social exchange relationship, the beneficial acts of one party towards another party are reciprocated the other party. Thus, an organisation which performs beneficial acts towards an employee creates an obligation that must be reciprocated by the employee. In the case of this study, we took the employer (the university) to be the first party and its employees as the other party. We thus hypothesized that if the university employees favourably perceived the HRMPs of the university where they worked, then their turnover intentions would be low. However, if the employees unfavourably perceive the HRMPs, then their staff turnover intentions would be high. Additionally, we also opted to anchor this study on SET because other earlier scholars such as Smart (1990); Ryan, Healy and Sullivan (2012), and Kehoe and Wright (2013) had successfully employed the same theory to investigate the linkages between HRMPs and the turnover intentions of employees - albeit in different contexts.

2.2. Conceptual Framework.

Based on the social exchange theory and the conceptualization of the key study variables as stated earlier in the paper, the following conceptual framework as illustrated in Figure 1 was derived. Figure 1 shows that in this study, the independent variable (HRM practices) was conceptualized in terms of rewards, promotion and job security offered to employees. The effect of these variables on turnover intentions (the dependent variable) was believed to be mediated by affective commitment (the mediator variable).

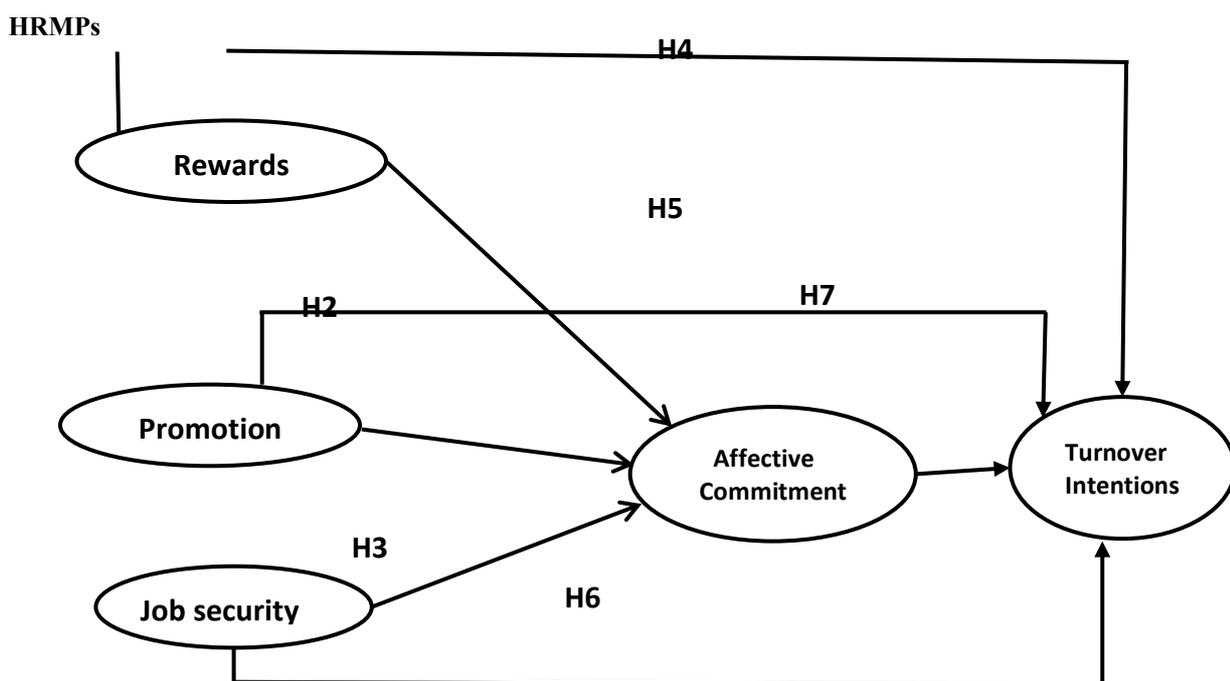


Figure 1. Conceptual model relating HRM practices, affective commitment, and turnover intentions
Source: Adapted from Kehoe & Wright (2013)

The assumed relationships among the variables represented in Figure 1 resulted in the generation of eight different hypotheses shown as arrows **H₁** to **H₈**. The results of the test of these hypotheses are presented ahead in sub-section 4.3 of this paper.

2.3. Related Literature

Over the years, scholars have examined the linkages between human resource management practices (HRMPs), organizational commitment and employee turnover intentions. Some of these studies specifically looked at the relationship between HRMPs and organizational commitment (Mostafa, Gould-Williams & Bottomley, 2015; Chang et al., 2016; Dhar et al., 2017; Kooij & Boon, 2018) while others focused only on studying the relationship between HRMPs and employee turnover intentions (Comm & Mathaisel, 2003; Xu, 2008). Some of the earlier studies, however, investigated only the relationship between organizational commitment and turnover intentions (see Faloye, 2014; Agarwal & Sajid, 2017) while others examined the mediating effect of affective commitment on the relationship between HRMPs and turnover intentions (e.g. Guchait and Cho, 2010; Chami-Malaeb & Garavan, 2013; Kehoe & Wright, 2013). All these studies produced different results regarding these linkages even if some of the study findings were related.

HRM Practices and Affective Commitment

Previous studies have reported that HRMPs are significant positive predictors of affective commitment (e.g. Meyer & Smith, 2000; Guchait & Cho, 2010; Daly & Dee, 2006; Kehoe & Wright, 2013). For example, in a study involving Canadian employees, Meyer and Smith (2000) reported that HRMPs were indirect but positive predictors of affective and normative commitments of employees. These results were not quite different from the work of Gould-Williams (2003) in the UK which also reported that the HRMPs had significant positive effects on organizational commitment of employees. In another study in New Zealand, Edgar and Geare (2005) discovered that HRMPs had significant positive relationships with organizational commitment among employees of different organizations. Similar results were also reported by Chang, et al. (2016) when they found that HRMPs had had significant positive influence on the organizational commitment of teachers in Taiwan.

However, there were also studies on the relationship between HRMPs and employee commitment in which contradictory findings were reported. For example, in a study of the relationship between HRMPs and organizational commitment in universities in Uganda, Mugizi, Bakkabulindi and Bisaso (2015) reported that rewards were not among the significant antecedents of employee commitment. This showed that not every HRMP has significant and positive effect on the commitment of employees; thus, calling for further investigations in this field. In addition, most of the studies reviewed above were conducted in the context of Europe, USA and Asia (Daly & Dee, 2006; Kehoe & Wright, 2013; Guchait & Cho, 2010). Yet the contingency perspective emphasises that the context in which HRMPs are applied can affect their effect on employee and organisational outcomes (Guest, 1997). Basing on the preceding paragraphs, this study proposed and tested the following hypotheses:

H₁: Rewards are positively and significantly related with affective commitment.

H₂: Promotion opportunities are positively and significantly related with affective commitment.

H₃: Job security is positively and significantly related with affective commitment.

HRM Practices and Turnover Intentions

In earlier studies that examined the relationships between HRMPs and employee turnover intentions, different findings have been reported. For example, Eisenberger et al. (1986) revealed that when employees are favourably rewarded and recognized for the good work they do, then they reciprocate by developing an emotional attachment to the organization; thereby, reducing employee turnover intentions. In this study, the researchers looked at rewards as a demonstration by the employer that he/she recognizes and values the employee's contributions to the organization and cares about their well-being. In yet another study by Panaccio et al. (2014) on the relationship between rewards and employee turnover intentions, it was reported that effective reward strategies were positively related with employee job satisfaction but negatively related with employee turnover intentions. This assertion is true even among employees in the higher education sector (Comm & Mathaisel, 2003).

Previous studies have also indicated that promotion opportunities are negatively associated with likelihood of quitting (Xu, 2008; Kehoe & Wright, 2013; Busari, Mughal, Khan, Rasool, & Kiyani, 2017). These authors report

that employees demonstrate organisational commitment when they are given opportunity for professional growth. According to Mosadeghrad, Ferlie and Rosenberg (2008), perception that an organisation uses underhand methods in promotions reduces organisational commitment and may lead to turnover. Cho and Poister's (2013) suggest that career development is associated with trust in the organisation and employees who have trust in the organisation are willing to maintain their membership in the organisation. In the context of higher education, empirical evidence has supported the view that opportunities for promotion are negatively associated with turnover intention (Daly and Dee, 2006; Xu, 2008; Tettey, 2009; Busari, et al, 2016). Similarly, Aydogdu and Asikgil (2011) established that if lecturers see no possibility of promotion, they will be dissatisfied, which could lead to turnover. Although the above studies indicate that promotion opportunity is a predictor of organizational commitment, little empirical research has been conducted on promotion opportunities and how they relate to university employees' turnover intentions in the Ugandan context.

Job insecurity can be conceptualized as the overall concern about continuity of employment in one's organisation. Previous research suggests that there is a negative relationship between job security and turnover intentions (e.g. Kipkebut, 2010; Wong & Wong, 2017; Daly and Dee, 2006). For example, Wong and Wong (2017) reported that there was a significant negative relationship between job security and turnover intentions among Chinese manufacturing companies. Similar results were reported in universities settings (Kipkebut, 2010; Xu, 2008; Daly and Dee, 2006; Amposah, 2015). Joarder, Sharif and Ahmed (2011) reported that the assurance of an employee's job security was a negative predictor of turnover intentions among university employees in Bangladesh. From the foregoing literature review, the following hypotheses were proposed and tested in this study:

H₄: There is a negative and significant relationship between rewards and turnover intentions.

H₅: There is a negative and significant relationship between promotion opportunities and turnover intentions.

H₆: There is a negative and significant relationship between job security and turnover intentions.

Affective Commitment and Turnover Intentions

The significance of organisational commitment has been well acknowledged in turnover in studies (Kehoe and wright, 2013; Guchait and Cho, 2010; Haque, Fernando & Caputi, 2019). In some of those studies, organizational commitment has been found to be negatively related with employee turnover intentions (e.g. Kehoe & Wright, 2013; Faloye, 2014; Agarwal & Sajid, 2017). Similar results have been reported in the literature involving samples drawn from universities where the relationship between organizational commitment and turnover intentions was also reported to be negative (Daly & Dee, 2006; Kipkebut, 2010; Joarder, Sharif & Ahmed, 2011). Some of these studies were actually anchored on the social theory of exchange – just like the current study. However, most of the available literature that reported on the effect of organizational commitment on the turnover intentions of employees in higher education institutions were based in the UK (e.g. Sturges & Guest, 2001), USA (e.g. Daly and Dee, 2006) and Asia (e.g. Joarder et al., 2011) - leaving the African context under-researched. Thus, the current study proposed and tested the hypothesis:

H₇: There is a negative and significant relationship between affective commitment and turnover intentions.

Mediating Effect of Affective Commitment

Although many studies have examined the relationships between HRMPs, organizational commitment and employee turnover intentions, only a few have looked at commitment as a mediating variable in the relationship between HRMPs and employee turnover intentions (Guchait & Cho, 2010; Chami-Malaeb & Garavan, 2013; Kehoe & Wright, 2013). For example, in studies conducted by Chami-Malaeb and Garavan (2013) and Kehoe and Wright (2013) moreover in different study contexts, the researchers reported that the relationship between HRMPs and turnover intentions is often mediated by different variables including employee attitudes, job satisfaction and organizational commitment. According to these researchers, HRMPs rarely directly influence employee turnover intentions; instead, HRMPs usually indirectly affect turnover as well as turnover intentions via other mediating variables such as employee job satisfaction and organizational commitment. This particular finding was corroborated Panaccio, et al. (2014) who reported that affective commitment mediated the relationship between pay satisfaction and turnover among human resource [HR] professionals.

Even in university settings, researchers like Daly and Dee (2006) Joarder et al. (2011) and Ababneh (2020) discovered that variables such as organizational commitment indeed significantly mediated the relationship between HRMPs and the turnover intentions. However, Wood and de Menezes (2011) noted that very few studies have attempted to test the mechanism through which HRMPs and employee outcomes relate at the individual level. Also, Kehoe and Wright (2013) noted that existing empirical research provided limited insight into the effects of HRM practices on proximal employee attitudes, which has led to gaps in our understanding of the mechanisms linking HRM practices to more distal outcomes. Similarly, writers such as Gucahit and Cho (2010) suggested that more research is required in different organisations and in different countries to validate the mediating effect of organizational commitment in the relationship between HRM practices and turnover intentions. Thus, in this study, we proposed and tested the hypothesis:

H₈: Affective commitment significantly mediates the relationship between HRMPs (rewards, promotion opportunities and job security) and turnover intentions.

3. Methodology

This was basically a quantitative study in which the analytical survey research design was employed in order to explore the mediating effect of affective commitment on the relationship between HRMPs and the turnover intentions of university employees. Data were collected from a sample of 722 university employees drawn from three public and three private universities in Uganda using an adapted self-administered questionnaire. Part One of the questionnaire solicited information on the background characteristics of the study respondents such as gender, age, education level and current job position. Part Two of the questionnaire comprised of 13 items that measured three dimensions of HRMPs, namely: rewards (five items, $\alpha = .822$), promotion (four items, $\alpha = .826$), and job security (four items, $\alpha = .889$). Part Three of the questionnaire on the other hand contained four items that measured the respondents affective commitment adopted from Allen & Meyer (1990) with a reported reliability index of $\alpha = 0.919$. The last part of the questionnaire had four items for measuring turnover intentions from DeConinck & Stilwell (2004) with a reliability coefficient $\alpha = 0.954$. Overall, we considered these reliability indices to be high enough and suitable to be used in undertaking the current study.

Once the data were collected, we employed structural equation modelling (SEM) technique with AMOS Software V. 20 for data analysis. Following the guidelines of Anderson and Gerbing's (1988) two step approach, we constructed a measurement model and path analysis structural models. In this study, four indices, i.e. CFI, TLI, RMSEA and normed chi-square (χ^2/df) were used to assess model fit. CFI and TLI values of .90 and above indicate satisfactory fit (Hu & Bentler, 1999; Bentler, 2006); normed chi-square (χ^2/df) values of less than 5.0 indicate good fit (MacCallum, Browne and Sugawara, 1996) and RMSEA values of less than 0.08 was adopted as cut-off point for adequate fit (Wheaton, Muthen, Alwin and Summers, 1977).

However, since the study involved testing for mediation, we utilized Baron and Kenny's (1986) four-step model for testing the different hypotheses. These four-step process involved:

- (a) Constructing a structural model of direct relationships between the independent variable (HRMPs) and the dependent variable (turnover intentions);
- (b) Constructing a model of direct relationships between the independent variable (HRMPs) and the mediator variable (affective commitment);
- (c) Constructing a model of direct relationships between the mediator variable (affective commitment) and the dependent variable employee (turnover intentions); and,
- (d) Constructing a structural model of relationships between the independent variable (HRMPs) and the dependent variable (turnover intentions) in the presence of the mediator variable (affective commitment).

To establish whether mediation occurred, again Baron and Kenny's (1986) counsel for establishing mediation was used. According to Baron and Kenny (1986) to prove mediation:

- (a) the independent variable must be a significant predictor of the outcome variable in the first model;

- (b) independent variable must be significant predictor of the mediator variable in the second model;
- (c) mediator must be a significant predictor of the dependent variable in the third model; and
- (d) in the presence of the mediator (in the fourth model), the independent variable must either be an insignificant predictor of the dependent variable (full mediation) or it remains a significant predictor but its predictive power must be reduced significantly (partial mediation).

4. Results

In this section, we have presented the findings of the study. These findings are presented in accordance with the research objectives. However, before presenting the results on the first objective of the research, we first describe the profile of our study participants.

4.1 Background Information on Respondents

As we stated in the methodology section of this paper, a total of 722 respondents participated in this study. However, these respondents were of different background characteristics as shown in Table 1.

Table 1. Distribution of respondents by their background characteristics

Background Variable	Attribute	Frequency	Percentage
Respondent's institution	Public university	479	66.3
	Private university	243	33.7
	Total	722	100
Staff Category	Teaching Staff	398	55.1
	Administrative Staff	324	44.9
	Total	722	100.0
Gender	Male	449	62.2
	Female	273	37.8
	Total	722	100.0
Age Group	Below 30 years	81	11.2
	30 - 39 years	233	32.3
	40 - 49 years	247	34.2
	50 - 59 years	139	19.3
	60 and above years	22	3.0
	Total	722	100.0
Tenure in Current Institution	Below 1 year	34	4.7
	1 -4 years	187	25.9
	5 - 10 years	267	37.0
	11 - 15 years	114	15.8
	More than 15 years	120	16.6
	Total	722	100.0
Tenure in Current Position	Below 1 year	92	12.7
	1-4 Years	306	42.4
	5-10 Years	233	32.3
	Over 10 Years	91	12.6
	Total	722	100.0

First, the results in Table 1 show that the majority of the study respondents (66.3%) were drawn from public universities and the remaining 33.7 percent came from private universities. This happened because there was reportedly more staff employed in the three selected public universities than their private counter-parts. Second, the results indicate that more than a half (55.1%) of the study respondents were teaching staff and the remaining portion (44.9%) was made up of non-teaching staff. Fourth, the majority of the respondents were males (62.2%). This occurred because the majority of university employees in Uganda are reportedly men. Fifth, the majority of the respondents (53.5%) were within the age group of 40 to 60 years, which is considered the prime age for active

university service. Finally, the majority of the respondents cumulatively had worked for their current university more than five years (67.4%). Of these, a large proportion of them (87.3%) had reportedly held their current position for a period exceeding a year. This meant that the majority of the study participants were individuals who had stayed in the universities studied for a reasonable period of time and, therefore, were able to provide authentic information regarding the subject under investigation.

4.2. Inter-variable Correlations, Reliability and Validity

As a precursor to testing the different hypotheses as indicated in Figure 1, we first verified whether there were significant correlations among the different variables that we investigated. The results of the correlation tests are presented in Table 2.

Table 2. Correlational results and summary of descriptive statistics

Variable	REWARDS	PROMO	JOBSECU	AC	TOI
1 REWARDS	1.000				
2 PROMO	.417***	1.000			
3 JOBSECU	.190***	.375***	1.000		
4 AC	.360***	.414***	.290***	1.000	
5 TOI	-.342***	-.357***	-.262***	-.654***	1.000
Mean	3.350	3.880	4.257	4.240	4.089
Standard Deviation	1.283	1.339	1.541	1.689	1.831
Cronbach alpha α	.822	.826	.889	.919	.954
Composite Reliability	.805	.828	.891	.919	.955
Average Variance Extracted	.509	.548	.673	.741	.841

* ** $p < 0.001$ (two-tailed test); AC = Affective Commitment; PROMO = Promotion opportunities; JOBSECU = Job Security; TOI= Turnover intentions

First, the results in Table 2 showed that there were significant positive inter-correlations amongst the HRMPs, namely: rewards and promotion ($r = 0.417$, $p < .001$); rewards and job security ($r = 0.190$; $p < .001$), and promotion and job security ($r = 0.375$, $p < .001$). Second, each of the HRMPs studied had significant correlations with the mediating variable: rewards and affective commitment ($r = 0.360$); promotion and affective commitment ($r = 0.414$, $p < .001$), and job security and affective commitment ($r = 0.290$, $p < .001$). Third, HRMPs had significant negative correlations with the dependent variable, turnover intentions: rewards and turnover intentions ($r = -0.342$; $p < .001$); promotion and turnover intentions ($r = -0.257$, $p < .001$), and job security and turnover intentions ($r = -0.262$; $p < .001$). Fourth, the results also indicated that the mediating variable (affective commitment) is significantly and negatively related with employee turnover intentions (the dependent variable) with a correlation coefficient of $r = -0.654$ ($p < .001$). All these results implied that a change in one variable is accompanied by a similar positive or negative change in the other variable depending on the results obtained. Finally, the results in Table 2 also showed the mean levels of HRMPs (Mean=3.350), affective commitment (Mean=3.3880) and employee turnover intentions (4.257) which were all above midpoint of the seven-point Likert scale.

We tested for validity and reliability using Chronbach alpha, composite reliability (CR) and average variance extracted (AVE). As shown in Table 2 all Chronbach alpha and composite reliability coefficients were greater than 0.7 indicating that internal consistency reliability was not a problem (Chronbach, 1951; Fornell and Larcker, 1981). All AVE for the variables in the measurement model were above the threshold of 0.50 indicating that the

measures satisfied the requirements for convergent validity (Fornell and Larcker, 1981). Having achieved internal consistency reliability and convergent validity of the measurement model, we proceeded to test the study hypotheses as shown in the next section.

Table 2. Correlational results and summary of descriptive statistics

Variable	REWARDS	PROMO	JOBSECU	AC	TOI
6 REWARDS	1.000				
7 PROMO	.417***	1.000			
8 JOBSECU	.190***	.375***	1.000		
9 AC	.360***	.414***	.290***	1.000	
10 TOI	-.342***	-.357***	-.262***	-.654***	1.000
Mean	3.350	3.880	4.257	4.240	4.089
Standard Deviation	1.283	1.339	1.541	1.689	1.831
Cronbach alpha α	.822	.826	.889	.919	.954
Composite Reliability	.805	.828	.891	.919	.955
Average Variance Extracted	.509	.548	.673	.741	.841

*** $p < 0.001$ (two-tailed test); AC = Affective Commitment; PROMO = Promotion opportunities; JOBSECU = Job Security; TOI= Turnover intentions

4.3. Hypothesis Testing

To test the hypotheses we constructed a series of structural equation models in accordance with Baron and Kenny's (1986) procedure.

Results on Objective One (H_1 , H_2 and H_3)

The first objective of this study was to explore the relationship between HRMPs and the affective commitment of university employees in Uganda. HRMPs in this study were rewards, promotion opportunities and job security. We tested the effect of individual HRMPs and employee affective commitment by constructing a structural model with the HRMPs as predictors and the mediator (affective commitment) as the dependent variable, as shown in Figure 2. The model fit indices ($\chi^2 = 420.495$; $df = 113$, $p < .001$; $\chi^2/df = 3.721$.; $TLI = .944$; $CFI = .954$; $RMSEA = .061$) indicated a satisfactory fit.

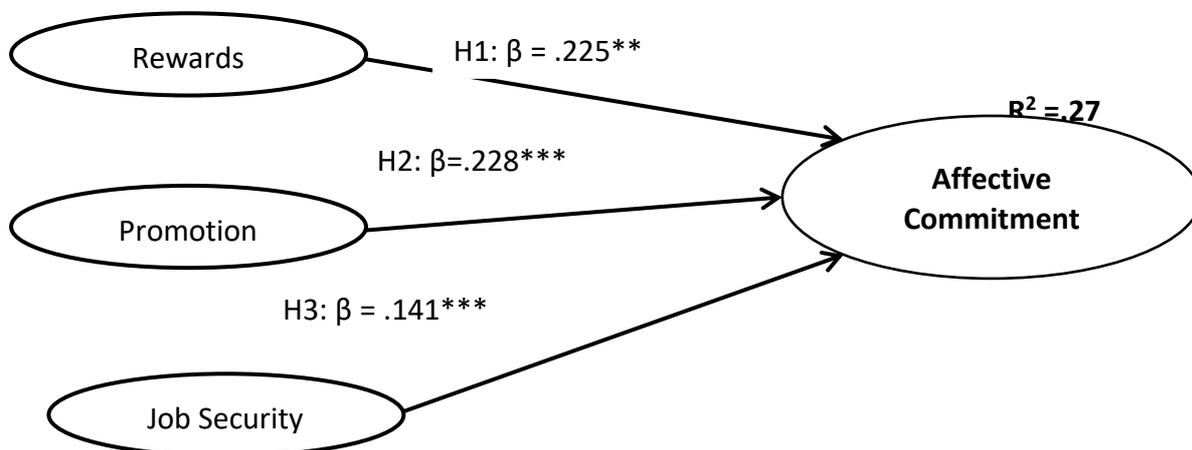


Figure 2. Standardised path coefficients for the direct relationships between HRMPs and affective commitment
Notes: *** $p < .001$

The results in Figure 2 indicate that all the three hypothesized relationships between HRMPs and affective organisational commitment were statistically significant and positive (rewards: $\beta=0.225$, $p < .001$; promotion: $\beta=0.228$, $p < .001$; and job security: $\beta=0.141$, $p < .001$). These results showed that HRMPs were significant joint predictors of affective commitment with an R-squared of (R^2) of 0.27. This implied that the three HRMPs explained 27 percent of the variance in affective commitment of university employees in Uganda. Therefore, the three research hypotheses, namely: H_1 , H_2 , and H_3 that are were supported. The summary of the results of the tests of hypotheses are presented in Table 3.

Table 3. Results of test of hypotheses between HRMPs and affective commitment

<i>Hypothesis</i>	<i>Path</i>	<i>Stand. coefficient</i>	<i>Critical Ratio</i>	<i>P-value</i>	<i>Result</i>
H_1	Rewards \rightarrow AC	.225	4.803.	< .001	Supported
H_2	Promotion \rightarrow AC	.288	5.576.	<.001	Supported
H_3	Job Security \rightarrow AC	.141	3.421.	< .001	Supported

AC = Affective commitment

Results on Objective Two (H_4 , H_5 , and H_6)

The second objective of this study was to determine the relationship between HRMPs and the turnover intentions of university employees in Uganda. Again, in order to assess the direct relationship between the independent variables (HRMPs) and the dependent variable (turnover intentions), we constructed yet another structural model basing on Baron and Kenny's (1986) procedure for studying mediations. The results indicating the relationships between the HRMPs and employee turnover intentions are presented in Figure 3. The model fit indices showed that ($\chi^2 = 366.850$; $df = 113$, $p < .001$; $\chi^2/df = 3.246$; TLI = .960; CFI = .967; RMSEA = .056) the model fit the data well.

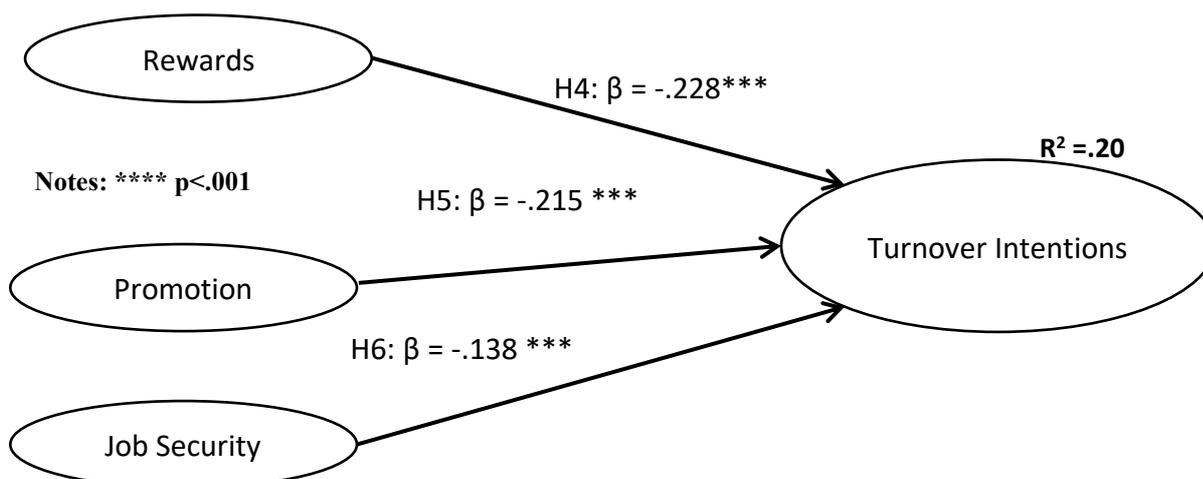


Figure 3. Standardised path coefficients for the direct relationship between HRMPs and turnover intentions

The results in Figure 3 indicate that all the three hypothesized relationships between HRMPs and employee turnover intentions were statistically significant negative (rewards: $\beta = -0.228$, $p < .001$; promotion: $\beta = -0.215$, $p < .001$; and job security: $\beta = -0.138$, $p < .001$). These results showed that HRMPs were significant joint predictors of turnover intentions with an R-squared of (R^2) of 0.20. This implied that HRMPs explained 20 percent of the variance in turnover intentions of university employees in Uganda. Therefore, the three research hypotheses, namely H_4 , H_5 , and H_6 were supported. The summary of the results of the tests of these hypotheses are presented in Table 4.

