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Mnemonics and Their Effect on Students' Vocabulary Memorization and Recall: A Quantitative Study

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Abstract

Having a Quasi Experimental Research design, this study aimed to reveal the fact whether Mnemonic Keyword is more effective in helping students to memorize and store vocabulary in the short and long term compared to Mnemonic Loci. Twenty-nine students of class IXB (Experimental group) and 31 students of class IXA (Control group) were involved in this study. The Experiment Group was required to memorize vocabulary by using Mnemonic Keyword while the Control group was required to use Mnemonic Loci in memorizing English vocabulary. Right after the last treatment session, the participants were given a post-test to find out the ability of the participants in both groups regarding their ability to store and recall vocabulary in short-term memory. The results revealed that the Experimental group and the Control group had the same performance. Exactly one week after the first post-test, the researcher conducted a second post-test which aimed to find out the ability of the participants in both groups regarding their ability to store and recall vocabulary in long-term memory. The results revealed the fact that the Experimental group had better performance than the Control group in terms of vocabulary retention and recall in long-term memory. This research also revealed the fact that Mnemonic Keyword was more interesting and unique for students during the vocabulary memorization process so that it made them more enthusiastic in memorizing English vocabulary.

Introduction

In recent years, a substantial amount of research on the efficiency of mnemonic devices in facilitating language retention has been carried out worldwide. Iran (Dobakhti et al., 2020), Teheran (Fasih et al., 2018b), and Turkey (Koksal et al., 2013) are examples of some of these countries. It is generally known that having a large vocabulary is one of the most important aspects of communicating effectively in a foreign language. Many teachers and language

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practitioners feel that expanding one's vocabulary is essential and integral to learning a new language (Alqahtani, 2015). Without sufficient vocabulary, a student would be unable to communicate verbally, make utterances, read or even write words or phrases. Suppose an EFL learners do not have a sufficiently massive vocabulary stored in their memory, they will be in trouble when reading foreign texts, producing foreign language utterances, or even writing foreign language sentences. This is because learning a foreign language involves reading, producing, and even writing in the target language. The inability to memorize sufficient vocabulary in the target language will be a significant roadblock in learning foreign languages. Even when sentence structure is incorrect, a student's words will be still comprehensible, but when vocabulary is lacking, nothing can be understood (Rasouli & Jafari, 2016). To put it another way, language learners need to have access to a vast vocabulary that covers a wide range of topics to assist in learning a language.

Learning a language, whether outdoor or indoor, needs a necessary amount of vocabulary to be successful. This is true for both types of learning. Instead of bringing a grammar book, English as a Foreign Language (EFL) students prefers to carry a dictionary when they study outside the class. This may be either a printed or electronic edition. It will be easier for them to locate the appropriate and precise language items they wish to employ during learning (Schmitt, 2010). That is to say; they are well aware and cognizant that, given their little language, fluid and problem-free communication is nothing more than just a dream for them. Communication may still be formed without appropriate and proper grammar, but communication and engagement are impossible without good vocabulary.

Compared to the above learning activity, learning a language indoor places a greater emphasis on the mastery of vocabulary as a crucial component in each of the following four skills: reading, listening, writing, and speaking. In this scenario, vocabulary is the basis for those skills (Richards & Renandya, 2002). When students do not have a sufficient amount of vocabulary stored in their memories, engaging with other students and their teachers in the target language will be challenging. Also, if they do not have an extensive vocabulary, it will be difficult for them to write sentences and grasp the meaning of the phrases they read. It is because the students have a propensity to use the same vocabulary from time to time, which, in the end, delays the process of language learning. If this happens repeatedly, the students will have the impression that the activities associated with language learning are highly monotonous and draining. The inability of students to learn and retain a sufficient amount of language is one of the primary factors contributing to this issue. In addition to the fact that students have a limited vocabulary, many of them tend to forget the vocabulary they have learned only a few minutes after they have learned it or not long after they have located the definition of the vocabulary item they are looking for in the dictionary. They cannot remember lexical items for either the short term or the long term, both of which are types of retention.

