A Comparison of the Use of Three Vocabulary Learning Methods by Pre-Service English Language Teachers

Umut M. Salihoğlu

Bursa Uludağ University, Turkey

 https://orcid.org/0000-0002-5321-6556

Işıl Yalçın

Eskişehir Osmangazi University, Turkey

 https://orcid.org/0000-0002-7160-4210

Abstract

The present study aimed to construct the piloting phase of a more extensive investigation on the effectiveness of the keyword technique, rote memorisation and semantic mapping as vocabulary learning methods in word retention rates of 16 third-grade pre-service teachers studying at English Language Teaching Department of a large Turkish university. The effectiveness of the methods for vocabulary learning was tested using three experimental learning conditions; the conditions were administered to all the participants for their learning of carefully selected 24 low-frequency English words. The results from the immediate post-tests indicated that the keyword technique provided the highest success in recalling the target words. Besides, the rote memorisation method was as successful as the keyword technique. However, the semantic mapping technique has created moderately lower scores both in immediate and delayed post-tests. After an interval of seven weeks, no significant differences were observed between methods. The study yielded suggestions for future larger-scale studies regarding the sample group's size, the field of study, and variety in the target language.

Keywords: Keyword Technique, Pre-service Teachers, Rote-Learning, Semantic Mapping, Vocabulary

Introduction

Vocabulary learning strategies are indispensable for a major vocabulary expansion in the mental lexicon of foreign language learners. Many research trends have offered different methods, techniques and devices for sophisticated vocabulary acquisition. Cook (2017) called the ways to organise new information to recall later as mnemno technics (p. 73). Likewise, Webb and Nation (2017, p. 281) used mnemonic as "a strategy or device to help remember information." They mentioned the example of "the keyword technique", which involves the optional use of imagery. Other devices mentioned are "word part analysis, looking for formal patterns like alliteration and rhyme, and exploring the etymological origin of words and multi-word combinations" (p. 37).

Having reported on the literature reviews in the field, Sagarra and Alba (2006) claimed that a higher rate of word retention could be achieved by using vocabulary strategies which demanded the learners to process the information at deeper compared to strategies with shallow processing levels. The deeper the level of processing, the more permanent will the memory relations be. Numerous studies have focused mainly on a single method or a comparison of the methods under investigation.

Despite the significant number of vocabulary learning methods and techniques offered in language learning,three outstanding methods have been employed in empirical research studies,the keyword, rote memorisation and semantic mapping methods. The following paragraphs in this section describe these methods, sometimes called techniques, and refer to pertinent research studies in the scientific arena. Rote learning,according to Webb and Nation (2017) and Thornbury (2002), forms a way to memorise words by having lavish use of repetitions, which may boost learners' chances to learn, but what influences learning to a greater extent seems to be determined by the matter of whether the learner pays attention to words encountered. Language learners, especially beginners, seem very comfortable with this method. As for the learning conditions with repetition, Webb and Nation (2017) stress the value of providing "information about the word, such as its form and meaning" (p. 66) at the outset, a sufficient number of repetitions. These repetitions may fluctuate between a few times up to 20 or more, varying from person to person and concerning the target word's salience and learning burden, and systematic spacing between repetition events, rather than all piled. They add several activities for increasing encounters, such as using graded readers and repeated reading of the same text or reading similar texts. If the reading text is not simplified, learners can be guided for "narrow reading" (p. 93). Thornbury (2002) contributes to the discussion of the value of repetitions for learning words by proposing the concept of "articulatory loop" (p. 23). In this technique, the learner repeats the target vocabulary item either silently or very quietly to oneself. This process helps activate the working memory for this item phonologically for a period of time to facilitate retention and recall, provided that the item is repeated as many times as is needed, there are not too many items to be handled at one time occupying much memory space, and there are no distractors around such as talk or noise. For the purpose of memory activation, Thornbury also underscores the importance of multiple –at least seven– encounters with words during reading, and also recommends using visual mnemonics which are produced by the learner rather than suggested by another person like the teacher. Cook (2017) warns

that "Practice may not be able to make up for a disastrous first encounter"p. 76).