Table 4. Results of test of hypotheses between HRMPs and employee turnover intentions

<i>Hypothesis</i>	<i>Path</i>	<i>Stand coefficient</i>	<i>Critical Ratio</i>	<i>P-value</i>	<i>Result</i>
H4	Rewards → TOI	-.228	-4.855	.001	Supported
H5	Promotion → TOI	-.215	-4.228	<.001	Supported
H6	Job Security → TOI	-.138	-3.335	<.001	Supported

TOI= Turnover intentions

Results on Objective Three (H_7)

The third objective of this study was to establish the relationship between affective commitment and turnover intentions of university employees in Uganda. In order to establish the relationship between the mediating variable (affective commitment) and the dependent variable (turnover intentions), we constructed yet another structural model. The model fit indices ($\chi^2 = 57.833$; $df = 19$, $p < .001$; $\chi^2/df = 3.046$; $TLI = .990$; $CFI = .993$; $RMSEA = .053$) showed that the model fit the data well. The results indicating the relationships between affective commitment and employee turnover intentions are presented in Figure 4 and Table 5.

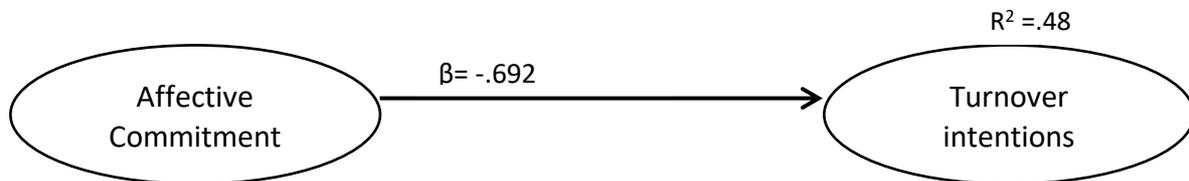


Figure 4. Standardised path coefficient for the direct relationship between affective commitment and turnover intentions

Notes: **** $p < .001$

The results in Figure 4 indicate that the hypothesized relationship between affective commitment and turnover intentions was statistically significant but negative (affective commitment → turnover intentions: $\beta = -0.692$, $p < .001$). These results also showed affective commitment was a significant predictor of employee turnover intentions with an R-squared (R^2) of 0.48. This implied that affective commitment explained 48 per cent of the variance in turnover intentions of university employees in Uganda. Therefore, research hypothesis (H_7) was supported. The summary of the result of hypothesis testing for H_7 are presented in Table 5.

Table 5: Results of Test of Hypotheses: Affective Commitment and Employee Turnover Intentions

<i>Hypothesis</i>	<i>Path</i>	<i>Stand coefficient</i>	<i>Critical Ratio</i>	<i>P-value</i>	<i>Result</i>
H_7	AC → TOI	-.692	-18.514	.001	Supported

AC = Affective Commitment; TOI= Turnover intentions

The results in Table 5 indicate that the hypothesis derived from Objective Three which anticipated a negative relationship between affective commitment and turnover intentions was supported. This result implied that when employees have higher affective commitment in an organization, then their turnover intentions are likely to decrease and the reverse is true.

Results on Objective Four (H_8)

The fourth and final objective of this study was to explore the mediating effect of affective commitment on the relationship between HRMPs and turnover intentions of university employees. To achieve this objective, we

constructed yet another structural equation model (Figure 5). We employed the mediation analysis technique termed bootstrapping method (Preacher and Hayes, 2008) at a 95 percent confidence interval with bias correction method and 2000 bootstrapped samples. The results of the structural model showed that there was a satisfactory fit ($\chi^2 = 537.807$; $df = 179$, $p < .01$; $\chi^2/df = 3.005$; $TLI = .959$; $CFI = .965$; $RMSEA = .053$). The results are summarised in Figure 5 and Table 6.

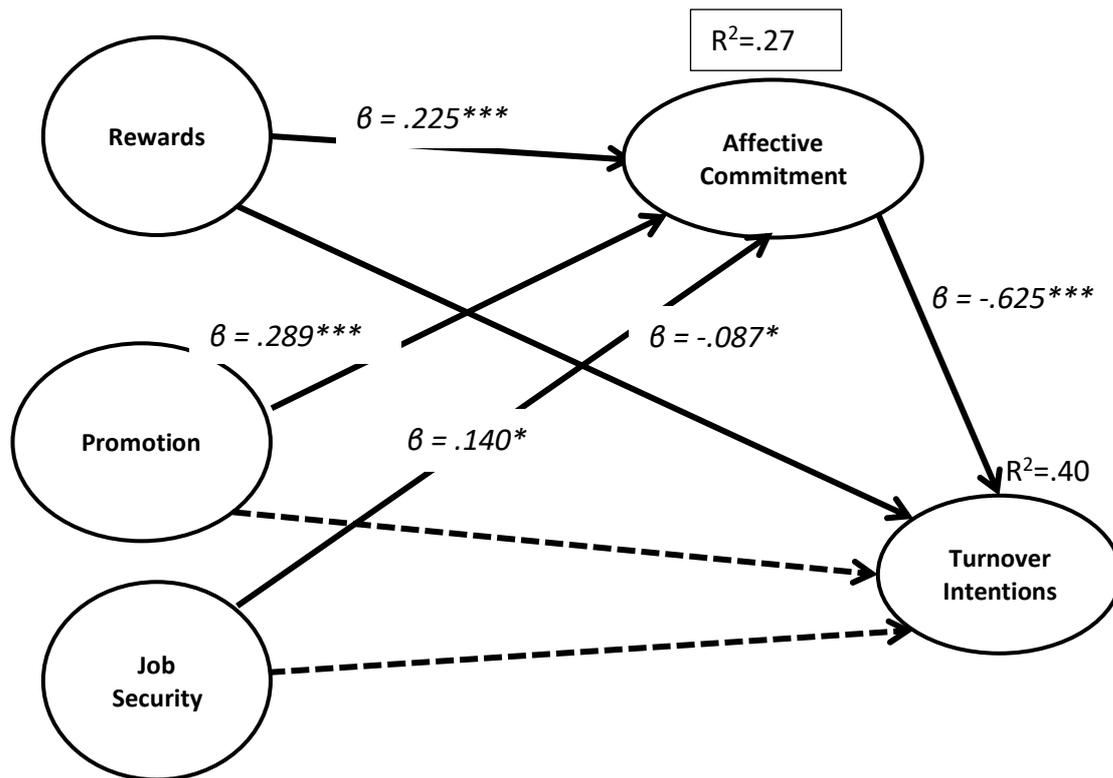


Figure 5. Hypothesis testing of the mediation model

Notes: *** $p < .001$; * $p < .05$; Dotted lines depict insignificant relationships

Table 6. Summary of results on the direct and indirect relationships among the study variables

Equation	Direct Effect β	P-value	Indirect Effect β	P-value	Result
Direct Relationship between independent variable and mediator					
REWARDS \rightarrow AC	.225	<.001			Significant direct effect supported
PROMO \rightarrow AC	.289	<.001			Significant direct effect supported
JOBSECU \rightarrow AC	.140	<.05			Significant direct effect supported
Direct Relationship between mediator and dependent variable					
AC \rightarrow TOI	-.625	<.001			Significant direct effect supported

Mediation: Indirect relationship between independent and dependent variables through mediator			
REWARDS→AC→T OI	-.141.	<0.001	Mediation supported
PROMO→AC→TOI	-.181.	<0.001	Mediation supported
PROMO→AC →TOI	-.088.	<0.001	Mediation supported
Direct relationship between independent and dependent variables after controlling for mediator			
REWARDS→ TOI	-.087	<.05	Supported: implying partial mediation
PROMO → TOI	-.034.	.451	Not Supported: implying full mediation
JOBSECU→ TOI	-.049.	.136	Not Supported: implying full mediation

AC = Affective Commitment; PROMO = Promotion opportunities; JOBSECU = Job Security; TOI= Turnover intentions

The results in Figure 5 show that consistent with the results in Figure 2, the path coefficients linking HRMPs and affective commitment were statistically significant. Besides, the results also indicate that there was a significant negative relationship between affective commitment and turnover intentions ($\beta = -.625, p < .001$). Besides, as shown in Figure 5 and Table 6, the path coefficient for the direct relationships between HRMPs and turnover intentions after controlling for affective commitment was statistically significant for Rewards ($\beta = -.087, p < .05$). However, the standardised regression weights for the direct paths linking promotion to turnover intentions ($\beta = -.034; p > .05$) and job security to turnover intentions ($\beta = -.049; p > .05$) after controlling for affective commitment were *not* statistically significant (dotted lines). These results suggest that affective commitment had partial mediation effect on the relationship between rewards and turnover intentions and full mediation effect on the relationship between both promotion and job security and turnover intentions. Therefore, H_8 which anticipated affective commitment to mediate the relationship between HRMPs and turnover intentions is supported.

5. Discussion

This study sought to examine the mediating effect of affective commitment on the relationship between HRMPs and the turnover intentions of university employees. The study came up with four key findings. First, the findings revealed that HRMPs (rewards, promotions and job security) are statistically significant positive predictors of affective commitment. Second, as expected HRMPs are significant negative predictors of turnover intentions of university employee. Third, the study results also revealed that affective commitment has a significant but negative effect on employee turnover intentions. Fourth, the study findings also showed that affective commitment is a significant mediator of the relationship between HRMPs and the turnover intentions of university employees.

The finding that HRMPs (rewards, promotions and job security) are statistically significant positive predictors of affective commitment among university employees was not totally new. In fact, earlier scholars such as Meyer and Smith (2000), Gould-Williams (2003), and Edgar and Geare (2005) have reported the existence of significant correlations between HRMPs and organizational commitment among employees in different countries including in Canada, the UK and New Zealand respectively. Even outside America and Europe, other scholars (e.g. Guchait and Cho, 2010; Chang, et al. (2016) have reported the presence of strong positive relationships between HRMPs and affective commitment among employees. On the African continent these findings are consistent with Kipkebut (2010) who reported that university employees who received fair rewards were committed to their universities.

Nonetheless, the finding in this study are contrary to Mugizi et al. (2015) who reported that rewards were not among the significant antecedents of employee commitment among university employees in Uganda. This difference in findings could have emanated from various factors including the difference in the type of universities investigated; whereas the current study focussed on both public and private universities in Uganda, the Mugizi et al.'s (2015) study focussed at investigating only public universities.

Second, the finding in this study that HRMPs are negative predictors of university employee turnover intentions is also in congruence with the works of other researchers such as Eisenberger et al. (1986) and Panaccio et al. (2014). According to Eisenberger et al. (1986), when employees are favourably rewarded and recognized for the good work they do, they would respond by developing an emotional attachment to the organization; thereby, reducing employee turnover intentions. In this case, theory of social exchange would apply; thus, making the use of this theory in the current research is truly justifiable. Nevertheless, we were still able to fill some knowledge gap because most of the earlier studies on the effect of rewards as a dimension of HRMPs on the turnover intentions of university employees had been conducted in the context of developed nations – unlike the current study.

Third, the finding that affective commitment has a significant but negative effect on employee turnover intentions was in tandem with the works of earlier scholars such as Kehoe and Wright (2013), Faloye (2014) and Agarwal and Sajid (2017) who investigated the relationship between organizational commitment and turnover intentions in different contexts. The findings of some of these studies actually revealed that organizational commitment was negatively related with employee turnover intentions.

Finally, the study findings that affective commitment is a strong mediator of the relationship between HRMPs and the turnover intentions of university employees was also in congruence with the findings of scholars such as Chami-Malaeb and Garavan (2013), Joarder et al. (2011), and Ababneh (2020). Like in the current study, Joarder et al. (2011) and Ababneh (2020) reported that variables such as organizational commitment significantly mediate the relationships between HRMPs and the turnover intentions of university employees. This was also in agreement with work of Panaccio, et al. (2014) who observed that affective commitment mediates the relationship between pay satisfaction and turnover intentions among human resource [HR] professionals

5. Conclusion

Empirical evidence from the current study has shown that rewards, promotion, job security, and affective commitment are significant predictors of turnover intentions. The study has also shown that affective commitment fully mediates the HRMPs-turnover intentions relationship. On the basis of these findings and the discussion that ensued, we have concluded that this article extends the frontiers of knowledge about the role of HRMPs in universities in Uganda. The study also makes a contribution by addressing shortage of empirical studies on HRMPs in sub-Saharan context by involving both private and public universities in Uganda. Finally, we have also concluded that these study findings are important for HRM practitioners and other managers alike. Moreover, the results can also be applied to enhance retention of university employees which can increase the performance and international rating of universities in Uganda and other countries of similar nature.

7. Limitations and Directions for Future Research

In spite of the foregoing contributions, this study has some limitations. First, the study applied cross-sectional design whereby data on all variables were collected at one point in time. As such, it is not possible to accurately infer causality between the variables. Therefore, future studies may adopt longitudinal designs to provide a more valid assessment of causality. Second, although organizational commitment has been validated as a three-component construct as postulated by Allen and Meyer (1990), this study considered only affective commitment, which is one of the three dimensions of commitment. Future research may consider the mediating role of normative and continuance job commitments. Third, the three HRMPs included in this study are not representative of all the practices used by the universities from which the study sample was drawn; they are, in fact, a small fraction among the many practices of HRM in the literature (e.g. Daly & Dee, 2006). Future research may consider other HRMPs such as training, performance appraisal, work-life balance, and participation which have been shown in other

contexts to have significant effects on affective commitment and turnover intentions. Nonetheless, in spite of the above limitations, this study has shown that affective commitment is an important mediating construct through which HRMPs can help reduce undesirable turnover intentions.

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The Accuracy and Shortcomings of Google Translate Translating English Sentences to Indonesian

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Abstract

Google Translate is a free and practical online translation service that allows millions of people around the globe to translate words, phrases, sentences, and paragraphs into an intended target language. However, in 2015, some Google Translate users in Indonesia, filed complaints, asserting that the machine was often inaccurate, speculating that it could only translate languages at the micro-level of words and phrases, rather than complete sentences or paragraphs. This research works to examine the accuracy as well as the shortcomings of Google Translate, in the context of English to Indonesian translations, in order to critically engage the complaints made by Google users. For the purpose of this study, 80 English sentences were translated using Google Translate and assessed for accuracy using a table adapted from Memsorce criteria. Both the original sentences and their translated versions were analyzed using a sentence pair matrix to determine the machine's failings and areas for improvement. The results challenged those initial speculations which suggested Google Translate is only effective with words and phrases. On the contrary, Memsorce proved to be a useful tool in demonstrating a reasonable level of accuracy, accurately translating 60.37% of Indonesian-English sentences and vice versa.

Keywords: Google Translate, Memsorce, Statistical Machine Translation, English-Indonesian Translation, Sentence-Pair Matrix

Introduction

There has been an upsurge of interests in machine translators within the last two decades, which has motivated the providers behind machine translations to improve their services. Thus far, the quality of many of these automated translations has left many users unsatisfied. *Google Translate*, for instance, remains a work-in-progress (Barreiro, et al 2014) despite its popularity as the most widely used machine translator in the world (Aitken and Balan, 2009; Butler, 2011).

As demonstrated by Aitken and Balan (2009) and Patil and Davies, (2014), *Google Translate* works well with some languages, but is less effective with others. As Patil and Davies (2014) reported in their research article on the translation of medical terms using *Google Translate*, the accuracy of translation varied from language to language. In their research, Patil and Davies (2014) tested ten commonly used medical statements. The statements were translated from English into 26 different languages using *Google Translate*. The translated statements were then sent to native speakers from each respective language, who were asked to translate the statement back into English and send it back to the researchers. The returned English phrases were compared with the originals and

assessed for meaning. The translations which did not make sense or were factually incorrect were marked as wrong, while minor grammatical errors were allowed. The researchers concluded that when the statements were translated into Eastern European languages, the accuracy of the translation reached 62%; and when the statements were translated into Western European languages, the accuracy was higher, around 74%. However, when the phrases were translated into African languages, the translations only reached a 45% accuracy level. Similarly, when translated into Asian languages, they were 46% accurate.

Patil and Davies (2014), reported some serious errors in the translations such as (a) “Your child is fitting” translated in Swahili to “Your child is dead.” (b) “Your husband has the opportunity to donate his organs” translated into Polish to “Your husband can donate his tools.” (c) “Your husband had a cardiac arrest” translated to Marathi as “Your husband had an imprisonment of heart.”; and “Your wife needs to be ventilated” translated to Bengali as “Your wife wind movement needed.” In their conclusion, Patil and Davies advised against using *Google Translate* to translate medical terms.

In relation to the findings of Patil and Davies (2014), the present writer intends to examine *Google Translate*'s accuracy in translating English sentences to Indonesian and to analyze the potential advantages and drawbacks of such translations. In light of these issues concerning Indonesian-English translations, I feel compelled as a translation studies researcher, to explore the extent that *Google Translate* was criticized to be ‘only good at transferring words from one language to another, but not sentences’ (see ONLINE translator and ENGLISHINDO.COM) and its subsequent framing as unsuitable for use, especially regarding text which has a significant cultural content.

On a level of pedagogical one, my curiosity grew as my students studying Indonesian language and culture at Inculs shared their personal experiences with *Google Translate* and its shortcomings, particularly when the machine was used to translate a number of phrases with significant grammatical complexity. Inculs or Indonesian Culture and Language Studies is a language institution specializing in the study of Indonesian language and culture. It belongs to Universitas Gadjah Mada of Indonesia. The students are from various countries from all over the world.

Before embarking on further research on how *Google Translate* operates in Indonesian contexts, I had to first consider what *Google Translate* is. It is a machine which “gathers a huge database of human-revised translations of millions of documents” (Grajales, 2015). This is in fact one of the strengths of *Google Translate* as a ‘statistical-based machine’, especially when it is used to translate languages having similar grammatical system. As Aitken and Balan (2009); Grajales, (2015); Patil and Davies (2014) reported, it can reach an accuracy level of more than 70% in English – European language pairings.

According to Osborne, et al (2006:17-24), a high level of accuracy between languages with similar grammatical systems is enabled by the operational system of the machine which is believed to be using parallel corpora. Theoretically, a statistical machine translation using arallel corpora such as translating English sentences to Portuguese, Indonesian to Malay, or Dutch to German, and vice versa will be easily executed by *Google Translate*. In contrast, translating languages made up of different language systems will not be as accurate

This research is intended to carry out a preliminary exploration of issues concerning the level of accuracy of *Google Translate* in translating sentences from English to Indonesian; with a goal of shedding light on the potential advantages and drawbacks of *Google Translate* when used to translate English sentences to Indonesian.

How *Google Translate* Works

Google Translate is a machine translation tool which uses statistics as the basis of its operation (Aitken and Balan, 2009; Butler, 2011; Barreiro, et al., 2012; Graesser et al, 2014). As a statistical machine translator, *Google Translate* uses linguistic modeling, statistical decision theory, and matching probabilities. (Ney, 1995:107-119; Koehn et al, 2003:48-54) as the basis for its translation processing. With this advantage, *Google Translate* has the capability, with the proper data sources, to translate sentences from any source language to any target language.

Since *Google Translate* uses statistics as the basis of its operation, the higher the degree of similarity between the initial source language and the target language, the higher the degree of accuracy the translator might achieve (see Koehn et al, 2003:48-54).

To understand the work of a statistical machine translation, one needs to be familiar with Bayes Theorem, proposed by Brown et al. (cited in Okpor, 2015), theorizing that any sentence in one language can potentially be the translation of any sentence in another and “the most appropriate is the translation that is assigned the highest probability by the system”. It means that no matter how different a target language is from a source language, a translation between the two can still be generated; while the chance of being accurate is affected by the probability distribution function which is commonly indicated by $p(e|f)$ and the language model, by $p(e)$. The probability distribution function ensures that the machine translation system produces a target hypothesis corresponding to the source sentence; while the language model ensures a grammatically correct output. (Okpor, 2015). This is how *Google Translate* facilitates translations.

In relation to the workings of the machine, Osborne et al (2006:17-24) contends that a statistical machine translation uses bilingual text corpora which operates systematically to translate a source language to a target language. An example is given to illustrate how a statistical machine translation like *Google Translate* works. In the following example a French sentence is translated into English.

1. *Ces gens ont grandi, vecu et ouvree- des dizaines d' annees dans le domain agricole.*
2. Those people have grown up, lived and worked many years in a farming district.

The English sentence is translated to French using the bilingual text corpora as follows:

<i>Ces gens ont</i>	Those people have
<i>gens ont grandi</i>	people have grown up
<i>ont grandi</i>	have grown up
<i>grandi, vecu</i>	grown up, lived
<i>, vecu et</i>	, lived and
<i>vecu et oeuvre</i>	lived and worked
<i>et oeuvre des dizaines d'oeuvre</i>	and worked many
<i>oeuvre des dizaines d' annees dizaines</i>	worked many years
<i>des dizaines d'annees dans</i>	many years in
<i>anes dans le</i>	years in a
<i>le domain agricole</i>	a farming district
<i>domaine agricole.</i>	farming district

In order to produce a translation, first the machine parses the source language into segments, identifying the match in the target language. After finding the best distribution, the machine determines the best match for the sentence.

As one may observe, the English translation of the sentence ‘fits’ the French version in many respects. While French and English differ in some grammatical respects, such as noun-adjective word order, and are gender marked differently, as Western European languages, they share many similar characteristics (Patil and Davis, 2014). For example, the similar word order of the two languages used in this translation provides ease in the process of pairing, even between segments within the sentences (Osborne et al, 2006).

As table 1 below illustrates, sentence pair alignment occurs systematically at the word-level in the previous example of French-English translation, although there is a change on noun-adjective order at the end of the sentence.

Table 1: The sentence pair is: Those people have grown up, lived and worked many years in a farming district.

	Those	people	have	grown	up	,	lived	and	worked	many	years	in	a	farmin	g	district	.
Ces	█																
gens		█															
ont			█														
grandi				█	█												
,						█											
vecu							█										
et								█									
ouvree									█								
des										█							
dizaines											█						
d'												█					
annees													█				
dans														█			
le															█		
domain																█	
agricole																	█
.																	

Here we see that the translation of languages of the same language family — in this case from French to English — forms an oblique pattern when viewed in the pairing table, moving from the top left to the bottom right. This diagonal arrangement reflects the workings of a one-to-one relation system in the translation of the text from the source language into the target language. In the context of languages which do not have a similar grammatical structure, the translation of the language pair will likely show a different, non-specific pattern of flow if plotted in the matrix table.

The Popularity and Usefulness of *Google Translate* to Indonesian Audiences

Despite the potential pitfalls, as briefly outlined above, *Google Translate* remains one of the most popular translation machines in Indonesia. As reported by the Engineering Director of *Google Translate* MacDuff Hughes, Indonesian is one of the top ten languages in the world used in *Google Translate* after English, Spanish, Arabic, Russian, and Portuguese (Liputan 6, 2016).

According to Julie Cattiau, Product Manager of *Google Translate*, most Indonesians use *Google Translate* in order to understand and share information on the internet (Liputan 6, 2016). Other uses include understanding unfamiliar languages when traveling abroad and communicating with business counterparts. As explained by Napitupulu (2017:15-23) *Google Translate* is even used by students at the Methodist University of Indonesia, Medan, North Sumatra (Napitupulu, 2017:15-23) to translate their undergraduate abstracts from Indonesian to English. Similarly, Farlin (2015) claimed that Indonesian students with a limited grasp of English often translate their graduate paper abstracts into English using *Google Translate*. Thus it can be surmised that the popularity and usefulness of *Google Translate* in Indonesia is a real and significant phenomenon, for that reason, it is worthwhile to investigate the nuances of *Google translate* in Indonesia and examine its sociocultural impact.

Indonesian Language at a Glimpse

Indonesian, which belongs to the Austronesian language family (Sneddon, 2003) is the official language of Indonesia, and is now spoken by more than 200 million people throughout the country. The language is actively spoken by majority of people, and thus functions as a unifying language for all the people living throughout

Indonesia, scattering 34 provinces, from Aceh to Papua. There are more than 700 indigenous local languages which are used at regional and district levels. Thus, the majority of Indonesian people are polyglots.

Indonesian is composed of words from various local languages, especially Javanese; and today is even influenced by English words and dialects due to globalization and encroaching elements taken from the mass media, internet sources, or interaction with people from other countries. Thus, there are many new words that appear in Indonesian which have been borrowed or adapted from other languages. For example: *action*, *riset* (research), *komunikasi* (communication), *promosi* (promotion), *provokasi* (provocation), *probabilitas* (probability), *kontinuitas* (continuity), *regularitas* (regularity), and so on.

In terms of its structure, Indonesian is similar to English, as it begins with a Subject followed by a Verb and an Object or SVO. This similarity in word order within a sentence makes it easy to translate from English into Indonesian, and vice versa. However, there are some cases which might cause problems during the translation process, namely: (1) Indonesian does not have verb tenses; (2) Indonesian is rich with prefixes, confixes, and infixes, including the prefix ‘di-’ and ‘me’, which indicate passive and active voices; (3) Unlike English, Indonesian does not have the gerund or participle tense; (4) Lastly, Indonesian does not have subjunctive verbs.

Given that Indonesian does not have verb tenses, it is unsurprising to hear that some Indonesian English-language learners struggle to produce the correct tenses in English sentences. A sentence like “Borobudur is built in the ninth century by Cailendra dynasty” is just one of the many errors which might be produced by Indonesian students in their initial stages of learning English. This problem is related to the difficulty of using verb tense which is not in existence in Indonesian language. Likewise, those who study Indonesian might find it difficult to anticipate this tense difference and navigate sentences accordingly. They often memorize temporal adverbs in Indonesian, knowing that when they translate English sentences with certain tenses, they can pair the verbs with temporal adverbs that match the English verb tenses. It is worthwhile to explore how *Google Translate* addresses this discrepancy, and how accurate its results are, especially when tasked with translating English sentences with complex verb tenses to Indonesian.

It is also noteworthy how *Google Translate* anticipates the difficulty of translating passive voice from English to Indonesian, as the passive voice in English and Indonesian differ both morphologically and semantically. In Indonesian, passive voice can be identified by the presence of prefix *di* + root verb or *ter* + root verb. For instance :

- (1) Daging itu **di**iris dengan hati-hati
- (2) **Dia** **ter**iris jarinya saat memotong-motong bawang merah.

The difference between prefix **di-** and **ter-** is that the prefix **di-** indicates there is intention in the action; or you do it on purpose; while prefix **ter-** indicates there is no intention in the action; or you do not do it on purpose. You cannot use prefix **me-** because **me-** is only used in active voice. Therefore you cannot say

- (3) Daging itu mengiris dengan hati-hati.
The meat cuts with care
- (4) Dia mengiris jarinya saat memotong-motong bawang merah.
He cuts his finger when chopping onions

Sentence (3) does not make sense. Meat can not do the cutting; while sentence (4) means He cut his finger when chopping onions (and he cut it with intention, on purpose).

Another aspect which may cause problems in translations is that Indonesian does not have ‘gerundial form’ or ‘present participles’ which take the same form in English, namely, the ‘-ing form’. Thus, the phrases (1) sleeping dog and (2) sleeping pill have exactly the same form (-ing) and position (before noun) but different functions. (1) A sleeping dog is a “dog which is sleeping”; but (2) a sleeping pill is not a “pill which is sleeping”, as this does

not make sense. The correct meaning is a “pill for sleeping”, a gerundial form. However, in Indonesian there is no such form.

Additionally, Indonesian does not have the same subjunctive form as in English. In English the subjunctive form is indicated by the presence of constructions such as “If I were you, I would marry her” or “Had I had that opportunity, I would have taken it”. Because there are no verb tenses in Indonesian, it becomes difficult to understand subjunctive tense for the Indonesian English-language learners.

The different grammatical structures of Indonesian and English challenge whether *Google Translate* can accurately and effectively translate Indonesian sentences into English and vice versa, or if it is just a rudimentary tool appropriate solely for extracurricular and recreational purposes. This research is meant to determine how accurate the machine is; what advantages it poses, and what potential shortcomings or problems manifest which need to be addressed.