Inputting a large amount of new vocabulary from a foreign language into students' memories is an endeavor that is, without a doubt, stressing with difficulty and not at all simple to carry out. It is considerably more challenging to retrieve words that have been successfully stored in the memory after they have been effectively learned. There is a lot of competition among EFL academics and practitioners to identify the strategies that are both the most successful and the most efficient in overcoming these problems. Mnemonics are a method that has been hypothesized to be able to improve vocabulary retention and so facilitate the process of learning new words. Mnemonics are a memory improvement strategy rarely used in language acquisition (Putnam, 2015). On the other hand, some professionals believe that the Mnemonics are unique technique that are very helpful, simple to use, and effective in assisting students in remembering new vocabulary (Sternberg et al., 2012). EFL students who use Mnemonics have

an easier time memorizing a set of vocabulary items, storing them in either their short-term or long-term memory, and bringing those items to mind when needed (Ellis, 1995).

The Mnemonic Keyword and the Mnemonic Loci are the two types of Mnemonics used most often in language acquisition. Mnemonic Keyword emphasizes actual visuals that can be seen immediately by the eye. It is widely held that the capacity of visual pictures to provide powerful stimuli may aid in the process of encoding newly acquired words into human memory (Shapiro & Waters, 2005). With the aid of the Mnemonic Keyword, remembering definitions, new vocabularies, and more may all be learned. It allows students to link any two information in memory. There are 2 important aspects in the Mnemonic Keyword, they are the "acoustic link" and "Imaginary link". Acoustic link connects an English phrase with a local word that at least partially has a similar sound to English. In Bahasa Indonesia, "bizarre" has a sound similar to "besar". The example will give students a visual reminder that the word "bizarre" implies something unusual or unique, which they may use whenever they encounter the word. Another example is the word "buku" in Indonesian would make the students think of the word "buquet" in English.

The second aspect of this mnemonic is known as the "Imaginary link". The students generate one or more images that convey the English word's true meaning in Bahasa Indonesia. The students may create a picture of a book having some flowers on it. Establishing a verbal and visual link between words in Bahasa Indonesia and English remains to be done at this point. Also, to create an "imaginary link", the students must correlate the target word with the first phrase in his drawing. As an example, he can make a drawing of a bus that seems to have unusual painting in it.

One thing to note is that, before using the Mnemonic Keyword in the classroom, teacher should feel confident in its effectiveness. Teacher must then follow specific protocols to be used properly and effectively. When applying Mnemonic Keyword, the teacher must know the following mnemonic characteristics so that the vocabulary memorization process runs smoothly. These characteristics include Similarity in Sound, Uniqueness, Exaggeration and Interactivity, Engaging in Activity, Creativity, and Simplicity.

In terms of Similarity in Sound and Uniqueness, the keyword should sound similar in both the source and target languages to be successful. By connecting the word "cabal", which refers to "a small group of people who plan secretly to take action, especially political action" (Cambridge Dictionary), with the word "**kebal**" (invulnerable), which might be connected to make the concept of being bulletproof will be more memorable to students. Another characteristic that defines the effectiveness of Mnemonic Keyword is uniqueness. The keyword must stand out from other terms that are being used. "**Kebal**" and "**Cabal**" have distinct meanings compared to other terms.

The third characteristic is Exaggeration. For some reason, the stranger or odder a word is, the easier it will be for students to remember it. It is easier to remember the word "bizarre" and "besar" when they are connected to the mental picture of an odd big painted bus. Also, the image must demonstrate a relationship between the two concepts. An odd big painted bus comes to mind when students combine the two due to their strong visual connection.

The other characteristics are Engaging in Activity, Creativity, and Simplicity. In implementing Mnemonic Keyword, students need to be more involved in coming up with the keyword, or the teacher has to develop an experience that will stick in the students' minds and help them recall the connection between the two words. In addition, to create a strong memory, the teacher or students must first create a connection between the word's sound and its visual depiction. It is

advised to explain the relationship using something simpler. In this case, the students will gain instant comprehension. Also, students may have used their daily activities or interests as inspiration for the phrase or image when the piece was created.

In some instances, using the Mnemonic Keyword isn't always a good idea, especially with certain forms of information. Suppose the subject matter calls for a formula, as in a grammar lesson. In that case, teachers may use another mnemonic, such as the acrostic, a sentence created to help people learn particular letters that stand in for items they need to know (Bakken & Simpson, 2011). However, by offering Mnemonic Keyword, teachers may help students learn the target language. Classes may begin using the Mnemonic Keyword by reading a book that contains the words, after which the students will learn and memorize new vocabulary using the Mnemonic Keyword, with the help of the teacher who will create the keywords for each new word. Although this peculiar yet effective teaching strategy, it really aids students in remembering the terms or words and their definitions.