Semantic mapping is a graphical method that processes incoming information or words by extending and expanding the already existing word knowledge. Webb and Nation (2017) relate semantic mapping to an activity classically led by the teacher who places the target word in the centre of a map. They elaborate that "the process of arranging the words into a semantic map can also be a source of reflective lexical insights" (p. 124). Such a mapping method requires more efforts on the part of learners because of the need for"deliberate noticing"(p. 124) and the reliance on the use of one's existing lexical knowledge. Webb and Nation advise caution regarding repetition in the learning condition since meaning connections are strengthened by the realisation of both verbatim repetition and repetition by way of different uses. Besides, teachers are invited to supply the learners with the words or phrases for semantic mapping or to ask for the learners' suggestions to evaluate for inclusion into the map. Finally, the selected items for the map need to be in connection to each other within the framework of a story or a process rather than being "members of a lexical set" (p. 125).

The keyword technique, as used by Thornbury (2002, p. 145) and Webb and Nation (2017, p. 73), constitutes the most popular way to learn new words. The method typically comprises both coming up with a similar-sounding L1 keyword and creating a mental image with a memorable short scenario to link the keyword's meaning to the target word. An example of learning with a keyword can be the English word 'gather,' which means to bring together; Turkish learners can learn it by using the word "getir" which means to bring. Consequently, the similarity in sound patterns can help a learner retain the meaning of the words. Using keywords, as maintained by Ur (2012, p. 66), is a worthwhile mnemonic strategy to employ for recalling individual words. This strategy was truly beneficial, especially when the particular target words possess several characteristics. That is to say, as Ur claimed, a list of vocabulary items could be remembered better when they are consistently uncomplicated so as to be interrelated in terms of meaning, sound, and emotions which they arouse

when they are easy to pronounce and write, and also when learners themselves formulate their specific keywords to support their own learning mechanisms. In addition, Ur suggested that the target vocabulary items are acquired more comfortably during the first stage of a lesson when learners are more attentive. Thus, the number of lexical items to present at one time, like in a lesson, should be determined wisely; the ideal number could be ten for the intermediate level but a smaller number for the younger learner groups.

The keyword technique has been a fruitful branch of research throughout the history of language learning and teaching. From earlier times, McDaniel and Pressley (1984) compared the effectiveness of learning low-frequency vocabulary by using guessing from meaningful context and keyword methods. Because of the superiority of the keyword method with lower-level verbal ability college students, the researchers postulated that the method could be limited to low-level or average students and that the impact of the keyword method for students with high verbal skills would be at minimal percentages. Another study by McDaniel and Tillman (1987) compared the effectiveness of the keyword and semantic context and focused on differences between the efficiency of contextual vocabulary learning, keyword learning, and no-strategy learning conditions. The results showed a higher level of definition recall in the keyword method condition compared to the context method. The findings of the study about the no-control group were at odds with the present results of the same researcher; however, no clear explanation for this issue was provided.

One truly remarkable study that the present study has partly attempted to replicate in some aspects with a few modifications is Sagarra and Alba's (2006) experimental design. The researchers had hypothesised that learners' building relations around both form and meaning of target words, which refers to the keyword method, would be more effective than the latter per se, called semantic mapping, which in turn would lead to higher gains than the vocabulary learning method which entails relatively less cognitive load, rote learning. They thus explored the effectiveness of rote memorisation, semantic mapping and the keyword vocabulary learning methods among 778 beginner level American learners of Spanish. Their results indeed showed that the keyword method, which necessitates a more profound level of processing, produced the best retention points. Rote memorisation was also found to be a very effective method for word retention. Nonetheless, the semantic mapping method was not as effective as the other two methods for these beginner-level learners. Seemingly, their hypothesis was partially corroborated by their obtained research findings. That is, the beginner-level learners retained meanings of the vocabulary items at a lower degree with semantic mapping than with rote memorisation. For upcoming research studies, the researchers suggested a replication of the design with more proficient learner groups. The present study aimed to represent an unpretentious attempt to test the findings from Sagarra and Alba's (2006) investigation.