Research Method

Data samples

As cited in the aforementioned discussion, my research was inspired by witnessing Universitas Gadjah Mada’s international students’ difficulties in translating English to Indonesian and vice versa, using *Google Translate*. experienced by international students who take English-Indonesian translation course at Inculs at the faculty of cultural sciences Universitas Gadjah Mada of Indonesia. In the light of the grammatic and semantic construction disparities, difficulties of English-Indonesian translation frequently occurred on syntactical and semantical level, particularly in contexts, of (1) passive voice, (2) conditional sentences, (3) sentences containing verb tenses (4) and sentences containing elements of gerund and participles. As the first study to consider *Google Translate* on a granular level, this study does not purport to ‘explain’ all challenges of English-Indonesian translation. As an exploratory study, the scope of the data used in this paper is limited to English sentences which contained the four grammatical elements above. The total number of sentences examined was 4 x 20 sentences, or 80 sentences. Though these four elements are the primary focus, word selection, which offers additional nuance and challenges, is also discussed in this paper. This is because an author’s intentional word selection or diction often has a context-specific meaning which is sometimes not recognized by the readers.

Research Procedure

As an exploratory study into the difficulties of English-Indonesian translation, the methodology used combined a comparative and descriptive approach, combining *Google Translation* and ‘human’ translation. In the first instance, I selected 4 grammatical cases which often cause problems to Indonesian English-language learners. They are ‘verb tenses’, ‘gerund and participle’, ‘passive voice’, and ‘conditional sentences’. There are 20 sentences with each case, so there are 80 sentences altogether. Each sentence was translated using *Google Translate*. These four grammatical cases were chosen as the focus of this examination because (a) tenses do not exist in the Indonesian language, and thus might create problems in the translation process; (b) gerunds and participles have the same form in English, signified by forming a Verb+ing, which might cause confusion for Indonesian English-language learners; (c) passive voice in English and Indonesian have different constructions to a certain extent, and it might make it difficult for those learning Indonesian; and (d) conditional sentences are expressed using certain verb tenses which are not in existence in Indonesian and thus might create difficulty in the translation process.

I then requested 4 translation experts to translate all of the 80 sentences (human translation) as one way of exploring the similarity between the *Google Translate* results and human translation.

The next stage of the research was to ‘score’ the results of *Google Translation* using ‘translation closeness metric on the basis that “the closer a machine translation is to a professional human translation, the better it is” (Pepinini et al; 2012).

The following is a ‘translation closeness metric’ adapted from Memsorce criteria to determine the translations’ accuracy level.

No	Level of Accuracy	Description of accuracy
1	Match 100	The translation results are identical to human translation by expert translations, with no editing required.
2	Match 85 – 95	The translation is near perfect, but requires a bit of editing by translation experts.
3	Match 50 – 75	The translation results require improvements to the words used, and must be edited by translation experts
4	Match 00 – 49	The translation results are still incomplete and tend not to match the source language.

(blog.memsorce.com)

After the level of accuracy was identified, the shortcomings of Google Translate were analyzed using Osborne’s (2010) sentence-pair matrix.

Research Results and Discussion

The Level of Accuracy of Google Translate translating English Sentences to Indonesian.

Based on evaluations using the ‘translation closeness metric’ which is commonly applied by Memsorce (2012), when translating English sentences into Indonesian *Google Translate* reached an accuracy level of more than 60%. It is significantly worse than human translation, but much better than when African and other Asian languages were translated, as reported by Patil and Davies (2014), which reached 45% and 46% consecutively. The individual achievement in the degree of closeness for each item in this research was as follows: (1) The translation of sentences having certain tenses reached 62.5% accuracy; (2) The translation of conditional sentences reached 58.5%, (3) sentences containing Gerund and Participle 63.5%, (3) and passive sentences reached 57 % accuracy.

One example of an English sentence written in the future tense, translated to Indonesian is shown as follows:

01. They will plant roses in the garden.
02. Mereka akan menanam bunga mawar di taman.

Table 2: The sentence pair *They will plant roses in the garden.*

	Mereka	akan	menanam	bunga	mawar	di	taman
They							
will							
plant							
roses							
in							
the							
garden							

Table 2 shows the accuracy of the translation reflected in the word pairings which correspond to each other in a manner similar to the aforementioned French-English translation. The sentence pair in table 2 also reveals a diagonal line from top left to bottom right, meaning that the pattern of the word order of both languages is similar.

Many, though not all, of the sentences with other verb tense forms in their grammatical constructions were also translated correctly. Of the 20 sentences containing past tense, past perfect tense, past continuous tense, present perfect tense, future tense, 37.5% were translated inappropriately, while 62.5% were translated correctly.

The Shortcomings of Google Translate in Translating English Sentences to Indonesian.

The results of this study contradict views that Google Translate is limited to translating words or phrases in the context of English-Indonesian translation. In fact, the results of this study indicate that the *Google Translate* has a capability of translating sentences although none of the ‘machine-translated’ sentences could match the human translator in terms of the quality of translation.

The issues facing *Google Translate* in the context of English-Indonesian translation is related, for the most part, to sentences having a different point of view between the source language and the target language. By this I mean there are some cases where translators intentionally generate a change in the point of view of the message without altering its meaning and without generating an unnatural feeling in the reader of the target text. In this respect, *Google Translate* is unable to do that. The following is the example of the shortcomings of Google Translated translating sentences with different points of view.

Sample 2.

Sentence to translate	Google Translate	Human Translation
He dropped his wallet.	<i>Dia menjatuhkan dompetnya.</i>	<i>Dompetnya terjatuh</i>
	He dropped wallet+his	Wallet+his dropped

Table 3: The comparison between Google Translate and Human Translation

Table 3A: *Google Translate*

	Dia	Menjatuhkan	Dompet	nya	.
He					
dropped					
his					
wallet					
.					

Table 3B: Human Translation

	Dompet	nya	terjatuh		.
He					
dropped					
his					
wallet					
.					

The data in table 3A shows a sentence pair which has been translated through *Google Translate*. In the pairing image we see the word order making a diagonal line, from top left to bottom right, with little shift of box formation on column three and column four. This diagonal line illustrates a similar trend formed between the target language and the source language; while the shifting formation of the box in columns three and four that do not make the diagonal line indicates there is different construction in that section.

Data in table 3B shows the sentence pair translated through human processes. The Configuration of dark boxes which shows the trend of the sentence moves from bottom-left to top-right. The pattern is different from data in table 3A. And in terms of acceptability, the translation as seen in 3B is more appropriate compared to the translation in 3A. It is congruent with what Papineni (2002) stated, that the quality of machine translation will never surpass that of human translation.

One of the advantages of human translators compared to statistical machine translators is that human translators have a sense of the language, or modulation while a statistical machine translator do not yet have this capability. When a string of sentence of a source language is unable to be verbatim translated to a target language, a change of perspective, or structural reconfiguration, is called for to enable a target language to convey the proper meaning. This situation is commonly termed as modulation. According to Hardin and Picot (1990:21) modulation is a change in perspective that allows a translator to express the same phrase or sentence in different ways. Notice that the sentence “He dropped his wallet” was translated to *Dia menjatuhkan dompetnya*. In Indonesian this sentence means “He intentionally dropped his wallet”. If one does not intend to drop the wallet, the order is reversed: *Dompetnya terjatuh*, which literally means “His wallet was dropped”. This nuance proves that the point of view or perspective of the source language cannot be transferred into the target language by machine translation alone and must be checked by the human translator.

Other similar sentences which were not translated appropriately by *Google Translate*:

05. The pizza was so hot that he burnt his tongue.
06. She cut her finger when chopping onions.
07. I got something in my eye.
08. I hit my head on the wall

The above sentences were not translated appropriately by *Google Translate* because of the different way of expressing active and passive voices in the source and target languages. When translating the source language, *Google Translate* followed the pattern of the source language so that the translation still has the sense of the source language. As a consequence, the translation was inappropriate.

Take a look at the translation using *Google Translate* below:

05. *Pizza itu begitu panas bahwa dia membakar lidahnya.*
06. *Dia memotong jari-jarinya ketika memotong bawang.*

The translation results showed that there is something missing in the proposition. It is a matter of how the proposition is expressed in the target language. The clause (05) “... he burnt his tongue” when it is translated as it is, is interpreted as an act of ‘deliberately burning his tongue’, while the intent of the sentence is actually “his tongue burns.” The same is true in clause (06) “He cuts his fingers” which is interpreted as an act of “deliberately cutting his fingers”. These examples prove that the machine translation is currently unable to transform the tacit meaning contained in the source language to the target language.

Similar cases can be seen in sentence (07) and (08). Sentences that read (07) “I have something in my eyes” and (08) “I hit my head on the wall” would generate a change in a point of view of the message. In Indonesian, the subject in sentence (07) is ‘my eyes’ and in sentence (08) the subject is “my head”. In Indonesian it would be appropriate and correct if those phrases become the focus of attention in the sentence construction, therefore they are placed as subject of the sentence or antecedent. The machine is unable to facilitate these subtle grammatical shifts. Therefore, a human translator must create a change in perspective so the translated sentences convey the proper meaning. Hence, instead of translating to (07) “*Saya mempunyai sesuatu di mata saya*” and (8) “*Saya memukulkan kepala saya di tembok*”, the human translator translated them as (07b) *Mata saya kemasukan sesuatu* dan (08b) *Kepala saya terbentur tembok*.

Word Selection in the Target Language

Another problem experienced by *Google Translate* users when translating English sentences to Indonesia is the accuracy of context-based word selection. The inaccuracy in word selection can result in a shift of meaning, both at the micro level (invert), namely in the level of words or phrase and macro (convert) or in the level of wider context, namely meaning as a whole. The meaning of sentences that contain local errors can still be generated to

a certain degree; while the meaning of sentences having global errors will result in significant deviations of meaning.

The quality of *Google Translate* as a statistical machine translation is affected by the accuracy of the inputted diction. If the words used in translation are contextually correct, the result is quality translations; however, if the words used in this translation are contextually incorrect, the translation will not be of sufficient quality.

The results of this study indicate that *Google Translate* in general has been able to use words appropriately given their context. The only shortcoming the *Google Translate* has, in terms of word selection, is mainly on words having multiple functions such as “that” and “used”.

Examples

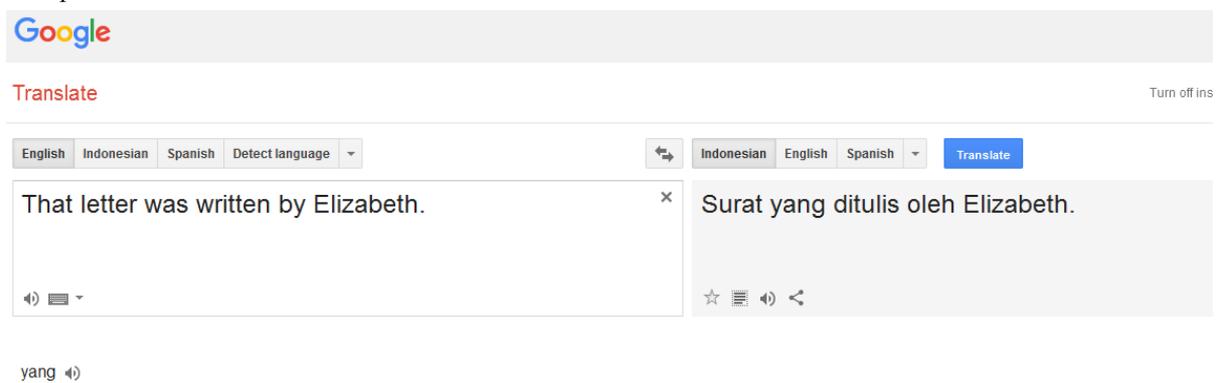


Figure 1: The translation of the sentence “That letter was written by Elizabeth”

The translation of the source language distorts the grammatical unit. The input, which in the source language was a sentence, is transformed into a clause. It is mainly because of the machine’s inability to identify the function of the word ‘that’ in the sentence. The sentence “That letter was written by Elizabeth” when translated by the machine becomes “The letter that was written by Elizabeth” in the target language. Thus, it changes the unit, from a sentence to a clause.

The word ‘that’, and other demonstratives, have the potential to cause errors in machine translation. ‘That’ can have multiple functions. It can function as (1) ‘demonstrative adjective’ as in the sentence “That test was hard”, (2) ‘demonstrative pronoun’ as in sentence “That was hard”, (3) ‘adverb’, as in “The test was not that bad”. The word ‘that’ can also introduce ‘restrictive relative clause’ as in “The test that she took was hard.”

Another example that is often mistranslated in *Google Translate* is the phrase ‘used to’. In general *Google Translate* identifies the phrase used to as the word "used" so that the translation results experience a global error, or there is a deviation of meaning that is too far from the original source for comprehension. Notice the translation of the phrase “used to” in the following:

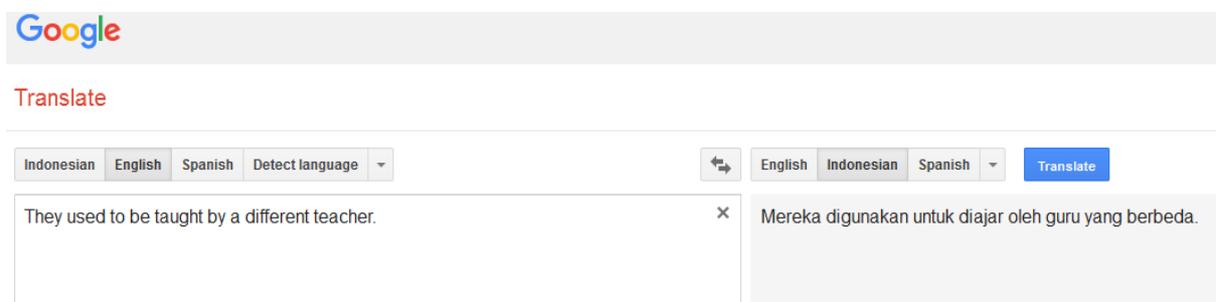


Figure 2: The translation of “They used to be taught by a different teacher”

The translation of “They used to be taught by different teachers” resulted in a global error. The error in this translation is caused by the failure of this machine to identify the phrase ‘used to’ correctly. The machine only sees the word ‘used’ per se so that in translation there is a confusion between the phrase "used to" and the word "used", which causes a significant deviation in meaning. The sentence “They used to be taught by different teachers” becomes “They are utilized to be taught by different teachers”, which is incomprehensible. Table 4 below shows the sentence pair:

Table 4: The sentence pair of They used to be taught by a different teacher.

	<i>Mereka</i>	<i>digunakan</i>	<i>untuk</i>	<i>diajar</i>	<i>oleh</i>	<i>seorang</i>	<i>guru</i>	<i>yang berbeda</i>
They								
used								
to be								
taught								
by								
a								
different								
teacher								

The sentence pair as seen in table 4 forms a diagonal line, represented by the light-colored boxes, moving from top left to bottom right. The diagonal line indicates the match of the language corpora. Yet, there are also dark colored boxes which interrupt the light diagonal line. Those boxes represent the wrong selection of words in the target language, and it is in this area that the intended meaning is disrupted.

The Use of Grammatical Structure: conditional tenses in English-Indonesian Translations

Another shortcoming is that Google Translate has not been able to transform all the English grammatical constructions into the target language coherently and accurately. Some grammatical constructions can be translated fairly well; while others cannot. One example of a well-translated sentence is a ‘conditional sentence’. This sentence is translated appropriately to the target language when sentence construction begins with IF. Please note that in English the prescribed sentence is divided into ‘open conditional’ and ‘subjunctive or ‘unreal conditional’. Open conditionals are open, meaning a presumed event can occur if the conditions are met; while the conditional subjunctive is the opposite. Open Conditionals always begins with IF, while ‘unreal conditionals’, besides beginning with IF can also start with WERE or HAD. Observe the following examples.

- (1) If I were you, I would not let her go. (which is similar to ‘Were I you, I would not let her go’).
- (2) If I had not worked in that institution during my study, I would not have been able to pay tuition. (which is equivalent to ‘Had I not worked in that institution during my study, I would not have been able to pay my tuition’)

The results of this study indicate that sentences beginning with IF can be translated easily; conversely *Google Translate* incorrectly translated all sentences beginning with WERE or HAD. Table 5 demonstrates this tendency.

TABLE 5. The sentence pairings of “*Had he known that you were coming, he would not have left*”

	Apakah	Dia	Tahu		Bahwa	Anda	Akan	Datang	Ia	Tidak	Akan	meninggalkn
Had												
He												
Known												
That												
You												
Were												
Coming												
He												
Would												
not												
Have												
left												

Table 5 shows a diagonal trend that moves from the top left to the bottom right, a sign that sentence patterns move with a one-to-one relational pattern. But there is an inaccurate translation of the word ‘had’ which is simply to introduced the unreal conditional but recognized by the machine as an indicator of the perfect tense that serves to form interrogative sentence construction. Therefore, the translation is inaccurate. This is an example of a limitation of Google Translate related to the use of structure in the target language.

Another drawback is seen in the translation of sentences that contain ‘present participles’. Although the translation of a sentence containing the ‘present participle’ does not imply a global error in the target language, this inaccuracy of translation reduces the accuracy value of the machine translation. Consider the following examples:

- 09 Feeling hungry, he went into the kitchen and opened the fridge.
 10 Putting on his coat, he left the house

The sentences were translated as

- 11 *Merasa lapar, ia pergi ke dapur dan membuka kulkas.*
 12 *Memakai mantelnya, ia meninggalkan rumah*

The ‘present participle’, represented by ‘verb+ing’ in both sentences form an ‘adverb of reason’ (09) and an ‘adverb of time’ (10). Without the presence of ‘reason’ and ‘time period’ markers, these two sentences are still understandable, but the accuracy of the translation is reduced. Both sentences will be more appropriate if translated as follows:

- 13 *Karena merasa lapar, ia pergi ke dapur dan membuka kulkas.*
 14 *Setelah memakai mantelnya, ia meninggalkan rumah.*

Thus, the difficulty of transforming a complete grammatical construction of a source language into a target language, in this case, from English to Indonesian is one of the shortcomings of the Google Translate.

Conclusion and Suggestions for Future Research

As demonstrated in the discussion, the preliminary findings using Osbourne's methodology of analysis indicate that *Google Translate* is not only able to translate words and phrases. It has the capability to translate sentences with an accuracy level reaching 60.37; which is much higher than that of other Asian languages as reported by Patil and Davis (2014), which averaged 46 percent accuracy. Yet, this research also revealed that *Google Translate* struggled to translate sentences from English to Indonesian in instances where sentences contain words that have multiple functions and sentences which have different sense of language relating to point of view or perspective. As shown in my sample of sentences, *Google Translate* seems to frequently mix up the word 'that', which can have numerous different functions in a sentence. Google was unable to perform the translation until a human translator interfered and changed the perspective.

As I admitted earlier, this research is only a preliminary exploration of the accuracy of *Google Translate* when translating sentences from English to Indonesian; with a goal of shedding light onto the potential advantages and shortcomings of *Google Translate* when used to translate English sentences to Indonesian. Yet, it strongly indicates that despite its limitation, the machine is still able to translate sentences fairly well, with an accuracy of more than 60% based on Memsources criteria. This research is important in that it helps realize that judging the capability of machine translators through a lens of assumptions is ineffective. Users should utilize google translate with a clear understanding of its benefit and uses, as well as its drawbacks and areas of weakness.

This research itself has its limitation in that it only uses a limited source of data with limited coverage, which regard to difficulty experienced by Indonesian language learners at Inculs. It is thus challenging for future researchers to explore more on the accuracy of *Google Translate* translating Indonesian text to English using corpus data.

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Mememes on the Evolution of Derivative Architecture Design

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Abstract

Through genetic tracing, the origins of a person and who their ancestors are can be traced scientifically even though over time their genes have evolved following ecological changes. Likewise, a person's ideas can be traced where the origin comes from through memetic tracing. This article discusses case studies in several works which are assumed to be works of design product plagiarism at one of the famous universities in Indonesia. The plagiarism process is investigated through tracking changes in their memes. The research method was carried out by investigation. Data collection and analysis through field studies and in-depth interviews with participants who are actors and users of plagiarism products. The research was conducted in 2017. The results showed that plagiarism resulted in degradation of physical and visual qualities, visual disguises for the purpose of copycat self-actualization, and a sense of innocence from them.

Keywords: Meme, Evolution, Plagiarism, Architecture Design

1. Introduction

1.1. Plagiarism Issues in Architecture Design

Information technology and social media have opened the eyes of architects to the opportunities and speed of plagiarism by the building construction industry. China, for example, is accused of being a copycat country, not only the Eiffel Tower or the White House, but also the design of buildings whose construction work has not been completed. Zaha Hadid's Wangjing Soho, for example, was quickly copied by a Chongqing, South West China developer before the original building was completed (Orr 2013; Wood 2017). In another case, Hadid also claimed that Kengo Kuma's Tokyo Olympic Stadium was similar to her design proposal that was rejected by The Japan Council. Kuma denied and believed that his design was different from Hadid's design (McCurry 2016; Frearson 2016).

The era of China's awakening in the last two decades has had the impact, among others, economic reforms, and the privatization of housing which has triggered changes in the culture of the middle class. Property development occurs on a large scale where the developer emphasizes the design style as Western. The imitation architecture of

Paris, Venice, Amsterdam, London, Madrid, or New York that occurs in the phase of cultural change not only occurs in China but also in Japan, Indonesia, Cambodia, Singapore, Egypt, and the United Arab Emirates (Bosker 2013:4-6).

In 2017, The Infinite Bridge sculpture in Aarhus Denmark designed by the architect from the Gjøde and Povlsgaard Arkitekter studio was copied by architect Ihsan Latif from Makassar. This imitation sculpture is used as an icon for the entrance gate and to be presented as an icon of the University of Hasanuddin (UNHAS). This architect not only copied the design idea, but the whole concept of design public communication including the terms infinity bridge, terrace, and panorama. The most ridiculous thing is the copycat architects are not just copying ideas, but cutting out the original image of The Infinite Bridge and pasting them to the UNHAS landscape background image.

Plagiarism is a design derivative that spreads as an architectural idea that mimics the original architect's mind. Although the issues of plagiarism in architecture design are still debatable, the cases are always discussed apart from the problems of architecture design itself. It is said to be debatable, because generally, people think that an architect cannot but be influenced by the drawings that he sees and remembers. Therefore, the originality of the design does not yet have a history of active copyright protection. When the 1950s architect Cliff May won his claim over plagiarism done to his design, the case was seen as a major advance for the protection of the architecture profession (Giovannini 1983).

Twins who are genetically identical do not even have the same exact traits because of the variation in their genotype and phenotype influenced by genetic, epigenetic, and environmental factors. The uniqueness of the characteristics of each twin can still be recognized (Matias; Alexandra, et al. 2014). Likewise, two architects with similar training and experience throughout their careers, will not produce the same idea. The uniqueness of the ideas of each architect can be recognized (Anderson 2011:35). Thus, the assumption that design similarity is coincidence is hard to believe.

Although issues regarding plagiarism for various reasons do not appear as legal cases, awareness of the need for nobility in carrying out the duties of the architecture profession always appears in various ethical discussions. In Indonesia, the Indonesian Architects Association Code of Conduct in Code of Conduct 2.103 clearly states that architects are not allowed to be involved in fraudulent work or which are detrimental to other parties. Things that are considered as fraudulent or detrimental to other parties include imitating / duplicating architectural works without the designer's permission (Ikatan Arsitek Indonesia 2007:1). The same thing can be seen in the Code of Ethics and Professional Conduct of The American Institute of Architects Rule 2. 101 (The American Institute of Architects 2017:12).

Awareness of plagiarism issues is always present in the lecture halls of architecture. Since the beginning students have been introduced to the moral view of architects as a general rule of thumb. When a student copies a design from an architect without the architect's permission, it is considered a violation of the law and a plagiarism error. Copying written text, copying designs without permission or in a manner prohibited by copyright laws is illegal (Chao-Duivis 2011).

If the theory of genetics occurs in the process of biological evolution, the theory of memetics occurs in the process of the evolution of cultural products. Just as genes determine the traits of the descent of living things, memes are the carriers of the inherited characteristics of cultural products. In 1976, Richard Dawkins through his book entitled *The Selfish Gene* introduced the term 'meme' which is equivalent to 'gene' as the evolution of an idea, behavior, or style that spreads from person to person in the culture.

Memes spread because they have something interesting that stays on someone's mind. If genes reproduce by passing from one body to another via sperm and egg, memes reproduce from brain to brain through a process of imitation. This is found in the products of song creation, ideas, expressions, clothing, and building arches. With meme information, the nature of the original design that was passed down as a replica can be traced through the identification of design properties (Dawkins 2006:192). This means that if there is a debate about plagiarism works, actually it can be traced who did the plagiarism and who was harmed.

1. 2. Memes as Imitation Design Tracker

In the process of biological evolution, the process of change occurs in all forms of life from one generation to the next. In each generation, organisms inherit traits from their parents that are passed down through genes. Mutations in genes will produce new traits in the offspring of an organism. In a population of organisms, some traits appear, while others disappear. The characteristics that appear are those that support and benefit the survival and reproduction of the organism.

After several generations, adaptation occurs through the combination of these random, continuous small changes in traits by natural selection. Meanwhile, genetic drift is an independent process that produces random changes in the frequency of the traits of a population. Genetic drift is generated by the probability that a trait will be inherited when an individual survives and reproduces (Ridley 2013:12-13).

Adaptation of traits does not occur completely, but through small and random changes, but is continuous in several generations. During this period, genetic drifts are found which are the result of a process of random changes in the frequency of a population. This deviation is expressed in individuals who are able to survive and reproduce (Ridley, 2013:12-13).

Even though the changes produced by drift and natural selection are small, these changes will accumulate and cause substantial changes in organisms. This process reaches its peak by producing new species (Patrik 2012:19). The similarities between one organism and another suggest that all known species descended from a common ancestor through this slow divergent process (Coyne 2009:8. Darwin accepted that organisms were designed for a specific purpose, arranged functionally. Organisms are adapted to a specific way of life and their parts are adapted to perform specific functions (Ayala 2007).

Darwin (2004) states that mutations, migrations, and genetic drift in the basic mechanisms of evolution produce natural selection. Not all individuals are able to adapt to their environment to be able to reproduce to support unlimited population growth. There are individuals whose reproduction is rare because they are eaten by individuals whose reproduction is denser because they are more able to survive.

Evolution requires mutation and natural selection. Without mutations, evolution cannot occur because no variation can be transmitted differently from one generation to another. But without natural selection, the mutation process will result in disorganization and extinction because most mutations are not profitable. Mutation and selection have driven the evolutionary process together to produce new species.

In the process of biological evolution, the process of change occurs in all forms of life from one generation to the next. In each generation, organisms inherit the traits their parents have through their genes. Mutations in genes will produce new traits in the offspring of an organism. In a population of organisms, some traits will become more common as others disappear. Traits that aid the survival and reproduction of organisms are more likely to accumulate in a population of unfavorable traits.

In the process of creating a design, ideas compete in the mind of an architect. Furthermore, these ideas compete again in society. The viability of ideas that can survive because they are in some way accepted as superior and plausible. These reasonable ideas spread by copying outside the minds of the early architects in what we later know as architectural styles. The easier the repetition, the easier the reproduction. Otherwise, difficult repetitions will kill reproduction (Dawkins, 2006:194; Salinger & Mikiten, 2002).

Kubler states there is a difference between prime objects and replicas. Prime object was associated with radical discovery, whereas replica was defined as continuous repetition. He also argues that in art change can be sudden and surprising because the inherited form no longer conforms to new views of the soul and attitudes toward nature. The replica of all things, actions, and symbols as well as human experiences did not happen suddenly but through gradual and continuous change. Like cohesion, each replica has an adhesive property that connects the prime

object shape and the replica shape itself. Replicas always have trivial variations. (Kubler, 2008:64-66). Unlimited variations that create unwanted drifts, which are referred to in genetic evolution as mutants.

This research explores and finds out: (1) How did the evolution process occur from the original architecture design to the artificial architecture design? (2) What is the motive for plagiarism in architecture designs? (3) What effect does copying design ideas have on product quality? (4) How does the copycat architect see the imitation products he creates?