In contrast to Mnemonic Keyword, the Mnemonic Loci is a strategy for learning new vocabulary that involves the learner organizing new words in a particular order and linking them with places and positions that are already familiar to them. This is done by having the learner imagines these familiar locales in their head (Lindenberger et al., 1992). When they intend to remember the language they learned, they need to think and visualize the settings they had constructed in their minds when they were learning the word. The most crucial aspect of Mnemonic Loci is for the learners to mentally visualize and recall every fictitious location linked to a specific piece of vocabulary they have learned in the correct sequence. When necessary, the learners simply mentally re-visualize each previously learned place in the sequence in which they were learned, acquire a creative image connected to the place, then transform the visuals into the words required (Sagarra & Alba, 2006). The primary goal of the Mnemonic Loci is to help students remember the mental images that connect the vocabulary words they need to remember in the order they are organized in the imagined location. It is so simple to remember information by mentally going back to the imagined location in the proper sequence, obtaining the relevant mental pictures, and then converting those images into the required words. Mnemonic Loci is sometimes called "Memory Palace" (Legge et al., 2012).

The students may illustrate the creation of Mnemonic Loci with this figure. Let us imagine that the students have been instructed to memorize the phrases "fried chicken", "soap", and "fish". They need to imagine familiar spaces in sequence, such as the bed, chair, desk, in their room. It is the first task students need to do. The students who use the Mnemonic Loci must act as if they are moving in the room from one location to another. They must mentally put one word into each setting as they transit from one to the next, such as the fried chicken is on the desk, the soap is on the chair, and the fish is on the bed. The students just need to visualize the places they have been in the past when it comes time to recollect the language. They can now view the vocabulary word they have placed in each section. When the students are expected to retain much vocabulary, there are challenges. To remember a lengthy list of phrases, they would "mentally picture" a box of fried chicken on the desk, a bottle of soap on the chair, and six fish head on the bed. A combination of a bizarre or unusual mental image may help in vocabulary acquisition; for instance, a box of fried chicken on a student's desk is more accessible to recall than a box of fried chicken in a fridge.

Several studies on the effectiveness of Mnemonics have been carried out to discover an effective method that may speed up the process of learning language, improve memory capacity, and make it easier to recall previously learned vocabulary. Marzban & Amoli (2012) were responsible for conducting an additional investigation. They wanted to demonstrate that

utilizing Mnemonics to remember previously learned words was successful. Therefore, they carried out this experiment. The sample consisted of seventy students who had just begun their studies at the Aviation University of Tehran. Before they were given treatment, all the people who participated in the study were given a pretest to ensure that the vocabulary was foreign to them. All participants in the study were randomly assigned to one of two groups. The researcher used the Mnemonic image and visualization technique in the experimental group. On the other hand, in the control group, the researcher did not employ any strategy. A post-treatment vocabulary exam in the form of multiple-choice questions was administered immediately after the treatment and two weeks later. The analysis of both post-tests shows that the experimental group's performance was much higher. The participants in this group were superior to those in another group concerning their ability to retain words in both short-term and long-term memory.

A study conducted by (Anjomafrouz & Tajalli, 2012) was yet another study that was not any less relevant. This research also showed that using mnemonic devices to remember language items stored in memory was beneficial. This study included adult and teenage students of English as a Foreign Language (EFL) in Iran. All of the participants participated in the study were randomly assigned to one of two experimental groups or two control groups. The participants in the two experimental groups were each given a new language set to learn by using the mnemonic association approach. On the contrary, two control groups were given the same collection of new languages to learn, but they were instructed to do it via various forms of repetition. In addition to demonstrating that mnemonic connections were better, the researcher wished to demonstrate whether the superiority of mnemonic associations was also affected by the participants' ages. According to the findings of this research project, the use of mnemonic associations in adult research subjects resulted in performance much higher than that achieved by research subjects in the control group who used the repetition method. The adult and teenage participants in the experimental group performed better than the younger participants. That is to say, the success of the Mnemonic association had been shown in this research, in comparison to the repetition strategy, in terms of storing a new set of language and remembering it when necessary.