Aiming to discover the importance assigned to vocabulary learning strategies, the use of these strategies, and the experiences of EFL learners with various strategies nowadays, Yolcu and Mirioglu (2020) collected quantitative and qualitative data from 398 Turkish eighth graders. Their instruments were a questionnaire with a 5-point Likert scale conducted to all the participants and a focus group interview conducted with 45 volunteers, both of which were fulfilled in the native language of the learners. The results pointed out that they highly valued the use of vocabulary learning strategies, that they knew several kinds of them, but that they were most commonly accustomed to repetition in different forms, such as oral, written, using word lists or flashcards. Surprisingly, the participants also mentioned that they were aware of connecting the meaning of a target word to an L1 similar-sounding word or the name of a familiar place called as"the encoding word technique" and the "Loci Method" (p. 40), respectively. Furthermore, the findings showed that the learners utilised from memory strategies far more than social strategies, such as asking the teacher for a translation or practising with peers outside the class. They concluded that despite their awareness of different strategies, the learners stated that they preferred to opt out of employing others requiring deeper cognitive processing than basic memory aids.

Although the keyword method is argued to be an effective method for second language learning in real contexts, a vast majority of research studies in the past had been carried out with native English speaker college students at US institutions enrolled in psychology courses (McDaniel & Presley, 1984; McDaniel & Tillman, 1987; Pressley et al., 1982). On the other hand, various studies are currently being conducted with foreign language learners. In a very unusual quasi-experimental study with 80 Kazakh undergraduates, Kayaaltı (2018) tried to understand whether the two conducts, namely the rote learning technique and the mnemonic technique involving keywords and visuals, produce more gains in the course of vocabulary teaching in the short term and the long-term retentions of 20 previously-unknown vocabulary items. The pre-intermediate EFL learner participants were presented with English words from high to low-frequency levels, together with their translations in Turkish, which was interestingly the other foreign language of the learners they did not have any difficulty communicating. The control group, who underwent rote learning mode, were asked to memorise the words listed on a sheet in 60 minutes in a very quiet faculty room.

In contrast, the experimental group received training by initially being motivated and hearing the words pronounced by the researcher, seeing their Turkish translations and picture drawings on a sheet, and creating the mental images presented to them verbally. The findings indicated that the latter group outperformed the first on the post-test results. The researcher mentioned the limitation of the study as providing the mental images himself rather than allowing the participants to use their own imagination. The present study agreed to let the participants make use of their own mental resources for acquiring the unknown target words.

Tılfarlıoğlu and Bozgeyik (2012) worked with 252 preparatory class university students at various-proficiency levels to examine their habits for strategy use and the connection between this use and their proficiency levels. As the compiled data with a strategy questionnaire and a vocabulary test presented after analyses, the students possessed the knowledge of various strategies, and their use of strategies paralleled their associated beliefs on the usefulness of learning strategies. Nevertheless, it is intriguing that the participants' proficiency levels according to the vocabulary test scores were not found as connected to their use of strategies. The researchers suggested providing language learners with training on vocabulary learning and memory strategies and opportunities to employ them conveniently. The final intriguing result from this study paves the way for pursuing new research data on the usefulness of some predominant vocabulary learning strategies.

Many other studies were also conducted to see the effectiveness of the keyword method in different instructional settings. For instance, Noprianto and Purnawarman (2019) attempted to explore the vocabulary learning strategies of 116 participants who were first graders in an Indonesian senior high school. The purpose was to clarify the relation of strategy use with the knowledge of English word affixes. The data were collected via a renowned questionnaire on strategy use and a word parts test. Remarkably, learners' knowledge of affixes, the knowledge regarding form and meaning in particular, significantly correlated with their overall use of vocabulary strategies in a positive way. The memory strategy, most excitingly, was included in this correlation in spite of the fact that it was not stated as a very frequently preferred practice among these EFL students. The further study suggestions included employing a wider population sample at the same proficiency level to test the findings and to triangulate them using qualitative research instruments, aiming to uncover the learners' justifications behind selecting certain strategies for vocabulary learning. Likewise, Motlagh and Rahidi (2015) compared the effectiveness of mnemonic strategies with non-mnemonic strategies of 40 Iranian EFL learners in their experimental research study. They found the superiority of mnemonic strategies to facilitate learning the target words over learning in a traditional way, such as synonyms and antonyms. The learners were asked to find their keywords themselves in advance and come to class to reach a consensus for the best ones in group work.