2. Methods

The research method was carried out using an independent investigation. Data were collected through field observation and in-depth interviews. The observation and interview processes were carried out simultaneously. Data analysis was performed by mapping the data using the domain analysis method. The research was conducted in 2017-2018.

Participants consist of architects, buyers, users, and workers. See Table 1

Table 1. Participant Data

No.	Participant	Number
1.	Architect	25
2.	Buyer	30
3.	User	50
4.	Worker	20
	Total Number	125

This research was not aimed at embarrassing the perpetrators but for the purposes of studying ethics for architecture education. Because of this, the participant's name was camouflaged.

3. Results

Between 2005-2010, as an architect, I was asked by the university leadership to design a new face for some of their strategic facilities. These facilities include the Academic Senate Room, the Chancellor's Workroom, the Global Development Learning Network (GDLN), the university canteen, and several other function rooms. As an architect, I surveyed various university stakeholders to get an idea of the university's vision and mission, so that the design's appearance could represent the university's ideals.

The university has a vision that is connected to the world and maritime culture. Marine humans are perceived as people who represent dynamic, courageous, honest, and open characters. These characters are then processed by the architect as a spirit that manifests visually in the design. With the concept of simplicity, the new design leaves a feudalistic, closed, locality, dark, and messy feel, which had been used in previous university designs to be equality, open, universal, bright, and neat. The design is named as RR Style, after the acronym for my middle name. Later, the design style that represented the character of the university was known as the T. Design.

After 2010, the work unit level leaders wanted to decide to come up with the same theme as that of the university leadership. The design process is carried out by the work unit leaders independently and independently, based on examples of existing university facility designs, involving the surrounding architects without communicating with the original designer architect.

3.1. Motivation

A motive is an impulse that arises from within a person that causes that person to want to act do something. Motive is born from a person's desire to fulfill his own needs. When these needs have been met or satisfied, that need is no longer a motivation to do something (Maslow, 2013). In carrying out their professional duties, every architect

has different motivations. We can find architects who do their job because of the motive to fulfill only basic needs in order to survive, but also many architects who do it with a higher motive such as self-actualization. The motive for self-actualization through the desire for achievement is seen as better than others (McClelland 1987:10).

In the research location, the desire to do plagiarism work is influenced by the local culture which does not consider plagiarism as a bad thing. There has not been any attention from institutions that have seriously considered the plagiarism issue. If there is a plagiarism case being processed, it is more because it is demanded by an external party such as the Directorate of Higher Education who questions articles for lecturer promotion that are suspected to be the result of plagiarism. Other demands are made by publishers of scientific articles which are required for the university to get the standard as a World Class University.

In the case of this research, generally, motivation is done to produce basic needs in order to survive. Architects work closely with officials holding university asset management policies. They work according to the wishes and direction of policyholders, including duplicating original designs from the original architect. The process of proposal design to final design is not carried out openly or through consulting activities related to the vision and mission of the university, but discussions about construction schedules and costs only with the equipment unit (logistics) and the university's goods procurement committee.

There are several motives related to the university policy directives to imitate the existing original designs. First, the desire to imitate is an appeal from the top leaders of the university to their subordinates. The real appeal was more related to the quality of the construction work, which was perceived by the subordinates as duplicating the design. Second, there was a growing assumption that involving the original architect would result in strict quality control. This was interpreted by the relevant officials as creating a situation that could complicate the financial management system. Third, there are no clear regulations regarding the relationship between design fees and the complexity of the design process. Both original designs and duplicates of varying quality are valued the same only based on the total cost of the construction work. Fourth, although this institution is an educational institution, moral issues regarding plagiarism cases have not become the main concern of the academic community.

3..2.Degradation of Quality

3.2.1. Physical Quality

Almost all artificial designs experience quality degradation both visually and material. At the Faculty of Medicine (FM), for example, architects have neglected the design of the acoustic wall work. The wall design for absorbing and silencing functions use the rockwool material covered with perforated gypsum panels. Thus, the architect hopes that the sound that enters through the holes in the walls will be absorbed by the rockwool behind it. The mistake made by the imitation architect at FM was not ordering the contractor to remove the paper layer behind the gypsum panel. As a result, the sound cannot enter the rockwool layer because it is blocked by the paper layer. Subsequent derivative degradation occurred, imitation designs no longer used rockwool as sound absorbers and absorbers, and only used porous gypsum panels.

The general degradation of user comfort that is encountered in almost all imitation designs ignores ergonomic principles. In meeting and working tables, dimensions are found that are not proportional to users in Indonesia. At the FM we find a meeting table with a height of 85 cm compared to the standard size of 70-75 cm. At the Faculty of Social and Political Affairs (FSP) a meeting table for the deans is only 40 cm wide. The narrow table surface with glass material makes users feel uncomfortable unless the user's belongings such as computers are not placed on the table surface.

For the selection of materials, imitation designs seem to avoid jobs that are considered complicated. In the original design, sunkai wood panel material with duco paint finishing on the furniture and walls of the room. The selection of materials and finishing was carried out with the consideration that the facilities could have a longer life, given the limited finances of the university for new investment. All imitation designs replace sunkai wood panel materials with High-Pressure Laminated (HPL) panels that do not require painting costs. In some cases, the use of HPL material for a period of 2-3 years shows a significant peeling of changes in quality.

The original design that imitators have always avoided is evident in the glass work technique which is mounted vertically on the table wall. The original design used a heating technique to create a glass arch. This technique requires calculating the shrinkage of shape and accurate dimensions of the glass material before and after heating. Inaccurate calculations will result in failure of the precision accuracy of wood and glass work joints. Avoidance of this complicated glass work is done by processing glass work on the table wall which can manipulate the shape that should be curved to become flat. Another avoidance is through replacing the glass material with plywood material.

3.2.2. Visual Quality

Visually, in the imitation design, the selection of the same material and color carpet is found. The difference is in the shades of the selected color. All the colors of the original design rugs use shade colors such as shade of blue and shade of red. The consideration is to avoid the glare of the very hot Indonesian sun when the user has just looked out the window of the building. Some imitation designs at the Faculty of Engineering (FE) use blue and red carpet colors with a very high degree of brilliance which causes an afterimage effect that tires the user's eyes when looking from outside the building into the building.

Although the imitation design also follows the visual composition of the colors in the original design, the proportions of the color components clearly feel very different. At the Faculty of Cultural Studies (FCS), this difference in color composition creates an impression of space that is also very different between the original and the imitation design. At the FM, the color composition is dominated by blue but without the support of an adequate balance of light and dark gradations.

In the original design, the architect did not make red, which is the color of university identity, as the dominant color in meeting or meeting rooms. The consideration is the red color in a meeting room will have a negative effect on the user because it is a stimulant that increases the heart rate and makes it uncomfortable. Far from being a requirement of a meeting room. Therefore, the proportion of red is deliberately muted by the dominance of blue which represents maritime and functions to provide coolness and comfort to users during the meeting. Even though blue is the dominant color of the composition, the balance of the proportion of light-dark blue is clear so that it does not cause a drowsy effect as happened in the FM.

In almost all imitation designs, the neatness of network placement is not a consideration for the imitation architect. At the FSP, it was found that the work of the electricity grid, sound system, and projectors appeared naked on the ceiling surface of the room and was not carried out as in the original design. When construction work is carried out on the original design, the entire conduit of the grid system, sound system, and the projector is installed before the floor, walls, and ceiling surfaces are worked on. In imitation design, this is not done because the imitation architect does not plan a network system that is hidden behind the floor, wall, and ceiling surfaces.

3.3. *Visual Camouflage*

Just like in the original design, the composition of the visual elements of the original design such as the presence of horizontal lines on the furniture and room walls, the glass area, and a touch of silver color also embodies the imitation design. See Figure 1. The difference is in the consistency of continuity of different horizontal lines and the addition of trinkets that did not exist in the original design. This is done to avoid the similarity in form between the imitation design and the imitation design. The more variations of the imitation design, the less the original design will disappear. See Figure 2.

The main color change occurs at the Faculty of Public Health (FPH). The imitation design turns blue to green. The continuous horizontal line elements are the same as the original design. There is a clear difference between the surface of the table wall, which in the original design uses a combination of multiplex walls and transparent glass, while the imitation design only uses multiplex walls without transparent glass. See Figure 3.



Figure 1: In the original design, the horizontal stripes of furniture walls are continuous. The glass plane elements are transparent.



Figure 2: In the imitation design the horizontal stripes are only in the middle of the furniture wall. The glass plane elements are not transparent.



Figure 3: The use of blue in the original design changes to green in the imitation design.

Artificial design variations are carried out by sticking to ideas without going through the analysis process and design concepts as in the process of creating the original design. The patching of variations on this imitation design is unable to disguise the character of the original design. This condition also explains that replicas do not produce sudden leaps of design ideas, but only bring about changes in a number of design variations. It is different from the original design which was done with a new concept because the old concept is considered to be no longer able to adapt.

Camouflage is a form of visual mimicry when one species, the mimics, evolve to share some properties with another species, the model. The goal is to make it invisible or hard to find (Pettersson, 2018). In this case there are two contradictory situations experienced by the imitation architect. The first advertises its ability to design like the

original. Here the architect maximizes the similarity between the imitation design and the original design. Second, try to disguise the imitation design so that authenticity is difficult to find.

In the process of biological evolution, it appears that gene mutations will create new gene traits that are capable of supporting the survival and reproduction of the organism. In imitation design cases, the character of the design also mutates according to the environmental conditions. Design characters that have a high level of difficulty in adapting to an environment that requires energy efficiency for the quality and price of goods. Plagiarism design ideas meditate following the conditions desired by the producers and users, creating a product that is similar in quality and at a price that is affordable to both the producer and user. If their ideas cannot adapt to environmental conditions, they will be eliminated from the opportunity to get a job.

3.4. Sense of Not Guilty

When I interview the architect team who is involved in plagiarism work, they initially feel uncomfortable revealing their work process. Some people reported that they plagiarized because the design was considered good. When I asked why they didn't contact the architect, they didn't answer my question. In in-depth interviews they finally revealed that they knew it was not a good thing to plagiarize someone else's design, but they thought it was because of the buyer's request. They only provide goods according to the wishes of the buyer. In this case it is the buyer, not the maker, to blame.

The rise of physical work plagiarism that is invisible to the eye shows that the environmental community is permissive to plagiarism activity. Informant Rasyid said that university leaders received information that copying someone else's designs was not considered plagiarism. The rise of physical work plagiarism that is invisible to the eye shows that the environmental community is permissive to plagiarism activity. There is no problem with imitation when there are different variations. Like comparing instant grits research. The first researcher found a method of making instant grits, while the second researcher found grits with a taste of seaweed.

Another reason that makes society permissive to plagiarism is the perception that as long as the design work is not registered as having a patent, then there is nothing wrong when someone's design is copied. Here it appears that it is appropriate for plagiarism to be viewed from a positive legal perspective and not from an ethical and moral side of the profession. Guilt from a review of professional ethics and morals are not automatically guilty from a legal standpoint.

4. Conclusion

This research found that plagiarism of architecture designs develops easily and quickly because people do not consider plagiarism as bad. The architect's motive as the creator of the plagiarism design idea is also still at the level of meeting basic needs and has not yet touched the level of self-actualization to perform better than other architects. Their performance is measured by the ease of the process convenience simplicity and cost efficiency, ignoring the complex processes that are involved before a design is created. Therefore, the idea of imitating architects only rests on how the products they create can adapt to what buyers and users are interested in.

Plagiarism of potential ideas creates design deviations that are physically and visually degraded in quality compared to the original design. Copycat architects ignore difficult ideas only and opt for copying only easy ideas to be implemented. Form not work perfectly. There is a condition of ambiguity in the copycat architects between the desire to present a design that is very similar and the desire to hide the origin of the design idea, making the disguise of the design form not run perfectly.

Although moral issues regarding the bad idea of plagiarism have been discussed in theory, these issues are neglected in the conduct of activities in the academic community. The space for moral awareness that the process of creating new ideas capable of producing various prime objects is not yet open. The academic community is still limited to producing replicas that repeat existing prime object ideas.

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Acculturation Orientation of Migrant Students

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Abstract

Due to the intensification of global migration movements, the importance of studies in the field of acculturation has been increasing. In order to develop a healthy adaptation process between the migrant community and the host society, it is especially necessary to conduct studies on the acculturation processes of young migrants. Exploring the acculturation orientation of migrant students in Turkey, one of the leading countries experiencing the migration movements intensively, this study collected data from a total of 110 migrant students, 69 females and 41 males. “Vancouver Index of Acculturation”, “Revised Social Contact Scale”, “Multidimensional Scale of Perceived Social Support”, “Turkish Proficiency Level Questionnaire” and “Personal Information Form” were employed as data collection tools. Multiple linear regression analysis was used to analyze the data. The analyses results revealed that the level of perceived social support of migrant students from their families and the quality of social contact significantly predicted their heritage culture orientation and explained 18% of them. In addition, the quantity of migrant students’ social contact and the quality of social contact significantly predicted their mainstream culture orientation and explained 25% of them. As a result, the present study put forth that in order to support the heritage culture orientation of migrant students, the perceived social support from the family should be improved, and the quantity and quality of social contact should be increased to reinforce their mainstream culture orientation and to facilitate the acculturation processes.

Keywords: Acculturation Orientation, Social Contact, Migrant Students, Social Support

1. Introduction

The phenomenon of migration, one of the most important issues in Turkey and the world lately, has affected and continues to affect the lives of societies at every period (Akıncı et al., 2015). The migration movement affects various components of the society and may cause problems related to adaptation in society (Apak, 2014). Beyond displacement, migration has a complex structure referring to a transition from one culture to another and from one social environment to another (Özdemir & Budak, 2017). As a result of migrations, individuals from different cultures come together, and the importance of relationships between individuals increases in the changing social structure. The interaction between migrants and host society members brings along the process of cultural change (Akıncı et al., 2015). Acculturation refers to individuals from different cultures coming together and interacting and thus having changes in their feelings, thoughts and behaviors (Berry, 1999; Gordon, 1964; Kim et al., 2001; Sam, 1992).

Although the studies in the field of acculturation have a long history (Gordon, 1964; Gillin & Raimy, 1940; Thurnwald 1932), it has become one of the most important and interesting topics with the increase of migration movements on a global scale (Castro & Rudmin, 2017). Turkey has always been one of the countries where migration movements were intensely encountered. Also, in recent years, there has been an intense influx of refugees due to political unrest and war in neighboring countries. Indeed, at the present, Turkey is one of the countries hosting the highest number of migrants in the world (United Nations High Commissioner for Refugees [UNHCR], 2020). It is believed that it is important to examine the acculturation process of migrants in Turkey. With the studies conducted in this direction in Turkey, contributions will be made to the development process of healthy relationships between the member of the host society and the migrant communities and to the integration process.

Migrants develop different orientations during the acculturation process. Berry et al. (1987) stated that ethnic and cultural minority groups in the multicultural societies formed after migration, basically seek answers to two questions. The first question is about “whether to maintain the ethnic identity or not” and the second is about “whether to be actively included in the mainstream culture or not”. In the process of acculturation, migrants are faced with the questions of “Is maintaining my cultural heritage valuable?” and “Is maintaining relationships with other groups valuable?”. Their acculturation processes are shaped in line with their answers to these questions. When they maintain their heritage, their “heritage culture orientation” develops, and when they adopt the mainstream culture, their “mainstream culture orientation” develops. Furthermore, different acculturation strategies such as assimilation, separation, integration and marginalization may come to the fore based on these two acculturation orientations (Berry, 1990; 1997).

As a result of migrations, people’ desire to live together develop with the adaptation process. However, this process can sometimes bring along maladjustments and conflicts, and intercultural communication may be disrupted. Solving such problems is among the priorities of many countries. It is especially important for migrant students to integrate with the society (Akıncı et al., 2015). In this respect, various studies internationally (Berry et al., 2006; Berry and Sabatier, 2010a, 2010b, 2011; Goforth et al., 2014; Virta et al., 2004) and in Turkey (Akdeniz, 2018; Bozdağ, 2020; Tunay-Aytekin, 2018) were conducted. However, these studies generally addressed the associations between the acculturation strategies of migrant adolescents, and their psychological and sociocultural adaptation. Only the study conducted by Goforth et al. (2014) explored the various variables (age, sex, religiosity and length of stay in the United States) predicting the heritage and mainstream orientations. Therefore, it is believed that it is important to examine the factors affecting the heritage and mainstream orientations of the migrant students in more detail. Thus, this study examined whether migrant students’ perceived social support from their families, friends and significant other, their quantity and quality of social contact, their level of Turkish proficiency and their duration of residence in the Turkey predict their heritage and mainstream orientations. With the results to be obtained, contribution to the theory and practice studies on the acculturation processes of migrant adolescents is aimed.

2. Method

2.1 Research Design

Exploring the variables predicting the acculturation orientations of migrant students in Turkey, this study employed the which tries to determine the predictors of acculturation orientations of the correlational design. In the correlational model, the degree and direction of the changes between the variables in the study are determined (Fraenkel et al., 2011).

2.2 Study Group

The study group consisted of a total of 110 students, 69 females and 41 males, who migrated from Afghanistan, Iraq, Qatar, Libya, Lebanon, Egypt, Saudi Arabia, Syria, Jordan and Yemen. The mean age of the participating migrant students was 18.23. While 75% of them stated that they came to Turkey because of war in their country, most of the remainder stated that they migrated due to family reasons and education. The years they had been

residing in Turkey varied between 1-7 years. 18% of the participants were attending middle schools, whereas 82% of them were attending high schools. 88% of them stated that they were economically from very low income families.

2.3 Data Collection Tools

In order to collect the study data, “Personal Information Form”, “Vancouver Index of Acculturation”, “Multidimensional Scale of Perceived Social Support”, “Revised Social Contact Scale” and “Turkish Proficiency Level Questionnaire” were used. “Personal Information Form” and “Turkish Proficiency Level Questionnaire” were developed by the researcher. The Cronbach’s alpha coefficient for the Turkish Proficiency Level Questionnaire was calculated as .82.

Based on a two-dimensional approach in acculturation, Vancouver Index of Acculturation was developed by Ryder et al. (2000). The index consists of two subscales, namely heritage culture and mainstream culture. Turkish and Arabic adaptation of the index was made by Bozdağ and Bilge (2019a). In the present study, the Cronbach’s alpha coefficient of the index was .84 for heritage culture and .87 for mainstream culture.

The Revised Social Contact Scale was adapted from the “Social Contact Scale”, developed by Islam and Hewstone (1993), to Turkish by Akbaş (2010). The validity and reliability analyses of the revised scale for the sample of refugee children were conducted by Bozdağ and Bilge (2019b). In the present study, the Cronbach’s alpha coefficient of the scale was calculated as .88 for the frequency of social contact and .75 for the quality of social contact.

Multidimensional Scale of Perceived Social Support was developed by Zimet et al. (1988) to determine individuals’ level of perceived social support. The scale was adapted to Turkish by Eker and Arkar (1995). In this study, the Cronbach’s alpha coefficient of the scale was found as .84 for perceived social support from family, .83 for perceived social support from a friend, and .85 for perceived social support from significant other.

2.4 Data Analysis

The study data were analyzed through SPSS 25. Multiple linear regression analysis was performed as the analysis technique. The upper limit of the margin of error was accepted as .05. For the multiple linear regression analysis, first, basic assumptions were checked. For this purpose, sample size, univariate and multivariate outliers, normality, linearity, homoscedasticity, multicollinearity and independence of errors were examined (Hair et al., 2014). In the data set, two univariate outliers were determined, whereas multivariate outliers were not determined. Since no significant difference was observed in the analysis results when the two univariate outliers were removed, these values were not removed from the data set in order to avoid data loss. It was determined that the sample size (110) was sufficient in line with the criterion presented by Tabachnick and Fidell (2012) [$n \geq 50 + 8m$ (m is the number of independent variables, since there were seven independent variables in this study, the calculated sample size is 106)]. Skewness coefficients varied between -1.43 and .10, and kurtosis coefficients varied between -.99 and 1.74. The fact that the skewness and kurtosis coefficients were between +2 and -2 indicated that the normality assumption was met (George & Mallery, 2010). Also, the scatter plots of the residuals were examined for the assumptions of normality, linearity and homoscedasticity, and it was determined that these assumptions were met. The fact that correlation coefficient between the variables was below .90 (Field, 2009), the VIF (Variance Inflation Factor) value was less than 10, and the TV (Tolerance Value) was greater than .10 (Hair et al., 2014) indicated that there was no multicollinearity problem.

Bivariate correlations between variables varied between -.14 and .65. The VIF values of independent variables were between 1.15 and 2.06, and the TV values were between .49 and .87. Therefore, there was no multicollinearity problem. Durbin-Watson value should be around 2 for the errors to be independent from each other (Field, 2009). As the Durbin-Watson value for the dependent variable was 1.92 for heritage culture and 2.26 for mainstream culture, all the assumptions for multiple linear regression analysis were met.

3. Results

Pearson product-moment correlation coefficients were determined to reveal the relationships between the heritage culture orientation and mainstream culture orientation of migrant students, and independent variables. The analysis results are presented in Table 1.

Table 1. Results of analysis of correlation between dependent and independent variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Heritage culture orientation	47.03	11.57	-								
2. Mainstream culture orientation	44.97	12.99	.29**	-							
3. Quantity of social contact	15.36	5.67	.08	.43**	-						
4. Quality of social contact	17.51	4.56	-.14	.37**	.29**	-					
5. PSS from friends	18.81	6.79	.27**	.06	.09	.07	-				
6. PSS from family	22.09	6.07	.32**	.03	.06	.10	.49**	-			
7. PSS from significant other	20.83	7.07	.25**	.14	.18	.11	.65**	.54**	-		
8. Turkish proficiency level	14.54	3.54	-.04	.22*	.57**	.17	.21*	.06	.09	-	
9. Duration of residence in Turkey	4.07	1.74	.02	.21*	.38**	.31**	.11	.11	.16	.37**	-

* $p < .05$, ** $p < .01$, $N = 110$, PSS: Perceived social support

As seen in Table 1, there were positive significant relationships between heritage culture orientations of migrant students, and their perceived social support from family ($r = .32$, $p < .01$), from friends ($r = .27$, $p < .01$), and from significant other ($r = .25$, $p < .01$). Furthermore, positive significant relationships between mainstream culture orientation of migrant students, and quantity of social contact ($r = .43$, $p < .01$), quality of social contact ($r = .37$, $p < .01$), Turkish proficiency level ($r = .22$, $p < .05$), and duration of residence in Turkey ($r = .21$, $p < .05$) was found. Multiple linear regression analysis was performed to determine the variables that predict the heritage culture orientations of migrant students. The analysis results are given in Table 2.

Table 2. Multiple regression analysis results for predicting the heritage culture orientations of migrant students

Predictor variable	<i>B</i>	<i>SE B</i>	β
Constant	41.59	6.44	
Quantity of social contact	.41	.24	.20
Quality of social contact	-.55	.24	-.22*
Perceived social support from friends	.29	.21	.17
Perceived social support from family	.49	.21	.26*
Perceived social support from significant other	-.01	.21	-.01
Turkish proficiency level	-.57	.38	-.18
Duration of residence in Turkey	.21	.68	.03
R		.43	
R ²		.18	
ΔR^2		.13	

* $p < .05$, $N = 110$

As seen in Table 2, the perceived social support from the family ($\beta = .26$, $t(102) = 2.37$, $p < .05$) and quality of social contact ($\beta = -.22$, $t(102) = -2.23$, $p < .05$) predicted heritage culture orientations of migrant students, respectively. These two variables explained 18% ($R^2 = .18$, $F(7,102) = 3.22$, $p < .01$) of the heritage culture orientations of migrant students. As the level of perceived social support from the family increased and the quality of social contact decreased, migrant adolescents preferred heritage culture orientation. Quantity of social contact, perceived social support from friend and significant other, Turkish proficiency level and the duration of residence in Turkey did not significantly predict the heritage culture orientations of migrant students.

Multiple linear regression analysis was conducted to determine the variables predicting the mainstream culture orientations of migrant students. The analysis results are given in Table 3.

Table 3. Multiple regression analysis results for predicting the mainstream culture orientations of migrant students

Predictor variable	<i>B</i>	<i>SE B</i>	β
Constant	20.87	6.90	
Quantity of social contact	.82	.26	.36*
Quality of social contact	.76	.26	.27*
Perceived social support from friends	-.03	.23	-.01
Perceived social support from family	-.13	.22	-.06
Perceived social support from significant other	.17	.23	.09
Turkish proficiency level	-.14	.41	-.04
Duration of residence in Turkey	-.001	.73	.000
R		.50	
R ²		.25	
ΔR^2		.20	

* $p < .01$, $N = 110$

As seen in Table 3, the quantity of social contact ($\beta = .36$, $t(102) = 3.24$, $p < .01$) and quality of social contact ($\beta = -.227$, $t(102) = -2.91$, $p < .01$) predicted mainstream culture orientations of migrant students, respectively. These two variables explained 25% ($R^2 = .25$, $F(7,102) = 4.95$, $p < .001$) of the mainstream culture orientations of migrant students. As the quantity and quality of social contact increased, migrant adolescents preferred mainstream culture orientation. Perceived social support from family, friend and significant other, Turkish proficiency level and the duration of residence in Turkey did not significantly predict the mainstream culture orientations of migrant students.

4. Discussion

Examining the acculturation orientations of migrant students, this study aimed to mainly determine the factors affecting the heritage and mainstream culture orientation. According to the study findings, as the migrant students' perceived social support from family, friend and significant other increases, these students prefer heritage culture orientation. Also, as the quantity and quality of social contact, Turkish proficiency level and duration of residence in Turkey increase, they prefer mainstream culture orientation. The acculturation process is shaped by both intra-group and inter-group relationships (Mohanty et al., 2018). When migrant adolescents arrive in the host society, they are likely to experience some psychological problems, as there is not enough contact with the new culture yet (Furnham & Bochner, 1982). Because of the sudden life changes at this stage, they can access less resources and social support (Briones et al., 2010). For this reason, the perceived social support especially from their close environment (family, friend and significant other) reinforces their heritage culture orientation. In addition, with the passage of time, more exposure to new culture reinforces heritage culture orientation. Learning the language of the host society and increase in the duration of residence in the host society positively affect the life satisfaction of migrant adolescents in the host society. The more time spent in the new culture, the easier it is to acquire a second language (Briones et al., 2010). Also, language acquisition affects the social contacts of migrant adolescents. The study conducted by Mercan-Uzun and Bütün (2016) determined that Syrian migrant children were subjected to social isolation and their problems increased because of not knowing Turkish. As the Turkish language proficiency of young migrants in Turkey improves and length of their stay increases, their marginalization (rejecting both cultures, rejecting heritage culture and rejecting mainstream culture) orientations also decrease (Balci & Ögüt, 2019). Therefore, it is especially important to develop linguistic skills of migrant students as these skills play a key role in their social contacts.

According to another finding of the present study, the level of perceived social support from the family and the quality of social contact significantly predict the heritage culture orientations of migrant students. Accordingly, as the level of perceived social support from the family increases and as their quality of social contact decreases, migrant adolescents prefer heritage culture orientation. Furthermore, the quantity of social contact and the quality of social contact significantly predict the mainstream culture orientation of migrant students. As their quantity of social contact and quality of social contact increase, migrant adolescents prefer mainstream culture orientation. It

is also important to ensure that migrant children maintain their heritage and maintain ties with their past, as well as helping them adapt to the society they are in through interaction and thus preventing them feeling like strangers (Sever, 2020). At this point, the importance of the family comes to the fore. Family origins are one of the determining factors in the social integration process of young migrants (Akıncı et al., 2015). In the psychosocial adaptation process, the social support migrant adolescents receive from their families and close environment enables this process to proceed in a healthier way (Gülmez & Öztürk, 2018; Karataş, 2019). The adaptation process becomes easier with the increase of psychosocial support provided by the family (Gülmez & Öztürk, 2018). Similarly, the present study determined that the migrant adolescents' perceived social support from their families helps them maintain their heritage. On the other hand, migrant families may also have fears about their children being assimilated (Bal & Arzubagia, 2014). Families do not prefer their children to forget their culture and adopt the mainstream culture completely. In this context, the importance of the support migrant families provide to their children increases even more. Deprived of adequate support, migrant adolescents may drift apart from their family roots and become alienated to their own culture.