Safa & Hamzavi (2013) successfully demonstrated that the Mnemonic Keyword helped enhance the capacity of the memory to store knowledge. He involved fifty students from a primary school in the Javanrood region of Iran; all were in the fifth grade. Each of the samples was then arbitrarily divided into one of two distinct groups. While learning new vocabulary, the researcher used the Mnemonic Key Word Method on the experimental group. For the control group to learn the same vocabulary as the experimental group, they were taught it using the repetition memory technique. After the completion of the treatment, three post-tests were administered to the two groups, one each after one day, two weeks, and one month. It was discovered that the experimental group treated with the Mnemonic Keyword performed much better regarding their capacity to learn a new language and commit it to long-term memory. Because of this, it can be concluded that the Mnemonic Keyword is, in fact, an effective and efficient method for memorizing vocabulary. This is demonstrated by the fact that EFL students could retain vocabulary items for more extended periods than they did when using other techniques. Sagarra & Alba (2006) also discovered that the Mnemonic Keyword, as opposed to rote memorization and semantic mapping, is the most effective way to achieve vocabulary retention among L2 learners. This proves that the Mnemonic Keyword is the powerful device for language learning.

The researches discussed above provide conclusive evidence that the Mnemonic Keyword is preferable since it makes it much simpler for the learners to learn new vocabulary and retrieve

language that has been effectively learned. On the other hand, the Mnemonic Loci is also predicted to facilitate vocabulary memorization and strengthen memory; however, none of the studies have investigated the effectiveness of the both Mnemonics in terms of vocabulary memorization and short-term and long-term retention, especially in language learning even though the Mnemonic Loci is predicted to be able to strengthen memory and facilitate vocabulary memorization (Putnam, 2015). Recognizing this gap, the researcher feels the need to conduct intensive study comparing the effectiveness the two Mnemonics (Mnemonic Keyword Method and Mnemonic Loci) to facilitate vocabulary memorization, strengthen memory and recall the vocabulary and answering the following research questions.

1. Do EFL students who memorize vocabulary using the Mnemonic Keyword achieve better performance in short-term retention and recall than those who use the Mnemonic Loci?

2. Do EFL students who memorize vocabulary using the Mnemonic Keyword achieve better performance in long-term retention and recall than those who use the Mnemonic Loci?

Research Methods

Designed as quasi-experimental research design, this research involved two classes selected by the principal without randomly select the samples. One of the classes was designated as the experimental group, and another class was designated as the control group through the lottery. This was done to circumvent the researcher's tendency to favor one of the classes over another. The experimental group consisted of twenty-nine students who were given the Mnemonic Keyword to learn new words and commit them to memory. On the other hand, thirty-one students were in the control group who were given the Mnemonic Loci to learn the same vocabulary as the experimental group. After the treatment, there were two different post-tests conducted. The first post-test conducted one minute after the completion of the last treatment, and the second post-test conducted one week after the first post-test. The first post-test was conducted to evaluate how well the two groups performed in terms of their ability to retain vocabulary items for the short-term retention, and the second post-test was conducted to evaluate how well the two groups performed in terms of their ability to retain vocabulary for the long-term retention.

Following the distribution of the students into the two groups, an initial competency test was conducted to determine whether or not both groups had equivalent vocabulary knowledge before receiving treatment. During this test, the member of each group was presented with twenty-five questions from the Key English Test (KET), all of which are multiple choice questions. The Cambridge Assessment English uses KET as a test that measures one's level of English proficiency (formerly known as Cambridge English Language Assessment). The outcomes of the preliminary examination for the initial level of competence are detailed in the following table.

Table 1. Initial Competence Test Result

	Class	N	Mean	Std. Deviation	T	Sig. (2-tailed)
	Group Statistics					
Score	Class IXA	29	44.14	44.14	1.582	.119
	Class IXB	31	40.26	40.26		

It can be seen from Table 1 that the Sig. (2-tailed) value is .119, which is significantly higher than .05. It is possible to conclude that the two groups were initially at the same level of vocabulary competency before receiving treatment.

Following this stage, the researcher used a lottery to divide the two classes into two distinct groups: an experimental group and a control group. The treatment consisted of teaching the Mnemonic Keyword to the students assigned to the experimental group to memorize vocabulary items. In addition, individuals who participated in the control group were given the task of learning the vocabulary items by using Mnemonic Loci. After the completion of the treatment, the two groups were given two post-tests. To determine whether or not the students in the "Experimental Group" outperformed the students in the "Control Group" in terms of STR (short-term retention) and LTR (long-term retention) of the memorized vocabulary, the mean values of the two groups' post-test scores were compared.