The reason why most of the vocabulary method studies used concrete words is connected with the abstractness and concreteness phenomena. A theory named dual coding is assumed to explain the issues

raised regarding cognitive load of words. As stated by Webb and Nation (2017), when learners can be helped to encode target vocabulary items both verbally and nonverbally,they are more likely to learn them than the words which are encoded verbally per se. Learners need to be provided with the guided practice for visualising related images in their minds for establishing meaning connections, perhaps by closing their eyes for this purpose and with enough time for such imaging. The words selected for the present research have been purposefully selected as items which refer to people (e.g. carlin), animals (e.g. aardvark), places (e.g. barbican), objects (e.g. buskin), substances (e.g. antiar) and food or drink (e.g. ramekin).

To summarise, the three different methods of rote memorisation, semantic mapping and the keyword method have yielded varying vocabulary gains for foreign language learners at different ages and proficiency levels. In light of the reviewed literature, the present study aims to explore the effectiveness of the three above mentioned vocabulary learning methods in a completely different context among pre-service English language teachers to shed light on the claims of the previous literature about the methods and the learner levels. The findings from this investigation could facilitate autonomous learning of lexical items, which are building blocks of a language and prepare more fruitful vocabulary lessons in foreign language teaching. We, therefore, wish to explore the following:

1) Are there any short and long-term differences in the effectiveness of using rote learning, semantic mapping and keyword vocabulary methods by pre-service English language teachers?

Methodology

The following section presents the details on the context, participants, preparation and piloting of the data collection instruments, data collection procedure and analysis.

Participants

The participants of the present study consisted of 16 students, five males and 11 females (the initial number of participants was 28; the reason for the decrease is explained in the methods section) from the English language teaching department of Bursa Uludag University Faculty of Education. These third-grade Turkish pre-service teachers were enrolled in a class titled Teaching Language Skills as a part of their training program. The course introduced the methodology and practice of how to teach various language skills. As a part of the course curriculum, the concept of teaching vocabulary methods was mentioned throughout the semester. Being advanced-level learners of English themselves and prospective teachers were familiar with the vocabulary methods for the present study. Participation was voluntary, yet the teacher candidates were informed about the future benefits of exploring their own abilities in vocabulary learning.

Treatment

The current study was carried out in three sessions which were allocated before the regular class hours. In the first session, the participants were given extra information about the study, and their questions were answered.

During the first session, the participants were re-introduced to the techniques with the following examples:
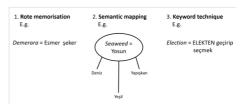

Figure 1 Examples of the Application of Techniques

With the purpose of exploring the effectiveness of three vocabulary techniques, 24 English low-frequency words were chosen from the previous studies (Levin & Miller, 1982; McDaniel and Pressley, 1984; McDaniel & Tillman, 1987; Pressley, Levin & Miller, 1982). (See Appendix 1 for a complete list of the words used in the study). To find out the frequency of the words used in this experiment, they were entered into the online corpus analyser program by Cobb (1999) named Vocab Profile. The Vocab Profile by Cobb (1999) gives information on how many words a text contains from the perspective of levels. The frequency list used for the analysis was

labelled as the experimental British National Corpus (BNC) 20000-word level list. It involves the most frequent 20000-word families in the experimental BNC. The words for this experiment have been entered into the program, and the words were placed into the 20 different thousand-word level lists. The software showed the words that were not included in any of the frequency lists by labelling them as off-list words.

The results showed that the experimental words were very infrequent words. For example, cordite, the most frequent word compared to the other words in the study, was found to be in the BNC 15,000 list. The results showed that the words aardvark, barbican, cowrie, mahout, ramekin and verbena were placed in the BNC 18,000 level, poteen in the 19000 level and buskin, empennage and gerenuk in the 20000-word level. It was interesting to see the remaining 13 words out of 24 that were antiar, bracero, bullace, carlin, casern, dogger, dottle, fumitory, hamate, jabiru, jarvey, manchet, and piggin were not in any of the experimental BNC lists and were regarded as off-list words.