Migrants tend to maintain their heritage in their private lives, often with their families and ethnic communities. In areas where they interact with people from the host society, they try to adapt to the mainstream culture (Berry, 1997). The adaptation of migrant adolescents to the mainstream culture and their general mainstream culture orientation vary depending on how they are perceived by the host society and how they are treated (Mohanty et al., 2018). According to the study conducted by Briones et al. (2010), ethnic discrimination faced by migrant adolescents decreases their life satisfaction in the host society. Although individual, intergroup and contextual factors directing the acculturation processes of the host society and migrants are emphasized, social contact stands out among these factors (Perez-Moreno et al., 2014). Perez-Moreno et al. (2014) stated the level of prejudice against migrants in the host society is associated with the acculturation orientation of migrants and that social contact affects the prejudiced attitudes towards migrants (Perez-Moreno et al., 2014). Social contact with the members from the out-group under certain conditions improves intergroup relationships. Thanks to social contact, stereotypes and prejudices towards the out-group decrease and the perception of similarity with the out-group increases (Pettigrew, 1986). According to the present study, the lack of qualified social contact between migrant adolescents and the host society causes migrant adolescents to gravitate towards their own group and not to establish a relationship with the out-group. On the other hand, increased quantity and quality of social contact enables migrant adolescents to gravitate towards the mainstream culture and thus to develop intergroup relationships. Social contact between the migrant community and the host society is effective in preventing possible problems and in the healthy progress of the acculturation process. Social networks of migrant adolescents can develop through social contact. Social networks allow migrants to be in contact with family members and friends from their heritage, to establish relationships with the host society members and to achieve social adaptation (Avolonto, 2019). The positive attitudes of the host society towards migrant adolescents maintaining their heritage improve the contact of migrant adolescents with the members of the host society, thus accelerating the integration process. The mismatch between the acculturation orientations of the host society and the migrant adolescents can lead to intergroup conflict, discrimination, weakening of group communication and a decrease in the well-being of migrants (Matera et al., 2018). Therefore, the migrant adolescents need to maintain their heritage on the one hand, and gravitate towards the mainstream culture on the other. As a matter of fact, various studies (Sam, 2000, Ward, 2006) determined that a strong identification with both acculturation orientations is associated with psychological well-being.

5. Conclusion

In conclusion, it is important for the host society member give social support to the migrant adolescents trying to psychologically and culturally adapt to the host society (Karataş, 2019) based on an acceptance and adaptation understanding in order to reduce the stress that migrant adolescents can experience (Karataş & Baloğlu, 2019). The present study revealed that in order to support the heritage culture orientations of migrant students, their perceived social support from the family should be improved, and the quantity and quality of social contact should be increased in order to reinforce their mainstream culture orientations and facilitate the acculturation processes. The most important factor for a qualified social contact is the positive attitude and behavior of the host society members towards migrant adolescents.

6. Limitations and Recommendations

The relatively low number of participants whom the data collected from in the study can be considered as a limitation in terms of the generalizability of the study results. It should also be kept in mind that this study is a cross-sectional study, therefore it does not provide a framework for how the acculturation orientations of migrant students developed over time. Similarly, it should not be overlooked that the participants were mostly migrant adolescents from Arab countries, so the findings should be assessed in this context. In future research, data can be collected from different migrant groups and comparisons can be made about the acculturation process of migrant adolescents. In this study, the effect of the family, and the quantity and quality of social contact in the acculturation process of migrant adolescents was revealed. Various studies can be conducted on the differences in acculturation orientations between migrant families and their children, and their psychosocial consequences. In addition, research can be conducted to develop the qualified social contact between migrant adolescents and host society members.

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Probing High School Students' Understanding of Einstein's Theory of Gravity Using Thought Experiments and Analogy

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Abstract

In this study, we probed high school students' understanding of Einstein's theory of gravity by implementing an approach which mainly consists of two steps: firstly, exposing students to TEs describing the Equivalence Principle; secondly, applying the analogy of parallel lines on a curved surface with the path of two falling balls in a real gravitational field to help students deduce the idea of gravity as the spacetime curvature. A total of 12 high school students voluntarily participated in this study where data regarding their understanding were measured by means of an identical pen-and-paper test and interviews. Even though none of the students could explain what the Einstein's version of gravity is in the pre-test, their responses in the post-test indicated that the approach we applied could help them understand the Einstein's theory of gravity. Not only could they recall what the gravity is, most of them managed to provide related analogy they have learnt to explain their thoughts. Apart from its easily comprehensible steps, the study suggested that the approach is worth adopting to teach Einstein's theory of gravity as it reflects the similar path ever taken by Einstein when starting to formulate his theory of gravity.

Keywords: Einstein's Theory of Gravity, Thought Experiments, Analogy, Students' Understanding

1. INTRODUCTION

Efforts to bring general relativity related concepts, such as Einstein's theory of gravity, gravitational deflection of light, black holes, and gravitational waves to high school students have increasingly been conducted for the last few years. Among others, pilot and follow up programs conducted by collaborating researchers in *the international Einsteinian Physics Education Research (EPER)* are worth mentioning. In recent years, this international collaboration which comprises researchers in Australia (Einstein-First Project), Norway (Project ReleQuant), and Germany (The Spacetime-Travel Project) has been actively developing and testing appropriate learning materials and approaches used to teach Einsteinian physics to high school students (Choudhary, Kraus, Kersting, Blair, Zahn, & Zadnik, 2019).

Researchers in the Einstein-First Project developed and tested learning resources, mainly consisting of spacetime simulator (rubber sheet model), tungsten balls and marbles, woks, and toy cars to teach general relativity related concepts (Foppoli, Choudhary, Blair, Kaur, Moschilla, & Zadnik, 2018; Kaur T., Blair, Moschilla, Stannard, &

Zadnik, 2017; Pitts, Venville, Blair, & Zadnik, 2013). In the Spacetime-Travel Project, Zahn and Krauss developed sector models to teach curved spacetime, gravity and black holes (Kraus & Zahn, 2019; Zahn & Kraus, 2014; Zahn & Kraus, 2018). In the ReleQuant project, digital and research-based resources were developed to teach general relativity theory (Kersting & Steier, 2018; Kersting, Bøe, Henriksen, & Angell, 2018; Kersting, 2019). Despite the difference in methods and approaches used, these researchers seem to agree that concepts related to general relativity are better delivered to high school students by using models and analogies (Kaur, et al., 2018; Kersting & Steier, 2018; Zahn & Kraus, 2014).

In addition to the use of models and analogies, thought experiments (TEs) have also been used as an assisting tool to teach and explain theories of relativity (special and general theory of relativity). Velentzas & Halkia (2013), for instance, used “Einstein’s elevator and Einstein’s train” TEs to teach basic concepts of relativity. Their study indicated that TEs can help students understand abstract concepts such as the equivalence principle, the relativity of simultaneity, time dilation, and length contraction. The use of TEs is also found in several well-known books popularizing Einstein’s theories of relativity, such as *Black Holes & Time Warps: Einstein's Outrageous Legacy* (Thorne, 1994), *Gravity from the ground up* (Schutz, 2003), *Spacetime Physics: Introduction to Special Relativity*, and *Exploring Black Holes: Introduction to General Relativity* (Taylor & Wheeler, 1991, 2000). In the context of teaching the Einstein’s theory of gravity, Kersting (2019) emphasized the importance of introducing and capitalizing TEs before using warped time model to teach Einstein’s theory of gravity.

The use of models, analogies and TEs to teach Einstein’s theories of relativity is arguably reasonable considering the highly abstract nature of the theories. In fact, theories of relativity are sourced from Einstein’s brilliance of using his genuine TEs to overturn classical idea about the interrelationship of space, time, and matter. Therefore, using TEs in teaching and learning Einstein’s theories of relativity is reasonably beneficial to helping students visualize abstract concepts in their minds and develop their imagination (Galili, 2009), triggering their interests about the topics being discussed (Velentzas, Halkia, & Skordoulis, 2007) and more importantly, raising their awareness about the importance of the long and natural connection of TEs to the development of the theories (Stinner & Metz, 2006). Equally important is the use of models and analogies to explain Einstein’s theories of relativity. As theories of relativity, in particular the general theory of relativity is formulated in abstract and complicated mathematics formula, models and analogies have been used in order to make concepts related to theories accessible in more simplified ways. The use of models and analogies is hoped to facilitate understanding of abstract concepts as the process allows students to analogize the similarities between objects or events in their world and the phenomena under discussion (Treagust & Duit, 2012). Moreover, the use of models and analogies is expected to help students construct mental models of abstract phenomena by referring to their existing or previous experience in order to interpret more complex ideas (Silva, 2006).

In the context of the theory of gravity, Einstein proposed a new feature of gravity which is very distinct from the old Newtonian gravity. Newton defines gravity as a force emanating from massive objects while according to Einstein gravity is a manifestation of curved spacetime (Einstein, 2005). Arguably, Newton explains gravity using a more familiar concept: a force. Einstein, on the other hand, has adopted a more abstract concept to explain gravity: the curvature of spacetime. In fact, spacetime itself is an abstract concept; it is a four-dimensional entity which we cannot directly perceive as we live in a three-dimensional world. Hence, apart from its mathematics complexity, it is quite obvious that even to explain Einstein’s theory of gravity conceptually, we do need models and analogies.

One of the most frequently used models to explain Einstein’s theory of gravity is the elastic rubber sheet model or pillow model or sometimes called spacetime simulator model (Baldy, 2007; Dua, Blair, Kaur, & Choudhary, 2020; Kaur T., Blair, Moschilla, Stannard, & Zadnik, 2017). In this model, spacetime is mimicked by the elastic rubber sheet and to represent the idea of spacetime curvature, a massive object like a heavy tungsten ball is put on that elastic rubber sheet to make it curved. Smaller objects put on that curved elastic rubber sheet will perform any movements depending on the sheet distortion. Using this model, one can reproduce Einstein’s theory of gravity as encapsulated in John Wheeler’s words, “*matter tells spacetime how to curve; curved spacetime tells matter how to move*” (Wheeler, 1990). Without the presence of any massive objects, the stretched rubber sheet will remain undisturbed and this is considered to represent a flat spacetime which is an arena for the special theory of relativity.

This model is considered to have great explanatory power (Kersting, 2019) and the concepts mapped from Einstein's theory of gravity to this model is straightforward (Pössel, 2018).

Apart from positive points this model can offer, the model is mainly criticized due to the double role played by gravity which potentially leads to a conceptual confusion (Pössel, 2018; Price, 2016). The model uses gravity to explain gravity. The model uses Earth's gravity acting on a massive object to explain gravity which is represented by the curved space on the rubber sheet caused by that same massive object. This circular argument may lead to students' confusion (Janis, 2018). Besides that, this model can lead to a misunderstanding that gravity is a manifestation of curved space, not curved spacetime (Janis, 2018) as the model emphasizes the role of distorted space and obscures the role of distorted time (Pössel, 2018). To address the limitations of this model, alternative models and approaches have been suggested, such as the warped time model (Kersting, 2019), sector models (Zahn & Kraus, 2014, 2018) and the use of the concept of geodesic using analogies with paths of flying aircraft on the surface of the Earth (Janis, 2018; Stannard, Blair, Zadnik, & Kaur, 2016)

The present research

In order to minimize the emergence of alternative conceptions resulted from the use of previous models, this research was designedly aimed at probing students' understanding of Einstein's gravity by adopting a new approach which mainly consists of two steps: first, exposing students to TEs describing *the Equivalence Principle*; second, applying the analogy of parallel lines on a curved surface with the path of two falling balls in a real gravitational field to help students deduce the idea of gravity as the spacetime curvature.

While in the previous research students were directly told about what Einstein's gravity is and the use of models and analogies was to visualize the concepts (Dua, Blair, Kaur, & Choudhary, 2020; Kaur T., Blair, Moschilla, Stannard, & Zadnik, 2017; Pitts, Venville, Blair, & Zadnik, 2013), in this research, we encouraged students to perform TEs and use analogies to deduce Einstein's idea of gravity. In this case, we followed the similar path taken by Einstein himself when formulated his theory of gravity (Pössel, 2005; Thorne, 1994). We fundamentally believe that this approach can hinder students from taking for granted the idea of gravity as a manifestation of spacetime curvature.

a. TEs describing the Equivalence Principle

The equivalence principle is a fundamental principle in the theory of general relativity, which states that observations made in a uniformly accelerating reference frame (\vec{a}) are indistinguishable from observations made in a Newtonian gravitational field (\vec{g}), where $\vec{g} = -\vec{a}$. Expressed in Robert Dicke's words, "the (strong) equivalence principle might be defined as the assumption that in a freely falling, non-rotating laboratory the local laws of physics take on some standard form, including a standard numerical content, independent of the position of the laboratory in space and time. It is of course implicit in this statement that the effects of gradients in the gravitational field strength are negligibly small, i.e., tidal interaction effects are negligible" (Nobili, et al., 2013).

Several TEs have been designed to explain the equivalence principle. In this study, students were asked to perform two TEs. The first TE was about Einstein's happiest thought: "*if a person falls freely, he will not feel his own weight*". "The person will not feel his weight" means that locally (in his immediate vicinity), the person who is experiencing free fall in a gravitational field does not feel gravity. Why is that? The fundamental reason behind this is that *locally* this person is experiencing *a homogenous gravitational field*.

The TE designed to perform this Einstein's happiest thought is as follow:

Students were asked to imagine a freely falling person who is recording the motion of a ball thrown horizontally from a certain height and describe what the ball's path looks like as observed by this freely falling observer. Besides that, they were also asked to compare what the path looks like as observed by an observer standing on the ground.

The second TE was designed to describe the equivalence of gravity and acceleration. The TE is as follow: Imagine a person who is in a windowless elevator located in a very deep space, free from gravitational influence of any gravitating masses. The person is holding two balls side by side and is about to release them. According to the person in the elevator, when the balls are released, what would happen to the balls when the elevator is at rest and when the elevator is accelerated at 9.8 m/s^2 ? Suppose that the balls fall to the floor, what would happen to the horizontal separation between the balls?

The first TE was designed to show that in a homogenous gravitational field, a person freely falling will detect no gravity. In this TE, freely falling observer is observing the ball moving in a straight line as if the ball were moving in a free gravity universe. The absence of gravity felt by the observer implies that the observer and moving ball are in a flat spacetime where the special theory of relativity holds. The expected responses to the situations described in the second TE are as follow: when the elevator is at rest, the balls released will remain floating at their initial positions. When the elevator is accelerated at 9.8 m/s^2 , the person in the elevator will find that the balls fall and hit the floor as if they were dropped on the Earth's surface.

How about the horizontal separation between the balls? While in many textbooks, this second TE is commonly used to merely explain the equivalent effect caused by gravity and acceleration, in this study, however, we concentrated on the different feature of this TE. We used this TE to set the stage for students' mental realization about the difference of the effects caused by 'relative gravity' (Pössel, 2005) or pseudo gravity and the real gravitational field or intrinsic gravity.

In this study, we used the horizontal separation between two falling balls as a pivotal entry point to distinguish the pseudo gravity and the real gravity, which eventually leads to an understanding of gravity as a spacetime curvature. In an accelerated elevator, a person in that elevator will observe that the two balls fall to the floor as if they were being influenced by a real gravity. This kind of gravity is called relative gravity or pseudo gravity, characterized by its magnitude and direction homogeneity and reference frame dependence. To be precise, 'a gravitational field' caused by a constantly accelerated frame of reference is always a homogenous gravitational field. In this homogenous gravitational field, two freely falling balls *will not 'feel their own weights' (they are unable to detect the presence of gravity)* which implies that *they are moving in a flat spacetime*. Regarding their horizontal separation, the two balls are falling side by side in a homogenous 'gravitational field' and hence *their horizontal separation remains unchanged*.

In the real gravitational field, this is not the case. The Earth's gravity, for instance, is not uniform as the gravitational acceleration varies both in magnitude and direction. Regarding the horizontal separation of two balls falling in a real gravitational field, the inhomogeneity of the real gravitational field has the impact on changing their horizontal separation. The two balls initially falling side by side will have a tendency to fall on radial lines towards the Earth's center of gravity. Their paths can be depicted as follow: *the balls initially move parallel side by side. Due to the non-uniformity of Earth's gravity or sometimes called the tidal effect* (Pössel, 2005; Schutz, 2003; Thorne, 1994), *after a certain period of time on their way towards the Earth, the balls will approach each other and their horizontal separation decreases*. Logically, in a real gravitational field, the balls must not move in a flat spacetime otherwise they will keep their horizontal separation as they do in the homogenous gravitational field.

b. *the analogy of parallel lines on a curved surface with the path of two falling balls in a real gravitational field*

In a Euclidean geometry, two parallel lines never meet; they are equi-distant. For instance, two parallel lines on a flat surface of a paper sheet never meet. On the curved space, in contrast, two parallel lines behave differently. On a curved surface, for instance, two lines which are locally parallel could meet at one point. The lines of longitude from the equator to the poles on the classroom globe are a good example.

In this study, students were asked to analyze the behavior of parallel lines on a flat and on a curved surface and compare it analogously with the behavior of two balls falling side by side in a homogenous gravitational field and in a real gravitational field. The nature of two parallel lines on a flat surface is analogous to the path of two balls

falling side by side in a relative/homogeneous gravitational field. In this homogeneous gravitational field, the two balls detect no gravity and hence their spacetime is considered to be a flat spacetime. The flat surface is analogous to the flat spacetime. The fact that two balls falling side by side in a real gravitational field cannot keep their horizontal separation is analogous to what exhibited by two parallel lines on a curved surface. The curved surface is analogous to the curved spacetime.

c. *Payoff of the Analogy*

In a two dimensional curved space, it is the curvature of the surface that forces two lines, initially parallel, to shrink their separation distance and even cross at one point. In the case of two balls falling side by side in a real gravitational field, it is gravity (or to be precise: tidal effect of gravity) that causes the decrease of their horizontal separation distance. The effect caused by gravity on the falling balls is similar to what the surface curvature does on parallel lines. As the surface curvature is analogues to spacetime curvature, the gravity is, in conclusion, a manifestation of this spacetime curvature.

2. METHODS

1. Context of the research

This study was conducted in Sikka regency, East Nusa Tenggara province, Indonesia where a total of 12 (denoted as S1 to S12) grade XI majoring science students voluntarily participated in this study. The study was implemented in a five meetings program. In the first meeting, we administered the pretest and presented the concept of *spacetime* as a result of Einstein's postulate about the universality of the speed of light. In the second meeting, we highlighted *Newton's law of gravity* to remind students about what they had learnt in grade X and revealed *its limitations*. These limitations were not part of materials they had learnt in the Indonesia grade X physics curriculum. The core contents of this study were presented in the third and fourth meetings of the program. In the third meeting, students learnt about *the equivalence principle* and *Einstein's theory of gravity* was presented in the fourth meeting. A week later, the post-test was administered (fifth meeting).

2. Data Collection and Analysis

Data regarding students' understanding were measured by means of an identical pen-and-paper test administered before (pre-test) and after the five meetings program (post-test) and interviews. This open-ended test which consisted of six questions was designed to reflect our approach and to probe students' understanding of the Einstein's theory of gravity accordingly.

The first two questions were designed to probe students' understanding of TEs describing the equivalence principle (q_1 and q_2). The next two questions (q_3 and q_4) were to probe their understanding of the nature of two balls falling in a real gravitational field (q_3) and the behavior of parallel lines on a flat and curved surface (q_4). Q_5 instructed students to analogize the behavior of parallel lines on a flat and curved surface (q_4) with the paths of motion presented in q_3 . In q_6 , students were instructed to deduce Einstein's theory of gravity based on their answers to q_1 to q_5 .

Students' responses as evidenced in their written answers were then analyzed. The analysis was focused on students' initial and final understanding about the concepts.

3. RESULTS AND DISCUSSION

Analysis of Students' Responses to the Questionnaire

1. Pre-test responses

A. *Students' responses to q_1 and q_2 about TEs describing the Equivalence Principle*

The q_1 was designed to probe students' understanding of the so-called *Einstein's Happiest Thought: if a person falls freely, he will not feel his own weight*. The question is as follow:

Imagine two persons, A and B, who are at a certain height above the Earth's surface. The person A throws a ball in a horizontal direction and at the same time, the person B makes a free fall (motion without initial velocity),

- a) What is the shape of the ball's trajectory observed by the person B?
- b) What is the shape of the ball's trajectory observed by a person C who is at rest on the ground?

The expected response to the q_1 is the person B observes a straight line trajectory while the person C observes a parabolic (downward curved) trajectory. The trajectory observed by the person C is what we commonly experience in our daily lives. The straight-line trajectory viewed by the person B can be explained as follow: a person in a free fall (person B) could not detect gravity and the ball, according to this observer, is also moving in a free gravity region where it travels in a straight line path.

The results indicated that the shape of the trajectory observed by the person C was quite obvious that most of the students gave the correct answer (10 out of 12). On the other hand, students seemed to perform a serious thought experiment to analyze the shape of the trajectory observed by the person B. Several responses that arose regarding the shape of the trajectory observed by the person B were: straight line/horizontal trajectory (S2, S3, S7, S9 and S13), curved trajectory (S10), upward curved trajectory (S8), tilted trajectory (S6), and that the ball doesn't have a fixed trajectory (S4). Three students gave unexpected responses such as "according to the person B, the ball initially moves in a horizontal line and then falls vertically to the ground" (S5); "the person B observes the ball moving faster" (S11), and "according to the person B, the ball is accelerated" (S1).

The fact that there were five students who managed to give the correct response indicated that the TE could actually be grasped by students. However, when confirmed by interviews about how they came up with their answers, three students just answered the question intuitively (not quite sure about the reason); S3 mentioned that "the observer and the ball fall down together and their position remains the same. Therefore, the observer sees the ball moving in a straight line"; S7 said "Straight line. I remember, if a ball is thrown horizontally and another ball is released vertically, both will hit the ground at the same time. So, [the situation is] like this [S7 explained by using his hands showing how two balls fall down together]. I think the case is similar to the problem given"

The q_2 was about the TE describing the equivalence of gravity and acceleration. Students were asked to answer the following question:

Imagine a person who is in an elevator located in the outer space (the person and the elevator are completely free from the effects of gravity). While in the elevator, the person is holding two balls, 1 and 2, as shown in the picture.

- a) According to the person in the elevator, in which direction will the balls move when they are released in the elevator which is at rest?
- b) According to the person in the elevator, in which direction will the balls move when they are released in the elevator which is accelerating upward with a certain acceleration? How is their separation distance?
- c) If the elevator is accelerating at 9.8 m/s^2 upward (the acceleration experienced by an object when it falls on the Earth's surface), explain your ideas about the motion of the balls as observed by the person in the elevator! How is their separation distance?

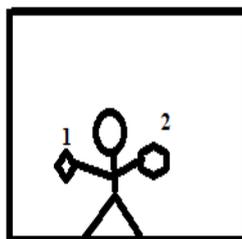


Figure 1: An observer in the lift

Regarding the $q_2(a)$, the majority of students responded as what expected that *the balls will float or remain at their places when they are released*. There were two students who gave different responses. S5 wrote: “the balls will fall down” and according to S9 “the balls will each other collide”. Students’ responses to the $q_2(b)$ could be divided into three categories: first, when the lift is accelerated, the balls fall down in parallel lines (S1, S6, S8); the balls fall down and their separation distance is always the same (S3, S4, S7, S9). Second, when the lift is accelerated, the balls will remain floating (S2, S10, and S11). Third, the balls float into the air (S5); the balls move upward and hit the ceiling of the lift (S12). Regarding the $q_2(c)$, in terms of the direction in which the balls will move, students’ responses were consistent with their previous responses ($q_2(b)$). Yet, none of the students pointed out the expected answer *that the two balls will fall to the floor as if they were being influenced by the real gravity*. The closest response was given by S8 who wrote “the balls will fall like objects falling from a certain height [on Earth]”. S3 and S9 seemed to misinterpret the problem when they considered the existence of gravity. “Because there is a gravitational force, the two balls fall quickly in parallel lines” (S3); “There will be a gravitational force and two balls fall down in a straight line” (S9). Confirmed in the interviews, their assumption about the existence of gravity is due to the misinterpretation of the data regarding gravitational acceleration (9.8 m/s^2) mentioned in the problem. We were also interested in responses given by S2 who consistently responded that the balls will float ($q_2.a$) and will remain floating ($q_2.b$ and $q_2.c$). In the interview, S2 explained as follow: “I think the balls float because there is no gravity. Even though the lift is moving, the balls remain floating”. It is quite obvious that in this case the S2 positioned himself as an external observer, not as an in the lift observer.

B. Students’ responses to the path of two balls falling in a real gravitational field(q_3)

The q_3 was about understanding the tidal force effect on changing the separation distance between two balls falling side by side in a real gravitational field. Students’ understanding was gauged by the following question: Look at the picture!

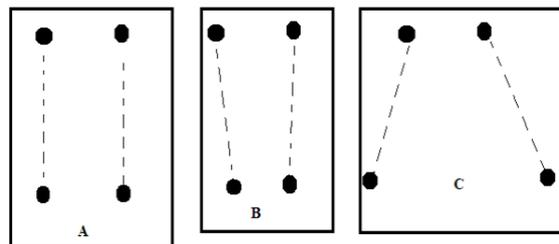


Figure 2. Two balls falling side by side in a real gravitational field

Two balls, originally put at a certain height, were dropped freely onto the Earth. After traveling a considerable distance for a long time, which picture do you think best describes the paths of motion of the balls? Explain why you chose that picture!

Responding to this question, 8 of 11 students (S1, S3, S4, S5, S7, S8, S9, and S11) chose the picture B, which was the expected answer. Yet, their reasons for choosing the option were unsatisfied. S1 and S11 proposed that it is the Earth’s gravity that causes the balls to get closer. However, when confirmed in the interview, they both were unable to explain in more detail how the gravity affects the separation distance of the balls. S3 and S8 mentioned the influence of the wind velocity while the remaining four students simply reasoned (rewrote what mentioned in the problem) that the balls get closer due to a considerable distance the balls have travelled. Basically, we assumed that students who have learnt Newtonian gravity should have argued that objects falling in a real gravitational field (the Earth’s gravity) will have a tendency to fall on radial lines towards the Earth’s center of gravity, which is responsible for the shrink of their separation distance.

C. Students’ responses to the behavior of parallel lines on a flat and curved surface (q_4)

In this research, we analogized the behavior of parallel lines on a curved surface with the paths of balls in q_3 in order to deduce Einstein’s theory of gravity. Therefore, it is very crucial for students to have a compact understanding about the nature of parallel lines when located on a flat and curved surface.

The q_4 asked students to analyze whether two parallel lines on a flat or curved surface could meet.

Is it possible for two parallel lines to meet when

- a) located on a flat surface?
- b) located on a curved surface?

In the context of Indonesia, students have been familiar with the concept that two parallel lines will never meet. They have learnt this concept since they were in elementary schools. Some high school students even took this concept for granted and failed to recognize that the concept is only valid when the space is flat (Dua, Blair, Kaur, & Choudhary, 2020). However, in this research, students' pre-test responses revealed a surprising result. The majority of students (83.33%) believed that two parallel lines can meet when located in a curved surface. Nonetheless, two students had different ideas. S5 gave unclear response to this question. "On a flat surface, two straight lines are moving in one direction. On a curved surface, they are in opposite direction" (S5). It was S10 who still believed that "they [parallel lines] will never meet whatever the surfaces are".

D. Students' responses to the analogy of parallel lines with the paths of the falling balls (q_5)

The q_5 instructed students to analogize the behavior of parallel lines on a flat and on a curved surface (q_4) with the paths of the balls in q_3 .

Analogize the condition of two parallel lines on a flat and curved surface with the paths of motion of the two balls in pictures A, B, and C in Q_3 above!

Responding to this question, all students agreed that two parallel lines on a flat surface were analogous to the paths of the balls in figure A in q_3 . However, in the case of making the analogy of parallel lines on a curved surface with the path of the balls, S1 and S7 claimed that they were analogous with figure B; S4 and S11 mentioned that they were analogous with figure C; the remaining seven students (including S10 who believed that the lines never meet) analogized them with figure B and C; and S5 didn't give his opinion.