Sample

The students of MTS Al-Amin Kediri, who were in grade IX and were drawn from two different classes, were the samples. The classes were class IXA (consisting of 31 students) and class IXB (containing 29 students). Actually, the total students in the class IXA were 38 students, but seven of them were absent during the initial competence test, leaving 31 students joined the initial test. Those thirty-one students were then the sample during the rest of the research. The researcher then utilized a random drawing to divide those two classes into two distinct groups: the experimental and control groups. This lottery was used to circumvent the researcher's natural propensity to divide the two classes into two distinct groups—an "Experimental group" and a "Control group"—when conducting the research. The lottery outcome determined that students in class IXB was in the Experimental group, while students in class IXA was in the Control group.

The Treatments

Five separate meetings of the treatment were provided to the experimental group. The researcher split the teaching-learning process into three parts at each and every meeting (with the exception of the Fifth meeting), which were referred to as the Pre-teaching, While-teaching, and Post-teaching. During the Pre-teaching, the researcher greeted the students, instructed the leader of the class to engage other students to pray, verified the students' attendance list, and reviewed the materials in previous meeting. During the subsequent meeting of the treatment, such activities were performed again and again.

During the While-Teaching, the researcher gave the class a model of a descriptive text about disasters that included ten vocabularies that the students needed to remember. After completing this portion of the lesson, the researcher let the students to generate as many questions as they could that were relevant to the content that was being presented to them. They were then given free time to search on their own for additional information related to the material that was being covered in the English textbook that they were using, after which they improved their understanding of the material. The following activities was guiding the students of the Experimental group to memorize the vocabulary items using Mnemonic Keyword and organize the ten vocabulary items into their current configuration. The purpose of this was to illustrate to the students in a way that was easy to understand how to use the Mnemonic Keyword. On the contrary, the students of the Control group were treated using the Mnemonic Loci to memorize the same ten vocabulary items. Experience, information, things related to schools, homes, and communities are some of the elements used during using this mnemonic. As the last step, the teacher provided some feedback and remarks on the student's performance. These activities were repeated over to the subsequent meeting, but this time with ten new vocabulary items and a new set of instructional resources.

The Post-teaching session took place after the While-teaching session completed. Both the researcher and the students engage in self-reflection on the various learning activities performed and offer comments on the learning process as well as the outcomes of those activities. In addition, the researcher went through how to utilize the Mnemonic Keyword and the Mnemonic Loci to memorize vocabulary items so that the students would have a better knowledge of this kind of Mnemonic. During the subsequent meeting of the treatment, such activities were repeated again.

Research Instrument and Data Collection

The researcher collected the data on the students' vocabulary memorization either for Short- and Long- Term Retention by having them completed multiple-choice exams in the two post-tests, known as the immediate and the delayed post-test, using an MCQ test. The immediate post-test was carried out immediately after the last session of the treatment, while the delayed post-test was carried out one week after the completion of the treatment. There were 25 questions on the test, all of which were multiple-choice questions. When the students gave the right answer to a question or an item, they were awarded four points; however, they received no points if their answer was incorrect for an item. Therefore, if a student could respond successfully to all twenty-five questions, they were awarded a score of one hundred points.

Results and Discussion

The Results of an Independent T-Test from the Immediate Post-Test

On the fifth meeting, immediately after the completion of the treatment's last session, the first post-test was administered. This test aimed to demonstrate whether or not the difference of the two group was significant. The Independent Sample T-test via SPSS 26 was used to perform the necessary calculation to compare the data obtained from the first post-test of the two groups. The findings are summarized in the table that can be seen below.

Table 2. Group Statistics Output of the Immediate Post-test

	Group Statistics					
	Group	N	Mean	SD	SED	Mean Difference
Score	Experimental Group	29	63.17	10.711	1.989	4.979
	Control Group	31	58.19	8.935	1.605	

When we look at the table above, we can see a total of 29 and 31 students in the two groups. Additionally, it was discovered that the Mean of the Experimental group is 63.17, whereas the Mean of another group is 58.19. At first glance, it may seem as if the two groups' performance on the immediate post-test is different; nevertheless, this conclusion should not be drawn. To demonstrate whether or not the difference is significant, we must take a closer look at the output table for the "Independent Samples Test," which is shown in the following table.

Table 3. Independent Samples Test of the Immediate Post-test

	Independent Samples Test					
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	Df	Sig. (2-tailed)
Score	Equal variances assumed	1.773	.188	1.960	58	.055
	Equal variances not assumed			1.948	54.689	.057

The significance level of "Levene's Test for Equality of Variances" is shown to be .188 in the Table above, which is a number that is more than .05 (.188 is greater than .05). There is no significant difference in the data variance between the two groups. Since it has been shown that the variances are similar to one another (**homogeneous**), the interpretation of the output table of the Independent Samples Test should focus on the t-observed value that is presented in the column labelled "Equal variances assumed." Using the Independent Samples T-test to analyse the data, we find that the t-observed value is 1.960 when we compare the means of the two groups. This t-observed has a significant level of .055 when analysed using a two-tailed test. Because of the Sig. (2-tailed) is much more than that .05 (.055 > .05), it is possible to conclude that the students who were taught to memorize vocabulary using the Mnemonic Keyword (the Experimental group) had the same performance as the students who were taught to memorize vocabulary using the Mnemonic Loci (the Control group) in terms of their ability to recall the vocabulary items over a short period.

The Results of an Independent T-Test from the Delayed Post-Test

One week had to pass after the first post-test to perform the second post-test. This test aimed to determine whether or not there is a substantial difference between the two groups in terms of LTR. The results of the independent sample t-test on the data obtained from the two different groups in this delayed post-test were computed with the assistance of SPSS 26. The findings are summarized in the table that can be seen below.

Table 4. Group Statistics Output of the Delayed Post-test

	Group	N	Mean	SD	SED	Mean Difference
Score	Experimental Group	29	48.69	7.714	1.432	5.851
	Control Group	31	42.84	8.714	1.565	

Group Statistics

We can see a total of 29 students and 31 students in each group. Additionally, it was discovered that the Mean of both groups is 48.69, whereas the Mean of another group is 42.84. At first glance, it would seem that the two groups' performances on the delayed post-test are different. However, it is necessary to look closely at the result table for the "Independent Samples Test," shown in Table below. This will allow us to determine whether or not the difference is significant.

Table 5. Independent Samples Test of the Delayed Posttest

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	Df	Sig. (2-tailed)
Score	Equal variances assumed	.001	.979	2.746	58	.008
	Equal variances not assumed			2.758	57.832	.008

Independent Samples Test

The results of Levene's Test for Equality of Variances are shown in the table above, which shows that the significance value is .979, which indicates that it is more than .05 (.979 greater than .05). That is to say, there is no significant difference in the data variance between the experimental and control groups. Since it has been shown that the variances are **homogeneous** to one another, the interpretation of the output table of the Independent Samples Test should focus on the t-observed value that is presented in the column labeled "Equal variances assumed." The Independent Sample T-test was used to compare the means of the two groups, and the result shows that the t-observed value is 2.746. This t-observed has a significant level

of .008 when analyzed using a two-tailed test. Because of the two-tailed Sig. value is less than .05 (.008 < .05), it is possible to conclude that the students who were taught using the Mnemonic Keyword (the Experimental group) had superior performance to those who were treated using the Mnemonic Loci (the Control group) in term of long-term retention of the vocabulary items.

There is an undeniable connection between the process of acquiring a foreign or second language and the process of expanding learners' vocabulary. It is unarguable that having a strong vocabulary favors a learners' ability to produce written or verbal communication in a second or foreign tongue. Learners of a foreign language or a language as a second language need to have the capacity to remember and retain the vocabulary items of the language they are learning. This is because learning a language requires learners to learn their vocabulary items. The ability to remember extensive vocabulary items of a foreign language, either for short-term or long-term retention and to retrieve them, when necessary, has become the most important and required aspect of learning foreign languages because these abilities support the successful use of the foreign language. This ability can retain the vocabularies either for short-term or long-term storage (Alqahtani, 2015). For learners to effectively remember previously learned vocabulary items, they need to have strong retention of those items, either in the short term or the long term. The researcher investigated the effects of Mnemonic Keyword on the student's retention of vocabulary items and compared it to the Mnemonic Loci to find the most effective way to assist students in retaining and recalling the memorized vocabulary items and facilitate them in retaining and recalling the memorized vocabulary items.