E. Students' responses to what the gravity is

"What do you know about gravity? Explain using analogies! (q_6)". As suspected, the majority of students understood gravity as an attraction force. "The gravity is an attraction force between two objects or masses" (S1, S2, S6, S12). "Gravity is the Earth's attraction force (S10, S11)"; Gravity is the force from Earth that attracts objects to its center" (S3, S9); Gravity is owned by planets such as the Earth. Gravity causes the free fall (S8). S7 didn't define what the gravity is but made a statement that "objects will float when there is no gravity". S4 and S5 defined gravity somewhat incorrectly that "gravity is a free fall force to the Earth's surface" (S5); and "gravity is the attraction force between one atom with other atom" (S4).

2. Post-test responses

A. Students' responses to q_1 and q_2 about TEs describing the Equivalence Principle

Responding to the q_1 (a & b), all students agreed that the person B observes the ball to be moving in a straight line trajectory while the person C who is staying at rest on the ground sees a curved/parabolic trajectory. Regarding the $q_{2(a)}$, all students believed that according to an observer in the lift, the two balls will remain on their places or floating when they are released. Responding to the $q_{2(b)}$, most of the students gave a standard answer that the two balls will fall down and their separation distance does not change/remains constant. Several students provided additional information to their answers. "According to the person in the lift, the balls fall down and their separation distance is always constant. Yet, people on earth see the balls remain at rest when the lift is moving upward" (S1). "The balls fall not because there is gravity but because the lift is accelerating upward" (S3). "The balls fall due to [lift's] acceleration, not because of gravity" (S10). Regarding the $q_{2(c)}$, most of the students responded as expected that the balls fall with acceleration like on the Earth (S1, S4, S6, S9, S10, S12); the balls experience free fall like

objects fall on the Earth (S2, S3, S8, S11). However, there were two students (S5 and S7) who simply mentioned that “the balls fall down”.

B. *Students’ responses to the path of two balls falling in a real gravitational field(q_3)*

Responding to the q_3 , 11 of 12 students chose the picture B (except S6 who chose the picture C) as the best picture which describes the paths of two balls falling side by side in a real gravitational field. Students choosing the picture B suggested the Earth’s gravity as the main factor which causes the balls to approach each other. Several interesting answers are cited below: they approach each other because the Earth’s gravity attracts them to fall towards the Earth’s center (S7, S11); the balls falling in a real gravitational field will get closer, not like the balls falling in the lift (S9) [The student refers to the $q_{2(b)}$]; the balls approach each other because they are moving in an inconstant gravity [inhomogeneous gravitational field] (S3, S12), the balls approach each other because they are moving in gravity that changes with height (S10). We do expect students to mention “the tidal force” effect in their responses. However, none of them did. We interviewed S3 and S9 for why not mentioning “the tidal force effect” in their responses and they both confirmed that they simply didn’t remember the terminology.

C. *Students’ responses to the behavior of parallel lines on a flat and curved surface (q_4)*

Regarding the behavior of parallel lines on a flat and curved surface, all students believed that on the flat surface, two parallel lines never meet. On a curved surface, they do. The result was not quite surprising as the majority of students had responded correctly to this question in the pre-test.

D. *Students’ responses to the analogy of parallel lines with the paths of the falling balls (q_5)*

As in the pre-test, all students responded that two parallel lines on a flat surface are analogous with the paths of the balls in the figure A (q_3). 10 of 12 students considered the parallel lines on a curved surface to be analogous with the balls’ paths in the figure B in q_3 and only two students who argued that parallel lines on a curved surface are analogous to the figure B and C in the q_3 .

E. *Students’ responses to what the gravity is*

Students’ responses to what the gravity is can be grouped into three categories. The first category is students who directly wrote that gravity is a manifestation of spacetime curvature (S11) or a manifestation of spacetime which is curved (S5) without providing any additional information. Secondly, students who correctly defined gravity as a manifestation of curved spacetime and provided a simple analogy to explain what they meant (S1, S2, S3, S6, S8, and S12). “Gravity is a manifestation of spacetime curvature. Gravity causes the balls falling towards the earth to approach each other like two parallel lines on the curved surface” (S1). “Gravity is a manifestation of curved spacetime. It attracts the balls to the Earth’s center which is the same as curved surface makes the parallel lines to meet in q_4 ” (S8). Thirdly, students who managed to present the complete analogy and deduce the idea of what the Einstein’s gravity is (S4, S7, S9, and S10). “According to Einstein, gravity is not a force. It is a manifestation of curved spacetime. We can analogize spacetime with a curved surface. The curved surface causes the parallel lines to meet. The gravity causes the [separation] distance of two balls [falling in a gravitational field] decreases” (S4). “According to Newton, gravity is an attraction force. According to Einstein, gravity is a manifestation of curved spacetime. In q_3 , two balls approach each other (figure B) which are the same as parallel lines on a curved surface. The curved surface is analogues to curved spacetime. It can be concluded that gravity is a manifestation of curved spacetime (S10).

Even though none of the students could explain what the Einstein’s version of gravity is (q_6) in the pre-test, students’ responses to q_1 to q_5 indicate a promising result about the approach we used. Their responses reveal that TEs and analogy we are using can be well grasped. Their pre-test responses also show that we can actually adopt familiar phenomena in Newtonian physics as ‘infrastructures’ to build an understanding of Einstein’s gravity.

In the post-test, the results presented in this research indicated that the approach we applied could help students understand the Einstein's theory of gravity. Not only could they recall what the gravity is, most of them managed to provide related analogies they had learnt to explain their thoughts. It is arguably because the approach provides students with easily understandable steps to deduce the Einstein's theory of gravity. Apart from the fact that it is easily comprehensible, this study suggests that the approach is worth adopting to teach Einstein's theory of gravity as this approach reflects the similar path ever taken by Einstein when reformulating Newton's gravity.

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Enhancing EFL Students' Autonomous Learning of English Conversation During COVID-19 Via Language-in-talk Log Assignments

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Abstract

This one-group pre- and post-test quasi-experimental study endeavored to investigate whether learner autonomy was developed with implementing language-in-talk log assignments as a monitored self-study task in a university English conversation course (890-020 English Conversation). Eighty-eight Thai second-year undergraduate accounting majors at Prince of Songkla University (PSU), Hat Yai, Thailand took part in the study. The participants completed 10 language-in-talk log assignments over 10 weeks. A pre- and post-questionnaire was administered before and after the intervention to examine the effect of the log assignments in developing participants' learner autonomy. The reflective log was also used to gather participants' perceptions of using the log assignments in a conversation course. The results showed that the language-in-talk log assignments aided in enhancing the students' learner autonomy to set learning goals, select appropriate learning materials, take responsibility, and evaluate their learning. Seeking social assistance, however, did not have a significant difference in mean scores, and participants expressed dissatisfaction over not being able to interact with their peers as in classroom learning. The findings further highlighted the significance of teachers' presence in scaffolding learners to achieve full autonomy. Overall, the results from this research supported the use of the log assignment as a potential pedagogical tool to enable learners to be responsible for their own learning in a language course.

Keywords: Asian EFL Learners, Autonomous Learning, COVID-19, English Language Teaching, Learning Logs, Online Learning

1. Introduction

Because of the COVID-19 pandemic, the normal functioning of schools and universities across the world has been disrupted. According to the United Nations (2020, p.2) statistics, "nearly 1.6 billion learners in over 190 countries and all continents have been adversely affected by the pandemic". To ensure the continuity of learning, many educational institutes have turned to online teaching, requiring teachers to move to online delivery of lessons in a brief span of time. This has resulted in a dramatic shift of learning from face-to-face to the distinctive rise of e-

learning, whereby teaching is undertaken remotely on online or digital platforms. According to Anderson (2011), learning and teaching in an online environment are quite similar to teaching and learning in any other formal institutional setting where learners' needs are analyzed, content and learning activities organized and learning assessed. However, while the shift to online teaching has averted the congregation of students to decrease the risk of COVID-19 spreading and enabled flexibility of teaching and learning, the rapid transition to online instruction has confronted teachers and students in most contexts, including Thailand with unprecedented challenges.

Aside from specialized delivery technologies, learning design is vital for successful online teaching. Hodges et al. stated that "effective online learning results from careful instructional design and planning, using a systematic model for design and development" (2020, p.3). Before the pandemic, many educational institutions in developed countries were already offering distance education and online courses with a good success rate (Anderson, 2011). Such educational institutions have invested enormous time and effort to plan and develop their instructional design with quality learning materials, appropriate media, and technology for course delivery to serve the aim of online teaching and learning. However, developing countries like Thailand did not have the luxury to go through such a rigorous process of designing and developing the online course as emergency remote teaching (Hodges et al. 2020). It was introduced within a short time span because of COVID-19. The overnight transition from the classroom to online teaching has therefore led to a hybrid of traditional and online teaching where teachers use the same pre-defined materials to teach via different technological mediums instead of face-to-face delivery (Rapanta, et al., 2020). Clark (1983, as cited in Anderson, 2011) argued that technologies served mainly as a medium of instruction but it was the instructional design built into the learning materials that had a significant influence on student achievement. For effective online teaching, learning materials must be designed properly to engage the learner and promote self-directed learning, notwithstanding the advantage of the flexibility of delivering the lesson online.

However, in the wake of the COVID-19 situation, teachers had to prepare and deliver lessons from home and make the transition from traditional classroom teaching to online teaching instantaneously without proper technical training. One major challenge for university teachers has been their lack of pedagogical content knowledge (PCK) (Shulman 1987, as cited in Rapanta, et al., 2020) needed for teaching online. Consequently, teachers have faced difficulty in designing online learning materials properly with learners and learning objectives in focus, and an instructional design that provides adequate support to the learners. Therefore, designing lessons with the balanced amalgamation of high authenticity, high interactivity and high collaboration (Ring & Mathieux, 2002, as cited in Anderson 2011) for meaningful online learning experience has proven a challenge for most teachers.

In addition to appropriate learning design, learner autonomy is an important attribute for successful distance learning or online teaching. Idealistically, learners are assumed to have developed a degree of autonomy for self-learning and self-motivation for online learning. Realistically, many learners may not have developed adequate autonomy for self-regulated learning. For instance, Asian learners are often described as passive and reluctant to openly challenge teachers' authority (Pierson, 1996, as cited in Chang & Geary, 2015). Lo (2010) found that Asian EFL students were less aware of the concept of autonomous learning and hardly participated and contributed to the process of creating knowledge. Similarly, within the English as a foreign language (EFL) context of Thailand, Rukthong (2008) and Meesong and Jaroongkhongdach (2016) found that although Thai EFL learners were positive about autonomous learning, they were not ready for autonomous learning. Their excessive reliance on teachers' instruction, low level of English proficiency, and inadequate learning strategies to take control of their learning were some of the factors impeding their engagement in autonomous learning. Therefore, during such uncertain times where face-to-face interaction seems unlikely in the near future, teachers are challenged to channelize a mechanism to provide adequate scaffolding and formative guidance to students with different degrees of autonomy for effective online learning. Learners, on the other hand, are finding it difficult to navigate through the content of the lesson and stay motivated to "apply, assess, analyze, synthesize, evaluate, and reflect on what they learn" (Anderson, 2011, p.33).

Along with learning design and learner autonomy, assessment has been a major challenge in online teaching. Anderson (2011) affirmed that "effective teaching presence demands explicit and detailed discussion of the criteria by which student learning will be assessed" (p.352). Research on assessment has shown that providing feedback

to students on their performance is effective in motivating learning, shaping behavior, and developing mental constructs (Shepard, 2000, as cited in Anderson, 2011). Thus, assessment plays a critical part in facilitating online teaching and encouraging autonomous learning among students. Unlike classroom teaching where teachers interact with students on a daily basis, online teaching is isolated. Accordingly, formative assessment such as self-reflections, learning logs, and portfolios are recommended. Furthermore, asynchronous activities or tasks as part of the students' learning process is also suggested as an alternative assessment tool to create teaching presence (Rapanta, et al., 2020).

Given this shift into the virtual classroom and intensified reliance on autonomous learning of course content with online materials, the current research examines how the use of learning and assessing tools such as language-in-talk log assignments can aid Thai EFL learners' autonomous learning of English conversation during COVID-19. According to Moon (2010), the log assignment is a pedagogical tool primarily used to enhance L2 learning beyond the classroom as it can accentuate favorable conditions for language learning, encourages independent learning, and supports metacognition. Therefore, the main question to be addressed in this paper is to what extent log assignments help Thai EFL learners with their self-study or autonomous learning of English conversation during COVID-19.

2. Literature review

In this section, pertinent literature on use of log assignments as autonomous learning and assessment tools and the role of technology in autonomous language learning are reviewed to lay down a conceptual framework for the study.

2.1. *Log assignment as an autonomous learning and assessment tool*

For the purpose of this paper, a log assignment, also referred to as a learning log, is a pedagogical tool which provides learners a place to keep a record of their learning process along with their reflection on learning activities, instructional methods, and learning experiences. Students and teachers predominantly use a learning log as a learning and assessment tool. The log allows students to express, examine, and explore their learning experiences and provides teachers the ability to assess the progress of the students and give them feedback (Rickards, 2002). Furthermore, Lee (1997) asserted that a log has a dual purpose for students. Firstly, it acts as a personal record of learners' preparation and effort to learn, their reflection on their interpretation, and their extension and reformulation of knowledge. Secondly, it served as the source and place of their self-evaluation as they used the log to evaluate their own strategies and effort to learn. Thus, a learning log has been beneficial in creating an environment where learners can freely record, evaluate, and examine their work and learning.

Furthermore, an asynchronous task such as a log assignment has been recommended by researchers as an assessment tool to motivate and regulate students' online learning. Assessment from the instructor's perspective involves "getting to know our students and the quality of their learning" (Ramsden 2003, p.180, as cited in Garrison, 2011). However, because of COVID-19 instructors are continuously engaged in synchronous online teaching and are deprived of face-to-face oral or written examination. Therefore, monitoring students' progress on a daily basis might be challenging considering the workload imposed by the emergency shift to online teaching. The role of an instructor is not only to deliver lessons but involves providing constructive and meaningful assessment feedback to help students develop the metacognitive skills and strategies to take responsibility for their own learning (Garrison, 2011). Log assignments are a formative assessment which enables instructors to make self-regulation part of the assessment. By contrast, the summative assessment such as standardized tests with minimal feedback leads to memorization and a surface approach to learning. The log assignment encourages students to have dialogue, receive richer forms of feedback, and deeper modes of learning (Entwistle, 2000, as cited in Garrison, 2011). A log assignment facilitates the development of self-assessment and reflection in learning.

In addition to facilitating and assessing language learning, in the EFL context, a log assignment is essentially used as a medium to promote autonomous learning. According to Litzler (2014), in writing logs, learners write information and reflections on various aspects of their learning, such as their reactions to a lesson and the

methodology used, out-of-class activities carried out to learn English, and other aspects of the learning experience related to a specific language course. Lee and Cha (2017) found that the use of listening logs for extensive listening in a self-regulated environment not only developed learner autonomy among participants, but yielded learners' growth in their ability to summarize, express feelings, and improve English proficiency. A log assignment is a potential tool to develop learner autonomy as students take responsibility for their learning, evaluate their progress, and reflect on the effectiveness of the teaching and learning process beyond the classroom learning environment (Chang & Geary, 2015; Litzler & Bakieva, 2017).

Previous studies revealed that learners' participation in out-of-class activities through a log assignment demonstrated their willingness to become autonomous learners as well as enhancing autonomous learning. Chang and Geary (2015) investigated the effectiveness of using self-assessment learning logs to promote the autonomy of L2 learners in Taiwan. The participants completed the self-assessment learning log entry on a biweekly basis, reflecting on their out-of-class activities to improve their English. The results indicated that the learning logs were effective in promoting learners' autonomy, and students viewed learning logs favorably. Similarly, Litzler and Bakieva (2017) examined students' views on using learning logs in foreign language study to develop learner autonomy. The results showed that students were generally positive about the learning logs as it helped them increase autonomy while working with English outside class, created self-awareness about learning strategies, and equipped them with new ways of learning a language. Litzler (2014) concluded that a log assignment is worth implementing in foreign language classes because students have a positive view of learning logs and it makes a significant contribution to the development of learners' autonomy.

2.2. Role of Technology in Autonomous Language Learning

In recent years, the concept of learner autonomy has become prevalent in foreign language learning due to the pedagogical shift in teaching language to communicative language teaching (CLT), which encourages students to engage and take charge of their learning actively (Hafner & Miller, 2011; Luzón & Ruiz, 2010). Although the definitions of learner autonomy differ, there has been a significant degree of consensus among researchers that autonomy involves learners taking more control over their learning (Benson, 2011). Holec (1988) defined learner autonomy as the ability to take control over one's learning and Little described it as a "capacity for detachment, critical reflection, decision-making, and independent action" (1991, p. 4). However, owing to the diverse and multiple interpretations of autonomous learning, language teachers are often left bewildered in deciding to implement the autonomous approach in the pedagogical process.

Although the term learner autonomy has various definitions and interpretations, Benson (2011) claimed that language learner autonomy differs in degree, indicating that amateur learners are capable of developing autonomy and that the intensity of autonomy ranges from lower to a higher level. Furthermore, previous studies unanimously agreed that learners might be at different stages of becoming independent or autonomous learners (Nunan, 1997). Hammond and Gao (2002) found that Chinese learners had a low level of autonomy, as they tended to listen and follow teachers' instructions. By contrast, Western learners participate and contribute to the process of creating knowledge. Thus, "autonomy is not an absolute but a relative term, and the degree of autonomy may vary from one context to another" (Farmer & Sweeney, 1994, p.138).

While the degree of autonomy may vary depending on the context, researchers claimed that new technologies are now providing opportunities for EFL learners to learn a language beyond the classroom, thereby transcending geographical limitations. Benson and Chik (2010) stated that emerging online platforms provide a conducive environment for autonomous language learning. More importantly, the use of technology in language teaching and learning fosters learner autonomy by providing learners with easy access to a range of resources, tools, and environments for out-of-class learning (Benson, 2011). Benson and Chik (2010) reported on English language learning histories of two Hong Kong users of English as Foreign language in 'globalized online' space designed for video, image, audio and text sharing, who credited their high-level proficiency to interaction with their preferred media and with other members of the virtual community. Similarly, Murray's (2008) study on Japanese informal English learners also revealed that exposure to ubiquitous English language pop-culture led to great improvements in English despite their lack of interest in English as a school subject. Cole and Vanderplank (2016)

and Sockett (2014) investigated how the growing affordance of new technology fostered learner autonomy and improved learners' English proficiency. They found that it enabled significant numbers of independent, informal learners in foreign language contexts to achieve a high level of proficiency.

While technology offers myriad opportunities for autonomous language learning, it is not without constraints. According to Holec (1998, as cited in Bailly, 2010), motivation, and accessible online resources are not adequate conditions to make autonomous learning possible or easy for students, whose learning process is driven by the social promotion of teaching and heteronomy over learning and autonomy. Researchers maintained that autonomy is essentially an idea from Western culture that values independence (Schmenk, 2005 as cited in Chik, Aoki, & Smith, 2018); collectivist Asian EFL learners may find the concept difficult to incorporate into their learning. Lo (2010) revealed that Asian EFL students were less aware of the concept of autonomous learning and they tended to view learning as an end product rather than a process. Several researchers (Doyle & Parrish 2012; Guo 2011; Inozu, Sahinkarakas, & Yumru, 2010) have examined the readiness of EFL learners for autonomous learning. Their studies disclosed that while EFL learners had a positive view of autonomous learning, they lacked basic premises of learner autonomy such as learner control, ability to make decisions, the capacity to take responsibility of one's own learning and skills to critically evaluate one's own progress (Little, 2004).

Regarding Thai EFL learners, Bruner, Shimray and Sinwongsuwat (2014) noted Thai students' dependence on their teachers, and their lack of willingness to take control of their own learning due to low English proficiency (Rukthong, 2008). Therefore, it might be difficult for Thai EFL learners to easily become fully autonomous. In the Thai EFL context, Thai students might benefit from 'reactive autonomy' as a preliminary step towards proactive autonomy. In an autonomous learning activity, proactive learners are self-initiated and have more control over learning. By comparison, reactive learners are responsive to a task and teachers help to formulate a direction of learning to which learners will react by choosing preferred strategies, materials, and goals (Littlewood, 1999). Although Thai EFL learners may not have developed adequate autonomy for self-regulated learning, the pandemic has left no alternative than to embrace online learning. Consequently, learners have no choice but to make drastic changes to their learning approach to suit the new learning environment.

Therefore, considering the teaching and learning approach mandated by COVID-19, it is imperative to develop an efficient instructional design by integrating learning tools such as log assignments to foster learner autonomy. An appropriate student-centered pedagogy should be developed by considering the advantages of specific technology for autonomous language learning and its implication for learners (Schwienhorst, 2007 as cited in Hafner & Miller, 2011). Developing autonomy involves a teacher's guidance and three main pedagogical principles: 1) learner involvement, 2) learner reflection, and 3) target language use in the development of language learning autonomy (Little, 2004). Accordingly, this research adopted the premise that a language-in-talk log assignment mandates extensive learner involvement, including the requirement for students to choose their own material, take responsibility for their choice, and reflect on their learning in the target language. This is facilitated by a teacher's guidance and weekly feedback. The goal of this study is to demonstrate whether the use of language-in-talk log assignments help students to be responsible for their own learning as part of self-study monitored by the teacher.

3. Research Methodology

3.1. Participants

A total of one hundred (N=100) non-English major students taking an elective English course (890-020 English Conversation) at the Faculty of Liberal Arts, Prince of Songkla University (PSU), Hat Yai, Thailand in the second semester of the academic year 2020 participated in the study. The students represented different academic majors, including Accountancy (n=94), Chemistry-Biology (n=1), Animal Science (n=4), and Agro-Industry Technology Management (n=1). Participants were selected using a purposive sampling method and to ensure participants' homogeneity, 94 students from the Accounting major who completed pre-requisite courses (890-002 Everyday English and 890-003 Fundamental English Reading and Writing) or have O-NET scores over 50 were considered as the principal participants of the study. However, data was collected from only 88 students (n=88), due to their absence in either the pre- or the post-questionnaire.

3.2. Data Collection Procedure

3.2.1. Intervention

Language-in-talk log assignments

The language-in-talk log assignment was integrated as a monitored self-study task in the conversation class and all participants received an explicit orientation on the specifics and structure of the log assignment at the beginning of the course. Each week the participants selected and watched two to three-minute long online video clips of English speakers' natural or near-natural conversations containing language actions such as greeting and introducing, leave-taking, expressing gratitude, making requests, offers and suggestions, and giving and responding to compliments and opinions. During the task, participants were also required to fill out a worksheet (see appendix A) asking them to specify the source of their listening materials, verbatim transcribe, and write a summary of the conversation describing its main goal, setting, and the relationship between speakers. To complete the task, they also needed to reflect on what they learned from the conversation concerning how a particular action is carried out through talk, what kind of language is used to get the action done, as well as how the use of the language is shaped by the interactional context. Participants submitted 10 log assignments over the course of 10 weeks.

3.3. Instrument

3.3.1. Questionnaires

A pre- and post-questionnaire was administered before and after the intervention to examine the effect of language-in-talk log assignments in developing participants' learner autonomy. The questionnaire consisted of two parts. The first part was designed to collect the participants' demographic information, including their gender, English language proficiency, and other related information. The second part investigated the participants' autonomous learning capacity. The questionnaire was developed based on five common characteristics of learner autonomy: setting up learning objectives, having the right to decide learning content, willingness to take responsibility, making an evaluation on what had been acquired, and seeking social assistance (i.e., teacher and peer support and assistance) (Holec, 1988; Morrison, 2011). A five-point Likert scale was used to indicate the degree of agreement of respondents and the questions were available in both English and Thai.

Table 1: Values of Cronbach's alpha reported for five dimensions to measure learner autonomy

Dimension	Cronbach's Alpha	N of Items	Instrument	Cronbach's Alpha (Reliability Overall)
Setting Learning Goals	.735	6	Measuring Learner Autonomy (34 items)	.911
Selecting the content	.736	6		
Willingness to take responsibility	.829	9		
Evaluating one's learning	.755	8		
Seeking social assistance	.775	5		

To ensure validity and reliability, Cronbach's coefficient α was used to calculate the internal consistency coefficients of the items included in the questionnaire through a pilot study with 49 non-English major students taking an English course at the Faculty of Liberal Arts, PSU. The questionnaire was analyzed using SPSS. Cronbach α scores greater than .70 were considered as indicative of acceptable reliability (Tavakol & Dennick, 2011). For the overall reliability, the Cronbach's alpha value was .911. The internal consistency reliabilities of each dimension were .735 for setting learning goals, .736 for selecting the content, .892 for willingness to take responsibility, .755 for evaluating one's learning, and .775 for seeking social assistance. The results for the reliability coefficient suggested that there was an acceptable level of internal consistency for the five dimensions. Thus, the overall reliability of the questionnaire was very high and the r -value for each dimension was at an acceptable level, implying that the questionnaire was reliable to assess the learner autonomy of students.

3.3.2. Reflective Logs

At the end of ten weeks of language-in-talk log assignments, open-ended questions were used to allow students to reflect upon (1) using the log assignments as a self-study task during COVID-19, (2) the effectiveness of the log assignments in developing their learner autonomy and (3) challenges and opportunities afforded by the log assignments in the conversation course.

4. Results

4.1. Questionnaire Results

4.1.1. Learner Autonomy Development

To answer the research question concerning whether language-in-talk log assignments helped learners with their self-study or autonomous learning of English conversation during COVID-19, the data was collected from closed-ended questionnaires and reflective logs.

Participants completed a 34-item pre- and post- closed-ended questionnaire in which they rated their status of learner autonomy before and after doing language-in-talk log assignments as part of monitored self-study in the conversation class. Items were rated on a five-point Likert scale. The mean differences in their pre- and post-ratings showed that overall participants developed learner autonomy and grown in all the five dimensions (1-Setting learning goals, 2-Selecting the content, 3- Willingness to take responsibility, 4-Evaluating one's learning, and 5-Seeking social assistance) after doing language-in-talk log assignments over one semester. The overall improvement in participants' learner autonomy and the extent of the growth in each dimension is represented in the graph below.