The immediate post-test was given to the students to proof whether or not there is any significant difference in short-term retention of vocabulary items between the students who were taught using the Mnemonic Keyword and the students who were taught using the Mnemonic Loci. This is to answer the first research question as "Do EFL students who memorize vocabulary using the Mnemonic Keyword achieve better performance in short-term retention and recall than those who use the Mnemonic Loci?". The findings of this post-test revealed that the experimental and control groups did not significantly different in their ability to recall language items over a short period. That is to say, when it came to the short-term retention of vocabulary items, the students taught using the Mnemonic Keyword approach had the same performance as those taught using the Mnemonic Loci. It is shown by a Sig. (2-tailed) value of .055, which is more than the significance level of .05 (.055 is greater than 0.05). Memory for the short term is directly connected to retention over the short term. It is a term that refers to the capacity and the ability to retain pieces of knowledge in mind in a short period without the need for rehearsal. Short-term memory comprises all memories ranging from 15 seconds to hours without rehearsal and begins at the beginning of the information intake process (Glassman & Hadad, 2009). Long-term memory is where we keep all memories older than those time range. About the rationale that Glassman and Hadad put up, the underlying explanation for the finding in the first post-test is that the test is conducted soon after the treatment has been administered. Put another way; the exam is still inside the window of opportunity for short-term retention. Therefore, when it is time for this post-test, the students in both groups still have a rather fresh recollection of the vocabulary items they were required to learn as part of the treatment.

One week following the first post-test, the second post-test was conducted to answer another research question as "Do EFL students who memorize vocabulary using the Mnemonic Keyword achieve better performance in long-term retention and recall than those who use the Mnemonic Loci?". The result of the second post-test revealed a different finding. It was discovered that there is a meaningful difference between the Experimental and Control groups

concerning the ability to remember language items over a long period. That is to say, in terms of long-term recall of vocabulary items, students who were taught using the Mnemonic Keyword had much better performance than students who had been taught using the Mnemonic Loci. It was shown by the Sig. (2-tailed) value of .008, which is less than the level of significance set at .05. (.008 < 0.05). This evidence is derived from the computed results of the second post-test conducted one week following the first post-test. The fact that the second post-test extends beyond the capabilities of immediate recall is one of the factors that contributed to the formation of this distinct discovery (beyond 30 seconds to hours). During the test, the students in both groups merely rely on the information stored in their short-term memories of the previously learned vocabulary items. In addition, the fact that the students in the Experimental group put well a procedure that allowed them to re-learn vocabulary items and store them in their long-term memories was an additional element that caused the recall of vocabulary items in their memories. As the result, the students in the Experimental group can remember the vocabulary items they remembered over the treatment in the second post-test easily.

Remember that Mnemonic Keyword and Mnemonic Loci are both kinds of Memory Strategies, one of the four Vocabulary Learning Strategies (Gu & Johnson, 1996), it is true that the Mnemonic Loci requires students of the control group to engage their imaginations by visualizing a setting that is already known to them. The students placed every lexical item in a fictitious location. When it's time to bring the memories back, all that is required of them is to simply revisit the imagined place in sequence, retrieve the mental images associated with that location, and transform those mental pictures into the words that need to be recalled (Legge et al., 2012). When the students visualize a location or area that is familiar to them, it is easier for them to remember it, making it simpler to recollect the vocabulary words they have remembered. It is important to remember that "visual imagery" is an efficient method of encoding that allows students to readily recall vocabulary items by associating them with different and distinct mental pictures (Zimbardo et al., 2012). In a nutshell, using visual imagery or a mental picture as part of the Mnemonic Loci during memorization makes it easier to transfer the memory from short-term to long-term. It strengthens the retention of the memorized vocabulary items in long-term memory. This is accomplished by making the transition from short-term to long-term memory easier.

Although the Mnemonic Loci has the advantage mentioned above, the Mnemonic Keyword has more features that can be used than the Mnemonic Loci such as sound similarity, uniqueness, exaggeration, interactive, creativity, visuals, color, and even imagination. That is, the Mnemonic Loci relies heavily on the mental images created by the students themselves which are still purely imaginative and sometimes even easily forgotten. It should be emphasized that the Mnemonic Loci's efficacy for successful memorization, retention, and recall of vocabulary items is highly dependent on the strength of the association or links that the learners have built between the target vocabulary items and the mental images they are familiar with (Ahour & Berenji, 2015). This is because the weaker the links or associations, the easier it will be for the vocabulary items to be forgotten. Unlike the Mnemonic Loci, the Mnemonic Keyword can involve visible visual elements like pictures and colors, creativity and even imagination. It is undeniable that visual images involving pictures and colors facilitate the process of embedding something into human memory (Shapiro & Waters, 2005). This combination of visual and mental images is the main factor in the superiority of the Experimental group over the Control group in terms of long-term vocabulary retention.

The study conducted also exposed the fact linked with the Mnemonic Keyword that the students in the Experimental group were shocked throughout the initial period of treatment.

They were surprised by the strategy used to memorize vocabulary items because there was no other technique comparable to this one. They felt a little shock by the visual representations used to illustrate the connection between the term and its meaning. The students were taken aback when they saw how their mother tongue is connected with English, sometimes in a ridiculous manner. Although the students sometimes laugh at the association images, doing so is a brilliant method to increase their recollection of the information. The use of Mnemonic Keyword provides students with an opportunity to remember the language in a more efficient manner. An individual student claimed that using the Mnemonic Keyword makes it much simpler for him er to learn the vocabulary by looking at the photos because his brain triggers the keyword whenever he comes into contact with the vocabulary. The reaction causes the brain to process the word's meaning, becoming conscious.

The finding of this study from the second post-test administered perfectly one week after completing the first post-test showed that the students of the Experimental group had successfully retained their vocabulary items in their long-term memories. This result is linear with (Fasih et al., 2018a), who were convinced that students using the Mnemonic Keyword might remember better various kinds of information in English words. Control group students who were instructed using reading and following the teacher performed much worse than those in the Experimental group, who received instruction of the Mnemonic Keyword.

Sofeny & Muamanah (2021) found that the Mnemonic Keyword improves students' retention of new words and boosts their motivation to learn. Also, the Mnemonic Keyword was able to boost or facilitate students in memorizing English vocabulary lists. Another research was performed by Davoudi & Yousefi, (2016), students in the Experimental group outperformed those in the Control group when remembering new words by having better performance on the delay post-test than the Control group's students. Also, there were advantageous pedagogical implications for using the Mnemonic Keyword in the classroom, which might assist students in learning a new language more easily. Supported by the studies above, this current research strengthens the power of Mnemonic Keyword in helping EFL students memorize new vocabulary, store them in long-term memory, and recall these vocabulary items when they are most needed.

Conclusion

This current research is conducted to compare two techniques for memorizing vocabulary, i.e., the Mnemonic Keyword and the Mnemonic Loci in the context of formal language learning. The findings show the fact that the Mnemonic Keyword is more effective than the Mnemonic Loci in terms of long-term retention of vocabulary that had been memorized by the research subjects. It is true that in terms of short-term vocabulary retention, the Mnemonic Keyword and the Mnemonic Loci do not show a significant difference. This is evidenced by the value of Sig. (2-tailed) of .055. This value is still above the significance level of .05. That is, participants in both groups are able to retain vocabulary in their memory and recall the vocabulary equally well when needed.

Even though it cannot be denied that the two techniques do not show any significant differences in terms of short-term memory (STM), the effectiveness and superiority of the Mnemonic Keyword are evident when dealing with long-term memory. That is, the Mnemonic Keyword is very useful for storing new vocabulary in the long term and recalling the vocabulary again. This will greatly support students in the early stages of student language development. Mnemonic Keyword is able to minimize the loss of vocabulary that students have memorized. This is evidenced by the value of Sig. (2-tailed) of .008. This value is under the significance value of .05. That is, participants in the Experimental group who received treatment with the

Mnemonic Keyword were able to retain vocabulary in their memory and recall the vocabulary well within 1 week after the last posttest.

This finding implies that the Mnemonic Keyword is a very useful and interesting technique for students, teachers, trainers or textbook designer in the context of learning language as a second language. Language trainers and teachers must be aware of and understand the importance of foreign language vocabulary teaching and learning techniques in order to be able to incorporate appropriate vocabulary teaching techniques into the foreign language teaching and learning process. Mnemonic Keyword is a new vocabulary learning technique that is more effective, easy to use, and fun so it makes it easier for students to master foreign languages. In addition, this Mnemonic Keyword can be an alternative for foreign language learners who want to have a unique vocabulary learning technique to them. On the other hand, the results of this research can also be used as a reference as well as helping textbook designers to introduce the Mnemonic Keyword into the textbooks they are designing.

The researcher is very aware and understands that this research is still far from perfect, so there are limitations and suggestions as follows. First, this study did not differentiate between male and female subjects. Therefore, researchers strongly suggest that further research is about examining the effects of the Mnemonic Keyword across genders which will produce more comprehensive findings. Second, the research design is "Quasi Experimental Research" which means that the conclusions and findings gained from research participants may not be applicable and cannot be considered applicable to the wider population. This is because it is not possible to randomize the sample during this research. Therefore, the researcher strongly recommends that further research be carried out in a True Experimental design so that the conclusions and findings generated can be considered valid and representative of the wider population.

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