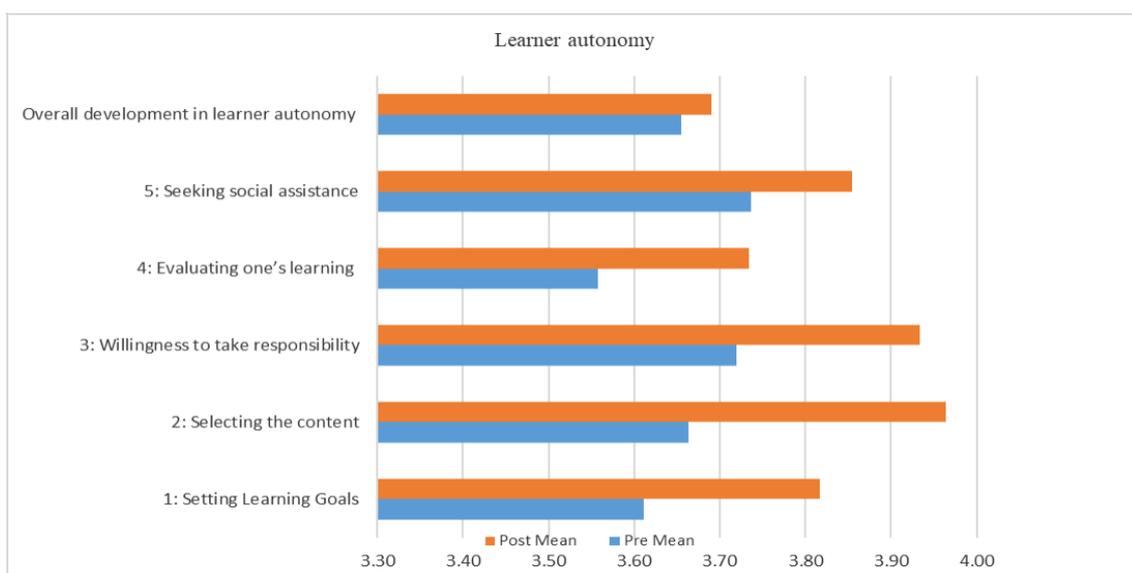


Figure 1: Learner autonomy development

Table 2: Independent paired *t*-test- students' learner autonomy

Dimension		Pre		Post		t	df	Sig. (2-tailed)	
		Mean	S.D.	Mean	S.D.				
I: Setting Learning Goals	pre1 - post1	3.61	.48	3.82	.48	-4.000	**	87	.00
II: Selecting the content	pre2 - post2	3.66	.55	3.96	.50	-5.354	**	87	.00
III: Willingness to take responsibility	pre3 - post3	3.72	.49	3.93	.47	-4.190	**	87	.00
IV: Evaluating one's learning	pre4 - post4	3.56	.46	3.73	.50	-2.719	**	87	.01
V: Seeking social assistance	pre5 - post5	3.74	.51	3.85	.38	-1.975		87	.05
Overall development in learner autonomy	pre - post	3.66	.38	3.69	.36	-3.957	**	87	.00

Remark : ** significant at 0.01 level , * significant at 0.05

As shown in Table 2, the independent *t*-test results suggested that overall, there were statistically significant differences in the mean scores of pre- and post-questionnaire responses of participants ($p=0.00<0.05$), indicating that the participants developed learner autonomy after the implementation of the language-in-talk log assignment as part of monitored self-study in the course. Their ratings on the five dimensions of learner autonomy also improved in respect of mean scores. Statistically, the average mean scores of setting learning goals, selecting the content, willingness to take responsibility, evaluating one's learning and seeking social assistance obtained after doing log assignments ($\bar{x} = 3.82$, $\bar{x} = 3.96$, $\bar{x} = 3.93$, $\bar{x} = 3.73$, $\bar{x} = 3.85$ respectively) were, in general, considerably higher than those obtained before doing log assignments ($\bar{x} = 3.61$, $\bar{x} = 3.66$, $\bar{x} = 3.72$, $\bar{x} = 3.56$, $\bar{x} = 3.74$ respectively). It was clear that there was significant growth in the mean scores of all the five dimensions of learner autonomy after the intervention. Therefore, it can be inferred that the language-in-talk log assignments helped learners with their self-study or autonomous learning of English conversation during COVID-19.

Paired sample *t*-tests were run to determine whether the differences between the mean rating for each dimension before the intervention differed from the mean at the end of the intervention to a statistically significant degree. Specifically, *p*-values of setting learning goals, selecting the content, willingness to take responsibility were .00, and evaluating one's learning ($p=0.01$) denoting that there were significant differences in the mean scores for dimensions 1, 2, 3, and 4 either at $p < 0.01$ or $p < 0.05$. This shows that students felt they had developed in all of these areas at a significant level after the intervention. The only exception was with the fifth dimension 'seeking social assistance' with $p=0.05$, which did not achieve statistical significance. One explanation for this outcome is that because of COVID-19 and the dramatic shift from face-to-face learning to online learning, and adhering to mandatory social distancing rules, there were fewer opportunities to seek social assistance from friends and teachers.

Table 3: Dimension 1: Setting learning goals

Items		Pre		Post		t	df	Sig. (2-tailed)	
		Mean	S.D.	Mean	S.D.				
1 I can adapt teacher's teaching objectives as per my own learning goals.	pre1.1 - post1.1	3.64	.76	3.89	.63	-3.279	**	87	.00
	pre1.2 - post1.2	3.68	.77	3.93	.66	-2.724	**	87	.01
2 I know the teacher's purpose in employing log assignment in English conversation class.	pre1.3 - post1.3	4.01	.75	3.88	.80	1.384		87	.17
3 I usually set my own learning goal for each semester.	pre1.4 - post1.4	3.10	.77	3.47	.79	-4.029	**	87	.00
4 I can make my own English study plans besides doing log assignments.	pre1.5 - post1.5	3.48	.71	3.65	.76	-1.858		87	.07
5 I set my own learning objectives for English conversation class related to the course syllabus.	pre1.6 - post1.6	3.76	.66	4.09	.65	-3.944	**	87	.00
6 I analyze information that I need to successfully finish log assignment.	pre1 - post1	3.61	.48	3.82	.48	-4.000	**	87	.00
Overall development-Dimension I									

Remark : ** significant at 0.01 level , * significant at 0.05

The results of the *t*-test showed that overall Dimension 1 ($p=.00$) had significant differences at .01 level (see Table 3), implying that participants' ability to set up one's learning objectives and study plans improved after doing the log assignments. This was found to be true for items 1 ($p=.00$), 2 ($p=.01$), 4 ($p=.00$), 6 ($p=.00$) signifying that the students felt they had improved in formulating learning goals, and planning and analyzing learning tasks and requirements to achieve the objectives of the course. The exception was with item 3 ($p=.17$) and 5 ($p=.07$), which did not achieve statistical significance. This is likely because of a ceiling effect, as students' ratings were initially high in the pre-questionnaire and did not change significantly in the post-questionnaire. A majority of the students entered the course with some knowledge of setting the learning goal for each semester. Therefore, their high pre-ratings left little room for growth in their post-ratings.

Table 4: Dimension 2: Selecting the content

Items		Pre		Post		t	df	Sig. (2-tailed)		
		Mean	S.D.	Mean	S.D.					
7	I would like to use videos/films/ TV shows/sitcoms to learn conversation skills, outside the English conversation class.	pre2.1 - post2.1	4.07	.77	4.31	.68	-2.842	**	87	.01
8	I like to listen to and watch audiovisuals containing ordinary everyday conversations of English speakers in doing log assignment.	pre2.2 - post2.2	3.55	.83	4.01	.78	-4.399	**	87	.00
9	I like having control over choosing materials for doing log assignments.	pre2.3 - post2.3	3.70	.92	3.86	.97	-1.241		87	.22
10	I use other English books and online resources on my own to improve my conversation skills.	pre2.4 - post2.4	3.64	.78	3.85	.72	-2.213	*	87	.03
11	I would like to select materials of my choice, rather than using materials suggested by the teacher.	pre2.5 - post2.5	3.15	.89	3.63	.93	-3.983	**	87	.00
12	I like using materials such as YouTube videos in my own time to make English language learning more interesting.	pre2.6 - post2.6	3.88	.81	4.13	.69	-2.643	**	87	.01
Overall development-Dimension II		pre2 - post2	3.66	.55	3.96	.50	-5.354	**	87	.00

Remark : ** significant at 0.01 level , * significant at 0.05

The *p*-value for Dimension 2 of the Learner Autonomy Questionnaire was .00, which showed that there was a significant difference between mean scores of pre- and post-questionnaires at 0.01 level. As shown in Table 4, except for item 9 with *p*-value 0.22, items 7, 8, 10, 11, and 12 have significant differences either at 0.01 or 0.05 level. The average mean scores of all the six items in post-questionnaire ($\bar{x} = 4.31$, $\bar{x} = 4.01$, $\bar{x} = 3.86$, $\bar{x} = 3.85$, $\bar{x} = 3.63$, $\bar{x} = 4.13$ respectively) were higher than those obtained in pre-questionnaire ($\bar{x} = 4.07$, $\bar{x} = 3.55$, $\bar{x} = 3.70$, $\bar{x} = 3.64$, $\bar{x} = 3.15$, $\bar{x} = 3.88$, respectively). Considering the mean values shown in Table 4, it can be understood that the participants' perspective of selecting the content for their own learning developed after doing the log assignments for one semester. The post-mean scores of items 7, 8, 12, related to using online resources such as YouTube videos, films, TV shows and sitcoms beyond the classroom or in their own learning time, were significantly different from the pre-mean scores. Although the post-mean scores for item 9 increased, its *p*-value at 0.22 demonstrated that participants were not entirely confident in having full control over choosing materials for doing the assignment despite their fondness for exploring online resources such as YouTube videos, films, and other resources.

Table 5: Dimension 3-Willingness to take responsibility

Items		Pre		Post		t	df	Sig. (2-tailed)		
		Mean	S.D.	Mean	S.D.					
13	I would like to take the responsibility of formulating the direction of learning for English conversation class as per my own needs.	pre3.1 - post3.1	3.65	.77	3.85	.72	-2.575	**	87	.01
14	I would like to share the responsibility of deciding what to do in the English conversation class with my teacher.	pre3.2 - post3.2	3.47	.76	3.70	.79	-2.742	**	87	.01
15	I would like to take the responsibility of completing log assignments in my own learning time to improve my learning productivity.	pre3.3 - post3.3	3.86	.80	4.01	.75	-1.326		87	.19
16	I believe that I will achieve a good level of speaking proficiency if I work on my own.	pre3.4 - post3.4	3.40	.90	3.56	.96	-1.438		87	.15
17	I know what to learn from the conversation material of my choice.	pre3.5 - post3.5	3.59	.80	3.86	.76	-2.711	**	87	.01
18	I know how to keep record of what I learn during the log assignment task.	pre3.6 - post3.6	3.39	.76	3.83	.78	-4.517	**	87	.00
19	In the future, I would like to continue learning English on my own/without a teacher	pre3.7 - post3.7	4.23	.87	4.42	.74	-1.969		87	.05
20	My success/failure in learning language is my own responsibility.	pre3.8 - post3.8	4.20	.78	4.28	.66	-.854		87	.40
21	I would like to take charge of assessing whether my learning is progressing according to my plan or not.	pre3.9 - post3.9	3.69	.68	3.88	.74	-1.861		87	.07
Overall development-Dimension III		pre3 - post3	3.72	.49	3.93	.47	-4.190	**	87	.00

Remark: ** significant at 0.01 level, * significant at 0.05

Table 5 indicated that the p -value for Dimension 3 of the Learner Autonomy Questionnaire was .00, showing a significant difference at the 0.01 level. All the nine items achieved increased average mean scores in the post-questionnaire compared to the pre-questionnaire. The p -value of item 13 (.01), item 14 (.01), item 17(0.1), and item 18 (.00) showed that students were willing to take responsibility for their own learning by formulating directions of learning, sharing responsibility with the teacher, analyzing materials, and keeping a record of their learning. However, item 15 (.19), item 16 (.15), item 19 (.05), item 20 (.40), and item 21 (.07) had a higher p -value ($p > .05$) showing that despite obtaining high mean scores in the post-questionnaire there was not a significant difference between pre- and post-mean scores. This shows that participants' readiness to embrace complete learner autonomy was at the initial stage, as they were skeptical about their capability to learn on their own with no scaffolding and guidance from the teacher. Specifically, items 16, 19, and 21 suggested that students were not confident about their ability to learn and assess their own learning without the teacher support.

Table 6: Dimension 4- Evaluating one's learning

Items		Pre		Post		t	df	Sig. (2-tailed)		
		Mean	S.D.	Mean	S.D.					
22	I need my teacher to evaluate me through regular test to check my progress of doing log assignment.	pre4.1 - post4.1	3.45	.84	3.72	.88	-2.322	*	87	.02
23	Every time I have an assignment, the teacher should score or correct it.	pre4.2 - post4.2	4.23	.69	4.34	.68	-1.342		87	.18
24	I do the log assignments only when my teacher is going to grade me.	pre4.3 - post4.3	3.15	1.02	3.35	.92	-1.659		87	.10
25	I have my own ways of testing how much I have learned from log assignment.	pre4.4 - post4.4	3.26	.72	3.52	.87	-2.372	*	87	.02
26	I evaluate whether I achieved my learning goals through my engagement in log assignment.	pre4.5 - post4.5	3.42	.77	3.60	.78	-1.887		87	.06
27	I evaluate whether my process of doing log assignment was effective or not in improving conversation skills.	pre4.6 - post4.6	3.50	.71	3.69	.73	-2.152	*	87	.03
28	I examine whether the learning approaches I use in doing log assignment enhance my conversation skills.	pre4.7 - post4.7	3.66	.76	3.69	.76	-.354		87	.72
29	I check whether I have understood the previous lesson when I try to finish a log assignment.	pre4.8 - post4.8	3.77	.72	3.93	.71	-1.578		87	.12
Overall development-Dimension IV		pre4 - post4	3.56	.46	3.73	.50	-2.719	**	87	.01

Remark: ** significant at 0.01 level, * significant at 0.05

The p -value of the participants' responses for Dimension 4 of the Learner Autonomy Questionnaire was .01, showing a significant difference between the mean scores of pre- and post-questionnaires at 0.05 level. Statistically, the average mean scores of the eight items in post-questionnaire ($\bar{x} = 3.72, \bar{x} = 4.34, \bar{x} = 3.35, \bar{x} = 3.52, \bar{x} = 3.60, \bar{x} = 3.69, \bar{x} = 3.69, \bar{x} = 3.93$, respectively) increased compared to those gained in pre-questionnaire ($\bar{x} = 3.45, \bar{x} = 4.23, \bar{x} = 3.15, \bar{x} = 3.26, \bar{x} = 3.42, \bar{x} = 3.50, \bar{x} = 3.66, \bar{x} = 3.77$ respectively). Item 22, which focuses on students' dependence on teachers for evaluation, had a statistically significant mean difference ($p=.02$). Nonetheless, it appears that the implementation of log assignments as part of the monitored self-study task in conversation class helped the participants to reflect and monitor their own learning while doing the log assignments. It is apparent from Item 25 'I have my own ways of testing how much I have learned from log assignments' and item 27 'I evaluate whether my process of doing log assignments was effective or not in improving conversation skills' that participants developed their approach to evaluating learning after doing the log assignments as both the items achieved a significant difference of .02 and .03, respectively. Furthermore, the fact that there was no significant difference between the pre- and post-mean scores of items 23 and 24 (.18 and .10, respectively) revealed that participants were gradually becoming autonomous in evaluating their work without much reliance on the teacher.

Table 7: Dimension 5: Seeking social assistance

Items		Pre		Post		t	df	Sig. (2-tailed)	
		Mean	S.D.	Mean	S.D.				
30	In log assignment, I like the parts where I can work with other students.	pre5.1 - post5.1	3.81	.92	3.72	1.08	.705	87	.48
31	I seek help from my friends outside of class to do log assignment effectively.	pre5.2 - post5.2	3.15	.97	3.43	1.09	-2.487 *	87	.01
32	I learn better when I get help from my teacher beyond the classroom.	pre5.3 - post5.3	3.76	.79	3.91	.75	-1.286	87	.20
33	I rely on my teacher's feedback to improve the quality of my log assignment.	pre5.4 - post5.4	4.10	.79	4.28	.71	-1.667	87	.10
34	I find it more useful to work with my friends than to work on my own in doing log assignment.	pre5.5 - post5.5	3.86	.97	3.76	1.01	.895	87	.37
		pre5 - post5	3.74	.51	3.85	.38	-1.975	87	.05
Overall development-Dimension V									

Remark: ** significant at 0.01 level, * significant at 0.05

Table 7 showed that the p -value for Dimension 5 of the Learner Autonomy Questionnaire was .05, suggesting that there was no significant difference between the mean rating for each item before and after the intervention. Only item 31 had a significant difference with p -value .01, showing that students sought help from their peers to do assignments. However, items 30, 32, 33, 34 (p -value=.48, .20, .10, .37 respectively) did not have a significant difference; specifically, the mean scores of items 30 and 34 in post-questionnaire ($\bar{x} = 3.72$ and $\bar{x} = 3.76$ respectively) decreased compared to pre-questionnaire ($\bar{x} = 3.81, \bar{x} = 3.86$ respectively). The decrease in the post-mean scores of items 30 and 34 might be because of the shift of learning from face-to-face to online learning due to COVID-19. Students learning online lacked the opportunity to meet with friends for interactive discussion. This was in contrast to the classroom learning environment, which provides students with opportunities for collaborative learning such as group discussion and pair work. Although the mean scores for items 32 and 33, associated with students' dependence on instructors' assistance and feedback, are statistically insignificant (.20 and .10 respectively), both items obtained higher mean ($\bar{x} = 3.91, \bar{x} = 4.28$,) in the post-questionnaire than in pre-questionnaire ($\bar{x} = 3.76, \bar{x} = 4.10$,). Participants' rating for item 33 was high both before and after the intervention, suggesting that instructors' help and feedback was still an important aspect in developing autonomous learning in students.

5. Results from Reflective Logs

At the end of the intervention, participants submitted a reflective log containing open-ended questions, which elicited their experience of doing language-in-talk log assignments as part of monitored self-study tasks in a conversation course amidst COVID-19. The reflective log was mainly used to collect additional information about the effectiveness of log assignments in developing their autonomous language learning. The results suggested two major themes involving participants' development in learner autonomy (e.g., setting goals, selecting content, willingness to take responsibility), and the importance of the teacher's presence.

5.1. Autonomous Language Learning

The 88 participants of the study agreed that the language-in-talk log assignments enhanced their autonomous learning of English conversation during COVID-19 and unanimously responded 'Yes' to Question 3 'Did the log assignment help you with your self-study or autonomous learning of English conversation during COVID-19? If yes, how? If no, why?' (see appendix B). These responses on the use of log assignments in relation to the development of autonomous learning corroborated the findings of the closed-ended questionnaire which also indicated that overall, the participants developed learner autonomy after implementing the language-in-talk log assignments as part of monitored self-study in a conversation course. The following are the comments provided by students in their reflection: The students' comments were not edited by the researcher for errors in grammar.

- *Yes, I think log assignment helped me with my self-study. Because when I did log assignment, I had to search for data by myself and I can do it anywhere such as house or dormitory. This is the great idea for learning English during COVID-19 with social distance policy and take advantage of my free time.*
- *Yes, I think log assignments can help me to learn on my own because when doing log assignments, I have to research and analyze resources to do the issues by own. I can do assignments right from home. Which is suitable for learning during COVID-19. It's a good solution.*

When asked whether the log assignment motivated them to look for more resources for improving their English conversation skills, all the participants reported that it stimulated them to search for more resources to facilitate their learning experience. The following excerpts demonstrated how log assignments prompted participants to look for more information:

- *In this semester, I associated with English language better than ever, therefore I was interested in looking for more resources apart from YouTube. I have one new resource for improving my English conversation skills, which is a channel podcast in Spotify. I listen to podcast in my free time and repeated after podcaster has spoken.*
- *Log assignment can motivate me to look for more resources for improving my English conversation skills. Because when I heard the conversation from the VDO clips it made me feel like I want to speak English better. I try to figure out the meaning of words that I don't know or understand and I try to listen to VDO clips or watch movies in English.*

Apart from being a stimulus to search for more resources, the log assignment also developed participants' capacity to select their own content and material for learning. Participants were optimistic about their experience of selecting materials for doing the log assignment, and expressed their interest in choosing materials of their choice and exploring the resources at their own pace. The following statements reflect the students' perception of greater learner autonomy:

- *It makes me enjoy studying. I can choose the video that I am interested to study, so it made me concentrate on log assignments and I was able to focus fully on assignments.*
- *I enjoy doing log assignments as a part of the self-study task. I can choose the movies that I like for easier transcribing and I already know how a particular action is carried out through talk.*

Furthermore, one of the essential components of autonomous learning is self-assessment and evaluating one's learning process, which enables learners to undertake more responsibility in identifying their weaknesses and strength. As can be inferred from participants' reflections, log assignments seemed to have developed participants' ability to assess their own learning. Participants expressed the following statements in their reflection:

- *Log assignment made me realize what parts of my skills are lacking and where I need to improve.*
- *When I first got this assignment, I wondered if this was the assignment of communicating English. Why isn't there more speaking practice? Which from this work is quite a lot of writing for me? At first, I wondered what the advantages were but after working on this assignment, I started to enjoy it even more. It is a task that I have developed skills in grammar, vocabulary, critical thinking, discussion.*

However, the findings of the reflective log suggested that log assignments did not aid in promoting social engagement and collaboration. This echoed the questionnaire results, which also revealed that of the five dimensions of learner autonomy, only the fifth dimension 'seeking social assistance' did not achieve statistical significance. Seeking social assistance is an important scaffolding activity to promote learner autonomy. However, due to COVID-19 and the shift from face-to-face to online learning with social distancing, there were few opportunities for interactive tasks and collaborative discussion. The following statements reflect participants' desire for peer work or face-to-face interaction with their friends and teachers:

- *I think my studies and assignments during COVID 19 can improve conversational skills at a level less than teaching in a normal classroom. Because teaching and learning in the classroom, there is more discussion and exchange between teachers and students than online learning. But doing a record assignment each week helped me practice my listening skills and to see examples of the conversations I encountered often in everyday life from the clips I studied. But in terms of improving conversational skills, I think I haven't been able to get enough of my speaking skills. Because during COVID-19 I was unable to go out and meet people and practice communicating in English.*
- *I prefer studying in the classroom. Talk to teachers and friends. When you have questions, you can ask the teacher immediately. But this online study has put me in charge of researching the various topics of the assignment. I think I have practiced a little conversation skill because during COVID I studied online and rarely got to meet people.*

5.2. Teacher Presence

Participants' reflective logs unveiled that teacher scaffolding gave students necessary guidance in doing log assignments. They admitted that the teacher's weekly feedback on log assignments encouraged them to do better and be actively engaged in completing the task on time. This attitude aligned with questionnaire item 23 'Every time I have an assignment, the teacher should score or correct it' and item 24 'I do the log assignment only when my teacher is going to grade me'. Mean scores of both items increased after implementing log assignments in the conversation course. Participants' comments revealed that they appreciated the support received from the teacher. For example, participants wrote:

- *..... when I got the feedback and mark for the log assignment, it makes me want to do the next log assignment better. I want to get good feedback and mark. So, I will search for more resources for improving my English conversation skills.*
- *At first, I did not like to watching movie but when I finish my work and got best word from teacher, it made me want to do next log assignment. I think teacher's good advice help student to open their mind with English. Someone did not like English but they got good advice from their teacher, it made them like English.*

- *Having feedback from teachers made me not feel lonely when studying this subject. Teacher motivate me to submit work.*
- *The enjoy part of the self-study task is when I receive scores and comments for the past log assignments. I enjoy developing my skills from the comments each week to improve the work and get better scores every week.*

While participants relatively improved learner autonomy after doing log assignments, some students still preferred having explicit instruction from their teacher and wanted the teacher to provide standard material to all students:

- *I need teacher to give a video clip for each log assignment, because sometimes it's unfair with someone who don't like to watch English movie cinema or cartoon. I think teacher should provide a fixed video clip for each log assignment for everyone, in order to be fair with everyone.*
- *Assigned work, I think it is good. But I think I should be taught more in detail about the use of notation in transcription. And explain various topics for better understanding so that students can understand and can search for more direct clips.*

6. Discussion

The current study aimed to examine the effectiveness of using language-in-talk log assignments as part of monitored self-study in developing learner autonomy of Thai EFL learners during COVID-19. The results supported previous studies regarding the use of log assignments as a pedagogical tool to promote autonomous learning (Chang & Geary, 2015; Duong & Seepho, 2017; Lee & Cha 2017; Litzler & Bakieva, 2017). Overall, the findings of the closed-ended questionnaire and reflective logs disclosed that the participants developed learner autonomy after implementing language-in-talk log assignments in the conversation course. Statistically, the questionnaire results showed a significant effect of using log assignments on participants' post-mean scores. Students' ability to take charge of their own learning improved, as they became capable enough to formulate learning goals, choose what to learn, select appropriate learning methods, and evaluate their learning process and outcomes. Holec (1988) defined learner autonomy as "the ability to take charge of one's own learning" (p.3). The findings from reflective logs revealed that the log assignments helped in developing students' learner autonomy. Their ability to select learning materials, make decisions, and act independently developed. Based on the results of the study, language-in-talk log assignments aided in enhancing the learner autonomy of students during this unprecedented time of the global pandemic. The findings suggest the value and potential of exploiting log assignments as a teaching and learning tool for both instructors and learners in the EFL context.

However, data analysis showed that despite the overall development of learner autonomy, there was not a significant difference between mean scores of the fifth dimension 'seeking social assistance' before and after the intervention. The decrease in post-mean scores of items 30 and 34 indicated that the log assignment did not really offer students a platform for learner interaction and collaboration. Firstly, due to the COVID-19 pandemic, educational institutions around the world have been forced to depend on emergency measures by switching to online learning from face-to-face learning and adapting to the new normal by adhering to social distancing protocols. This shift to online teaching has enabled flexibility of teaching and learning, but drastically reduced social interaction; that is the support from teachers or peers in the language learning process (Rapanta, et al., 2020). Consequently, restrictive social communication channels such as student-student and student-teacher interaction for discussion and practical activities amidst COVID-19 might have affected the possibility of seeking help from peers.

Secondly, the log assignment was designed as an individual self-study task. The structure and requirements of the assignment might not have promoted peer discussion and collaborative learning. Rovai (2002) asserted that the delivery medium is not the determining factor in the quality of learning per se; rather, the content and instructional strategy in the learning materials determine the learner's achievement (as cited in Anderson, 2011). Accordingly, further investigation is needed after incorporating an interactive task into the current structure of a log assignment

to see the impact of collaborative learning on learner autonomy. Anderson argued, “as learners work through the content, they will find the need for learner support, which could take the form of learner-to-learner, learner-to-instructor, instructor-to-learner, and learner-to-expert interactions” (2011, p.33). Apparently, the interactive task does not solely promote social engagement and collaboration. Rather, it depends on student’s ability to take initiative in seeking social assistance if they could not learn in isolation but had to collaborate and interact with others in autonomous learning (Cui, 2012 as cited in Cheng, 2019). Therefore, the design of a log assignment and a student’s willingness to collaborate could have influenced their decision to seek social assistance during the learning process.

The findings of this study are in line with other research studies that claimed that the teacher’s feedback and roles are important in the development of students’ autonomous learning (Kim, 2014; Lee, 2016; Yunismar, 2019). According to Little (2007) to foster learner autonomy, the teacher plays a prominent role in facilitating, monitoring, and evaluating the learning process. This explains the increased post-mean scores of items 32 and 33 of the questionnaires. Furthermore, providing timely feedback is considered as “an integral part of the online teacher’s function of facilitating students’ learning” (Anderson, 2011, p.352). Findings from the reflective log revealed that students needed the teacher’s weekly feedback, which motivated them to submit better log assignments. Although autonomous learners ought to be analyzing their learning needs, selecting appropriate approaches, evaluating their learning process, Morrison (2011) argued that scaffolding from teachers is essential as autonomous learning need not be a secluded activity, but rather a collaborative experience to achieve learners’ goals. Teachers’ support and assistance are quintessential in the promotion of learner autonomy among students.

7. Limitations to the Study

All the participants were considered an experimental group in this one-group pre- and post-test quasi-experiment design. Having a control group whereby participants are taught the same conversation course as the experimental group but without having to complete weekly log assignments might have offered a wider perspective on the effectiveness of using language-in-talk log assignments as an autonomous learning tool. Secondly, the log assignment did not incite much collaboration or peer interaction between the learners. Adding a task where learners can exclusively work in pairs or groups using different communication technologies might have provided adequate scaffolding to facilitate learning.

Apart from these limitations, the findings of this study attested to the potential for using language-in-talk log assignments as a teaching and learning tool in the EFL context. Gradually, educational institutions were moving toward online delivery, both on campus and at a distance (Anderson, 2011). However, due to the COVID-19 pandemic, schools and universities around the world, and in particular in developing countries like Thailand, grappled with significant challenges of urgent and unexpected transition from face-to-face learning to online learning. The concerns raised by UNICEF (2020) regarding the rapid shift of learning from the classroom to online learning were that the students might not have developed sufficient autonomy for self-learning. There was a lack of mechanisms for teachers to assess and provide feedback and formative guidance to students. To address these concerns, teachers can use language-in-talk log assignments as a pedagogical tool to facilitate autonomous learning and assess student’s progress for meaningful learning.

Conclusion

This paper investigated the effectiveness of using language-in-talk log assignments in enhancing autonomous learning of Thai EFL learners during COVID-19. Findings from the statistical analysis and themes that emerged from reflective logs reaffirmed that autonomy is a universal human capacity (Little, 2007). Asian learners can enhance their learner autonomy with proper training and pedagogical tools in place. The results confirmed that log assignments developed students’ ability to take charge of their own learning in terms of setting learning goals, selecting appropriate learning materials and methods, and evaluating their own learning. Since learning is the product of social interaction, the findings from the study also highlighted the importance of teacher support and collaboration with peers. Both are vital for learners to achieve full autonomy in the language learning process.

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Appendix A - Language-in-Talk Log Assignment

Worksheet: Language-in-Talk Log Assignment # _____

Name: _____ **Student ID:** _____ **Section:** _____

Part I: What do you study? (Please include the source of your materials).

Part II: Can you provide a transcript and write a summary of the conversation you have just listened to?

Part III: What have you learned as to how each weekly-chosen action is carried out in English?

Appendix B - Reflective Logs (open-ended questions)

1. In what ways did you **enjoy/not enjoy** doing log assignments as a part of self-study task?
2. Did log assignments motivate you to look for more resources for improving your English conversation skills? If yes, how? If no, why?
3. Did log assignments help you with your self-study or autonomous learning of English conversation during COVID-19? If yes, how? If no, why?
4. What are some **good points/benefits** of doing log assignments?
5. What were some of the problems you faced during the process of doing log assignments?

Analysis and Improvement Strategies of the Phenomenon that What Biology Teachers Teach is not What They Learned in Rural Middle Schools

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Abstract

Rural education is a short board of China's education. It is of great significance to strengthen the construction of the teacher team in rural middle schools for Rural Revitalization in the new era. The problem of structural shortage of teachers, reflected by the phenomenon of "what biology teachers teach is not what they learned" in rural middle schools, is a key issue that has been existing for a long time in the development of rural middle school education in our country. It is also a key problem that must be paid attention to and urgently solved in the face of the new situation, new tasks and new requirements. In response to this phenomenon that caused by the decline of students and the loss of biological teachers in rural middle schools, the government needs to play a supporting role and the school leaders of rural middle schools should innovate their systems and concepts. What's more, biological teachers should reflect on their hearts and have the educational feelings of being willing to develop the countryside. Only when the government, middle school leaders and biology teachers have formed an educational synergy, can we better solve that harmful phenomenon and promote the healthy and rapid development of rural middle school education.

Keywords: Rural Middle School, Biology Teacher, Teach not What They Learned, Structural Shortage, Improvement Strategy

In recent years, our country has made many constructive measures for the revitalization of rural education. In the aspect of biology education and teaching in rural middle schools, the equipment of biology laboratory has been improved and the training of biology teachers has been strengthened. Besides, the curriculum standards and curriculum settings are more flexible considering the reality of rural middle schools. A series of improvement measures play an important role in improving the quality of biology teaching in rural middle schools.

In 2020, the fight against poverty has entered its final stage and the construction of Rural Revitalization will embark on a new journey. Six departments including the Ministry of Education issued the “*Opinions on Strengthening the Construction of Rural Teachers in the New Era*”, focusing on the shortcomings and weaknesses to provide institutional guarantees for the happiness of rural middle school teachers (Ministry of Education, 2020). Although the state attaches great importance to the construction of teachers in rural middle schools, in actual rural middle schools, due to the regional economic and cultural differences and other factors, there are still some problems in the rural middle school teachers team, such as the shortage of teachers, serious loss, teaching not what they learned, aging knowledge structure and so on (Zhang, 2020). These problems are common among the biology teachers in rural middle schools. Therefore, this article conducts an in-depth analysis of the problems that biology teachers in rural middle schools teach not what they have learned, and puts forward targeted improvement strategies. It is hoped that it can help to improve the quality of biology education and teaching in rural middle schools and promote the healthy and rapid development of biological education in rural middle schools.

1 There is a phenomenon that biology teachers in rural middle schools not teach what they learned

1.1 The overall number of biology teachers in rural middle schools is relatively small

According to the relevant educational statistics released by the Ministry of Education official website in 2019, it can be found that the number of biology teachers in rural middle schools is relatively small as a whole. Due to the objective conditions of the differences between urban and rural areas in reality, there is a significant difference between the school-teacher ratio of the number of biology teachers in rural middle schools and that in urban and town areas. As shown in Table 1, in the junior middle school stage, there are on average 4.2 biology teachers in each urban junior middle school and 3.2 biology teachers in each town junior middle school. However, in rural areas, there are only 1.7 biology teachers in each junior high school on average, which is obviously different from the number of junior high school biology teachers in urban and town areas. While, at the ordinary high school level, there are 8.9 biology teachers in each urban high school and 9.4 biology teachers in each township high school on average. There are only 5.8 biology teachers in each rural high school, which is also quite different from those in urban and town areas.

Table 1: Statistics on the number of rural biology teachers nationwide in junior high schools and ordinary high schools in 2019

		Urban area	Towns area	Rural area	Total
Number of schools	junior high school	13390	24548	14477	52415
	ordinary high school	7190	6034	740	13964
Number of biology teachers	junior high school	55540	77529	24031	157100
	ordinary high school	64288	56785	4306	125379
Average number of biology teachers per school	junior high school	4.2	3.2	1.7	3.0
	ordinary high school	8.9	9.4	5.8	9.0

In addition, there is still a certain gap between the number of biology teachers in rural middle schools and the number stipulated by the state according to the class-teacher ratio and the student-teacher ratio. It can be seen that the number of biology teachers in rural middle schools is generally small. Therefore, in the construction of biology teachers' talent team, it is necessary to further strengthen the introduction and training of biology teachers to promote the steady improvement of the quality of biology education and teaching in rural middle schools.

1.2 Biology teachers in some rural middle schools are not teaching what they have learned

In the case of the overall small number of biology teachers in rural middle schools, some or even most of the biology teachers are concurrently held by teachers from other subjects. In a survey of the professional development of 121 rural middle school biology teachers in Jiangxi Province, it was found that not all of the 121 rural middle school biology teachers had a biology major (Figure 1) (Xiong, 2018). It can be seen from Figure 1 that only 43.7% of the biology teachers were from the biology majors and 10.4% were from the similar science majors in the surveyed rural middle schools in this province. While the proportion of teachers from other disciplines with relatively different backgrounds was as high as 45.9%. Among these people, there were even teachers from humanities specialties such as politics and history. In fact, this situation is actually common in rural middle schools across our country. It has been mentioned in many investigation and research documents that the biology teaching work in some rural middle schools is performed by teachers of non-biological related majors (Nan, 2017; Wen, et al., 2018; Weng, 2014). The main reason why teachers with non-biology-related education background are engaged in or hold a concurrent post of biology is that there is a shortage of biology teachers in rural schools. Therefore, teachers from other subjects who have spare capacity are selected to ensure the completion of normal biology teaching tasks.

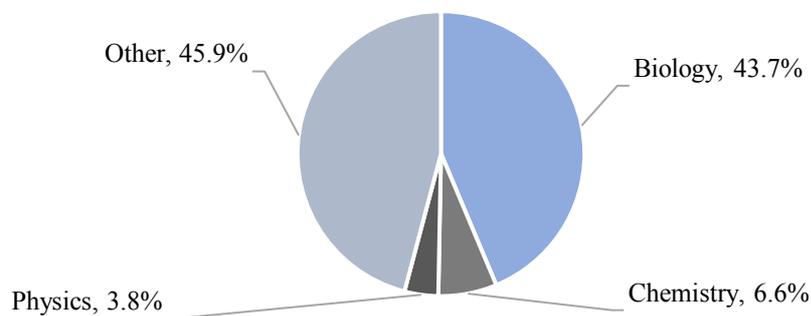


Figure 1: Composition of professional background of biology teachers in rural middle schools in Jiangxi Province (Xiong, 2018)

However, the opposite phenomenon exists in some rural middle schools. For example, in a survey of rural junior high school biology teachers in Maiji District, Tianshui City, Gansu Province (Chen, 2017), there were six biology teachers in one rural school. Three of them were teaching biology courses, one was teaching mathematics, one was teaching mental health, and the other teacher was working in the teaching office. When there was a need for biology teachers to participate in teacher training, it was replaced by other teachers who have free time and no lessons. This situation exists objectively and is also mentioned in other documents (Cao, 2018; Shen, 2013). It can be seen that under the general environment that the number of biology teachers in rural middle schools is relatively small, the number of biology teachers in some rural schools seems to be more, which leads to the phenomenon that some rural biology teachers are not teaching what they have learned.

2 The phenomenon that biology teachers in rural middle schools teach not what they have learned and the structure of the teaching staff

To some extent, it can promote the students to master the knowledge of different subjects with biology teaching by teachers of different majors in rural middle schools. For example, teachers who mainly teach Chinese can quote the poem “planting beans at the foot of Lu Mountain, grass flourishes but seedlings are scarce” to explain the population competition between weeds and soybean seedlings. According to the biological knowledge, the reason why “frosty leaves are redder than the flowers of early spring” is that under the influence of low temperature in autumn, the chlorophyll content in maple leaves decreases and the anthocyanins increase, which makes maple leaves appear red in autumn. In the combination of the beauty of poetry and the interest of biology, in the collision of rational thinking and perceptual thinking, students will be more adept at observing the creatures in ordinary life and have different understanding of the corresponding biological knowledge.

Although the above-mentioned approach has certain advantages, in general, the phenomenon that rural middle school biology teachers teach not what they learned is very unfavorable to the professional development of teachers. It is also not conducive to the improvement of biology teaching quality in rural middle schools. Teachers majoring in biology are better than non-biology professional teachers in the aspects of knowing well biology textbooks and syllabus, actively paying attention to the frontier knowledge of biological science, understanding the principles of biological experiments and operating skillfully. Besides, non-biology professional teachers may just echo what the books say, which will reduce the learning enthusiasm of middle school students and is not conducive to the cultivation of the core biological literacy of students. Therefore, this issue must be taken seriously.

In the final analysis, the phenomenon that biology teachers in rural middle schools teach not what they have learned reflects the structural lack of teachers, which is a common problem in the construction of rural middle school teachers. Structural vacancy of teachers refers to the problem of lack of staff that the total number of teachers reaches or exceeds the required number of staff, but the actual number of teachers in some subjects is insufficient or the number cannot meet the teaching needs (Zhang, 2013). The structural lack of teachers will cause the development of rural education to lag behind (Li, et al., 2020). In rural middle schools, the total number of teachers is overstaffed, but there are vacancies in some teaching posts, so they can only fill the vacancy with teachers from other subjects. Hence it happens, in some rural middle schools, non-biology teachers teach biology, while in other schools there are biology teachers teaching other subjects. The teaching work of mismatched majors can easily cause teachers to have a sense of job burnout, which is harmful to the professional development of teachers. Therefore, the phenomenon that biology teachers in rural middle schools teach not what they have learned, which reflects the structural shortage of teachers, is an important problem that must be paid attention to and urgently solved in the new situation, new tasks and new requirements of rural middle school education in our country.

3. Analysis of the reasons for the phenomenon that rural middle school biology teachers teach not what they learned

There are many reasons for the phenomenon that biology teachers in rural middle schools do not teach what they have learned.

First of all, the loss of students in rural middle schools is serious. With the development of rural construction, many rural families have the conditions and are willing to choose better schools for their children. However, the existing conditions of teachers in rural middle schools can't meet the needs of students to pursue higher education quality, so rural students gradually flow to urban schools. With the decrease of students, more and more rural middle schools have the imbalance of teacher-student ratio (Guo, 2014). The extra teachers don't have suitable teaching posts, so there has been a contradiction that teachers with biological background teach other subjects, while teachers of other subjects teach biology courses in different rural middle schools.

Secondly, the rural middle schools do not pay much attention to biology in the curriculum setting. The entrance examinations of junior and senior high schools have different score arrangements for different subjects. Biology at the junior middle school level is not tested or gets less scores during the senior high school entrance examination, and the biology scores in the college entrance examination are the least among science subjects. In order to increase the rate of enrollment, schools reduce the study time of so-called "sub-subjects" and "partial subjects" in order to improve their teaching achievements more efficiently. However, as one of the "sub-subjects", biology can't get enough attention. In contrast to the so-called "sub-subjects", the school-teacher ratio of the number of biology teachers in rural middle schools is not as good as that of physics and chemistry teachers. As shown in Table 2, there are 1.7 biology teachers in a rural junior high school and 5.8 biology teachers in a rural ordinary high school on average, which is slightly different from the number of teachers in other two subjects. At the same time, due to the reduction of school students, rural middle schools generally arrange large-class teaching in order to make better use of teaching resources (Xue, 2020). A biology teacher teaches several classes. At the same time, there are many students in one class. Therefore, there are no needs for

so many biology teachers. It may be that teachers of other subjects are also teachers of biology, or extra biology teachers teach other subjects.

Table 2: School-teacher ratio of science teachers in rural middle schools in 2019

	Junior high school	Ordinary high school
Average number of biology teachers per school	1.7	5.8
Average number of physics teachers per school	2.6	6.9
Average number of chemistry teachers per school	1.7	6.9

Finally, biology teachers in rural middle schools are slowly losing. Although the country has been paying close attention to the development of rural education, the number of rural biology teachers has been gradually decreasing in recent years, as shown in Figure 2. There are differences between urban and rural areas in terms of working environment, welfare benefits, development space, training opportunities, etc. Urban schools, with better development conditions, are more likely to attract students and teachers to flow to the city. In addition, social prejudice against rural teachers is also an important reason for the loss of rural middle school teachers. In some rural areas, the salary and staffing situation of rural teachers is better than those of urban middle schools. However, due to the limitation of traditional thought that “rural areas are not as good as cities”, some teachers are ashamed of teaching in rural areas and try their best to enter cities to teach. Due to the difference of material treatment and social status, the number of rural biology teachers is less than that of urban schools. The newly graduated biology normal students are more inclined to go to the city to teach. And backbone biology teachers with rich teaching experience are more likely to be attracted to urban schools. It is difficult for rural middle schools to recruit biology teachers and retain excellent teachers. The imbalance of teaching structure makes it difficult for rural middle schools to catch up with urban middle schools in terms of teaching quality, which further aggravates the loss of students and eventually leads to a vicious circle. Some measures formulated by the state, such as free training of normal students, special-post teacher plan, can supplement the number of rural biology teachers to a certain extent. However, it still can't fundamentally change the structural shortage problem of biology teachers teaching not what they learned (Zhou, 2018).

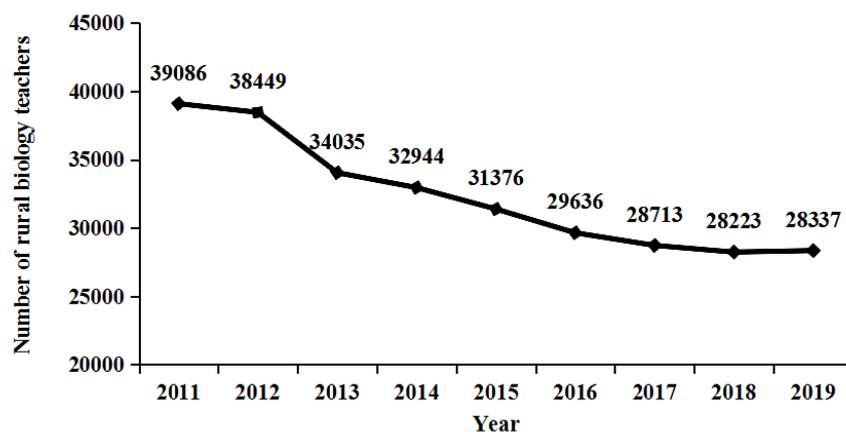


Figure 2: Statistics on the number of rural biology teachers nationwide from 2011 to 2019

4. The improvement strategy of the phenomenon that rural biology teachers teach not that they learned

In view of the phenomenon of professional mismatch of biology teachers caused by the decrease of students and teachers and the deviation of school educational concept in rural middle schools, it is necessary to take the needs of rural middle school education as the guide, pay attention to the living conditions of rural teachers as the premise, take the macro-control of the government as the guarantee, focus on improving the overall quality, and

adhere to the fundamental task of cultivating morality and educating talents. By this way, the phenomenon that rural biology teachers teach not what they learned will gradually decrease and finally disappear. Only by keeping high-quality teachers can the quality of education in rural middle schools be improved.

4.1 The state should give strong support

4.1.1 It is necessary to support the construction of rural middle school education and give material concern to rural biology teachers. President Xi emphasized at the National Education Conference that teachers are the key to running rural education well and they should be given more preference in policies and treatment. For the urbanization of rural education brought about by the urbanization of rural population, the government should take advantage of the trend, do a good job in top-level design, and rationally allocate the educational resources of rural middle schools (Liu, et al., 2020). In addition, a survey shows that (Yan, et al., 2019), factors such as position and income level have an important impact on the life satisfaction of rural middle school teachers. However, they are at a disadvantage in the evaluation of professional titles, especially the evaluation of senior professional titles. There are also significant differences between rural and urban middle school teachers in terms of wages and other treatments (Qin, et al., 2018). Therefore, it is necessary to improve the rural middle school teachers' treatment guarantee system, and give them appropriate preference in the aspects of professional titles, performance pay, housing security, medical assistance and so on, so that they will not "escape" from the countryside and the teaching work because of the hard life of rural. It is unrealistic to ask rural middle school teachers to dedicate selfless and ask for nothing in return. Only by giving them a realistic sense of security can they be willing to stay in the countryside and contribute to the Rural Revitalization. Only when the biology teachers in rural middle schools have a good living guarantee can more talents be brought in. So that they will be more willing to stay and devote more energy to invest in teaching.

4.1.2 It is necessary to reform the evaluation mechanism of middle school education and give spiritual care to biology teachers in rural middle schools. With the development of society, the thought of respecting teachers and promoting education has become more and more indifferent. The social status of teachers is not high, but the moral kidnapping of teachers has become more serious. Some teachers in rural middle schools are separated from the teaching staff and there are even some normal students who are unwilling to choose the profession of teacher. In 2020, the enrollment of public-funded normal school students in Henan Province only achieved less than two-thirds of the target, and even one of the county did not been completed any of the plans. The professional attractiveness of rural teachers is getting lower and lower. It is necessary to establish and implement the national teacher honor system as soon as possible. We should vigorously carry forward the good social customs of respecting teachers to give enough respect to rural middle school teachers and improve their social status (Zhou, 2020). We should form a good atmosphere in the whole society and get rid of people's mentality of discrimination against rural schools and rural teachers. To change the stereotyped conceptualization of rural teachers, it is no longer "suffering from hardship" and "low status", but "teaching with reward corresponding" and "realize the value of life", so that rural middle school teachers can identify themselves as teachers (Zhao, et al., 2018). The honorary support and good social recognition atmosphere can effectively improve the mental state of rural middle school biology teachers and endow them a sense of honor and a positive attitude to participate in teaching activities. It can make excellent biology teachers love rural teaching work and devote themselves to biology teaching (Jin, 2020).

In addition, it is necessary to reform the evaluation mechanism of middle school education and give rural biology teachers enough space to develop qualified education. If the education quality in China is to reach a new level, we must reform the present educational evaluation mechanism. Educational evaluation directs the orientation of running a school and is related to the direction of educational development. *The General Plan for Deepening the Reform of Educational Evaluation in the New Era* issued by the Central Committee of the Communist Party of China and the State Council puts forward that after 5 to 10 years' efforts, the evaluation system that makes teachers devote themselves to educating talents will be more perfect and the evaluation methods that make students develop in a all-round way will be more diversified (State Council, 2020). Therefore, in rural middle schools, it is necessary to improve the system of cultivating people by virtue and change the unscientific orientation of educational evaluation. For students, we should resolutely overcome the wrong idea of only focusing on scores and further education. For biology teachers, we should firmly break the

tendency of attaching importance to teaching but neglecting education. For rural middle schools, we should resolutely correct the one-sided tendency to pursue the rate of enrollment. For biology subject, we should abandon the concept of subcourse and face up to its educational value. In public opinion, it is strictly forbidden to publicize and hype the concept of famous schools and student champions to standardize the behavior of enrolling students and running schools. We should strengthen the interpretation of the concept of science education and guide parents to establish a correct view of education and talent. It is necessary to intensify the propaganda of the advanced deeds and typical teaching experiences of rural teachers to improve the teachers' moral cultivation and educational feelings of rural middle school teachers (Liu, 2020). Only by giving full play to the guiding role of education evaluation and carrying out the fundamental task of cultivating people by virtue to develop quality education, can we truly run a good education that satisfies the people.

4.1.3 It is necessary to strengthen the flow of teachers between urban and rural areas to bring vitality to biological education in rural middle schools. Various measures should be taken to guide the flow of outstanding biology teachers to rural middle schools. The rural areas should adopt various ways and means, such as regular communication, cross-school competition, integrated management of school districts, counterpart support, and group output of key teachers to guide the flow of outstanding principals and key teachers from cities and towns to rural schools. Make overall arrangements for the teaching exchange of teachers in the central schools of the township and villages teaching sites. Urban schools should set up special posts to accept new rural middle school biology teachers for on-the-job training to help improve the teaching staff of rural middle schools (Niu, 2020).

In addition, we should take various forms to strengthen the biology teachers' team in rural middle schools. Within the existing policy framework, the government should make various attempts to broaden the supplementary channels for rural middle school teachers (Zeng, et al., 2018). Combined with the needs of rural education, it is necessary to build a pattern that multilevel and multichannel teachers, such as high-end talents, backbone teachers, college graduates and retired teachers are eager to come to the countryside to teach and support rural education. We should innovate open recruitment methods for teachers and encourage talents to teach in rural areas. The government can implement the local special-post teacher program according to the actual situation. Through the implementation of the master of education teacher training program in rural schools, we can improve the teaching level of rural middle school teachers and optimize the age structure of middle school biology teachers so that more energetic young teachers could drive the vigorous development of rural middle school education (Hao, 2020).

4.1.4 It is necessary to fully implement the supervision system to effectively guarantee the rights of biology teachers in rural middle schools. The emphasis on rural education should not only be reflected in words, but also be put into practice. As for the reform measure of "county management and school employment", which can coordinate the allocation of teacher resources, there are still some problems in practice, such as excellent backbone teachers flocking to go to urban schools, excessive principal power, and dampening teachers' enthusiasm. It needs to strengthen supervision and guidance to local governments to make good policies effective (Ministry of Education, 2020). In addition, in the *Teacher Law*, the policy that "the salary of compulsory education teachers shall not be lower than that of local civil servants" has not been implemented in many places. Even the Education Bureau of a county, under the banner of encouraging teachers to improve their teaching achievements, committed the hurtful behavior of deducting teachers' salaries and bonuses. This year, the Ministry of Education issued a notice requiring all parts of our country to complete the goal of "teachers' salaries must not be lower than those of local civil servants" before the end of the year. The government should strengthen supervision, instead of all talk but little action, which makes the teachers in rural middle schools heartbroken.

The local party committees and governments are the main bodies responsible for the construction of rural teachers' team, so it is necessary to take the construction of rural middle school teachers' team as the key content of the work of the county and township party committees. It is important to strengthen the overall planning and establish a mechanism of leading by the education department and coordinating with all departments, so as to form a joint effort. To implement the work in place, teachers can really become the most respected and enviable profession in society.

4.2 The leaders of rural middle schools should have leadership

Rural middle schools have more autonomy in education, and at the same time, they should give full play to their leadership, so as to truly seek welfare and contribution for teachers and students.

Rural middle schools should innovate education and teaching system. Schools with insufficient students can try to explore small class teaching mode and make full use of biology teacher resources. In some rural middle schools with a large number of biology teachers, they should not simply carry out “seeking for vacancies and filling the posts” to make biology teachers teach interdisciplinary courses after simple job transfer training, in order to improve the utilization rate of teachers. It can only solve temporary problems, which is not only unfavorable to the professional knowledge learning of students, but also unfavorable to the long-term development of teachers’ professional quality. Rural middle schools should strengthen the linkage and communication among regions. For those overstaffed schools that need to supplement full-time teachers, the existing staffing can be structurally adjusted across schools, and the sharing of biology teachers can be realized through cross-school part-time teaching and teachers’ moving teaching. In addition, rural middle schools can help teachers who have spare time outside of teaching to set up unique school-based teaching resources in combination with local culture.

Rural middle schools should have humanistic care for biology teachers. The principal’s responsibility is to help, support, explore and motivate teachers. Only when rural middle schools treat biology teachers with a correct vision and mentality and arouse their enthusiasm, can teachers be more willing to stay in the countryside and play their own value. Many rural middle schools already have relatively complete biology laboratories. Schools should encourage and support biology teachers to carry out experimental teaching and improve the biological science literacy of rural students (Yang, 2017). Rural middle schools should not consider the rate of enrollment and judge heroes by their achievements. While promoting the all-round development of middle school students’ knowledge, ability, emotion, attitude and values, it is necessary to realize that biology teachers in rural middle schools are not tools for imparting knowledge, but the enlightening coaches for students to explore the biological world. Rural middle schools should not only teach, but also educate. They should recognize the unique educational value of biology science and help biology teachers to explore unique educational models based on the countryside.

Rural middle schools should put teachers first and give biology teachers space to develop their creativity and individuality. Only when teachers have more autonomy in their work can they better improve their awareness of the role of teachers (Zhou et al., 2013). Young teachers in rural middle schools generally lack native soil feelings and have a sense of distance from rural students (Cai, 2019). It is necessary to encourage young biology teachers to truly go deep into the lives of people in the rural areas. It can not only enable young teachers to have a sense of belonging to the countryside and be willing to take root in the countryside, but also help them to link the knowledge of biology to the production and life in rural areas to better carry out life-oriented teaching and improve the quality of biology teaching. Dongping Jiedao Middle School in Dongping County, Shandong Province has done a very good job in this regard (Bu, et al., 2019). Based on the local culture, they organize science education with the most advanced curriculum concepts. To enhance students’ love of nature and hometown in a harmonious and interesting way, biology teachers develop club courses. They allow students to understand the severe living conditions of the wetland near the school through field inspections and consulting materials and explore the way of harmonious coexistence between humans and nature. In addition, the newly revised biology curriculum standards also set up a variety of elective courses, which are convenient for biology teachers in rural middle schools to explore unique school-based courses according to local conditions. Students can carry out animal and plant research according to local characteristics, understand local cash crops to develop environmental friendly awareness, recognize and classify local animals and plants, etc. It is of great significance to develop biological activity courses according to local conditions for cultivating students’ interest and getting them closer to their hometown and nature.

4.3 Biology teachers in rural middle schools should have introspection

The country provides external guarantee for the development of biology teachers in rural middle schools, and rural middle schools provide space for them to play their expertise. More importantly, the rural middle school biology teachers themselves should learn to adjust their own mentality to provide internal motivation for improving their professional happiness.

Biology teachers should understand the characteristics of rural students and lead students to understand the vastness and magic of the biological world from the unique perspective of rural biology (Zheng, 2017). In the real, fresh and original biological environment in the countryside, biology teachers in rural middle schools should base themselves on the reality of rural life, be good at using rural materials to innovate biology teaching methods to build a biology humanities teaching mode based on the reality of rural life. For example, drowning has always been a major safety problem in rural areas. However, it is more effective to infiltrate life concept and safety education for students by explaining students' drowning prevention combined with biological knowledge and guiding students to carry out scientific rescue (Shen, 2016). In addition, they can explain to students combining practical problems such as burning straw in rural areas with ecosystem-related knowledge to cultivate their sense of social responsibility.

Biology teachers in rural middle schools should live in poverty but be content with the way. They should abandon the prejudice between urban and rural areas and be proud of the great profession of rural teachers. They should also abandon the concept of minor subjects and give full play to the professional advantages of biology science. Biology teachers should constantly reflect on themselves and actively participate in training to learn advanced concepts and teaching strategies. They should strive to improve teaching ability to contribute to the development of rural education. By obtaining inner satisfaction, the biology teachers in rural middle schools will change from "being forced to stay in the countryside" to "actively going to the countryside" and "actively staying in the countryside".

In response to the weaknesses of Chinese education, the education department has issued a series of policy documents to develop rural education. Significant progress has been made in rural schools' educational resources, environmental construction and teacher team construction. But in the process of construction, there are also many drawbacks. Entering the new era, the next step is to achieve "excellent" on the basis of "passing and good". We must strike a targeted blow to the outstanding problems of rural education and achieve precise policy implementation and precise education optimization. Regarding the phenomenon that rural middle school biology teachers not teach what they learned, all departments, schools, and teachers should do their best to actively respond, so that biology teachers can give full play to their expertise and the quality of rural education in China can be greatly improved.

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