To see whether the prospective teachers were familiar with these low-frequency words and an alphabetical list of the 24 words was given, the participants were required to supply translations of these words into Turkish. The sheets were returned blank, as none of the participating students knew the meaning of any of the target words. At the end of the first session, the participants were invited to join the second phase two weeks later in an allocated multimedia classroom with a projector and speaker system. During this interval, the researcher prepared Power Point slides for the 24 words. In order to comply with the three experimental design settings, 24 words were randomly divided into three groups, each with eight words in total.

The slides were prepared in the following way: a) First, the target words to be learnt appeared on the left side of the slide with a large font size; b) two and a half seconds later, a sound file embedded in the slide started to play the pronunciation of the words. c) on the fifth second of the slide, the Turkish translation appeared on the right side of the screen.

As it might be recalled, most of the studies in the literature supplied the learners with native-speaker

pronunciation. (See McDaniel & Presley, 1984; McDaniel &Tillman, 1987; van Hell& Mann, 1997). Since the researchers were non-native speakers, we did not want to distort the input, so the pronunciation for the low-frequency words were recorded from Merriam-Webster's online internet dictionary of English. Later, these sounds were duplicated and sequenced with the help of a commercially free sound editing program called Audacity. The resulting sound file was ten seconds long with four repetitions of the target words. As mentioned above, the embedded sound file started playing two and a half seconds after the target word appeared on the screen, and on the fifth second of the slide, the Turkish translation appeared on the right side of the screen. Each slide lasted precisely one minute. The students were allowed to acquire the words in one minute because allowing adequate time would be necessary for establishing stronger links in memory (Fritz, Morris, Acton, Voelkel & Etkind, 2007). A low beep sound was heard two seconds before the slides changed to alert the participants. The participants listened to and saw the target words and the translations and studied the words in the order of the method prescribed to them with the booklets.

When the participants entered the room, they were randomly seated in one of the three rows of desks in the multimedia class; it was assured that each participant was sitting alone at a single desk. Each of the three rows created three experimental groups. For the purpose of using three different methods, colour codes were also assigned to each technique. The colour blue was chosen to represent the semantic mapping technique, yellow for the rote memorisation, and the colour green was assigned to the keyword method. Sheets with these colours were stuck on the board, each one bearing the name of the method assigned to that particular colour to remind the participants of the method categories. For setting the order of the experimental method, booklets with ten pages were prepared. The order of methods and the number of words to be learned can be seen in Table1.

Table 1 Order of Experimental Design

Experimental Design			
	Presentation Order 1	Presentation Order 2	Presentation Order 3
Words 1–8	Rote Memorisation	Keyword Method	Semantic Mapping
Words 9–16	Semantic Mapping	Rote Memorisation	Keyword Method
Words 17–24	Keyword Method	Semantic Mapping	Rote Memorisation

The first page of the booklet in white colour was reserved for the names of the participants. The remaining nine pages consisted of three different colours, three for each. For example, for the first group of students, the second, third, and fourth pages of the booklet were yellow to remind them to use the Rote memorisation technique. On every third page of the colour groups, the eight target words were printed in a different order from the presentation of the slides. Students were warned not to look at the printed target words during the practice phase and before being told. One other faculty member kindly helped the researcher with this invigilation duty. Right after the first eight words were introduced by the slides and practised with the given method, the students were told to open the fourth page in their booklets and match the words on the pages with the pictures that appeared on the projector screen by writing the number under the picture next to the correct word.

Just like Sagarra and Alba's (2006) study, there were ten pictures on the screen, eight of which clearly represented the target words and two distracters. The participants were given 5 minutes to complete the first immediate post-test. After the first test, the study continued in the same manner until the remaining sixteen words were practised, and the two immediate post-tests were taken. The booklets were collected back, and the second session had ended. A sample booklet from a participant can be observed in Appendix 2. The booklets were later examined to ensure the participants used the assigned method for practice. It was found that although instructed not to use any other methods than the prescribed one, nine participants used different techniques, so their data were excluded from the study.

During the third phase of the study, which was seven weeks after the immediate post-test, 16 students were again invited to the same multimedia class. The reason for the decrease in the number of participants was due to their absence and not using the assigned method for vocabulary learning. The participants were given three separate sheets with eight words each. The word order was different from the previous tests to inhibit the order memorisation effect. The students were shown the same pictures in the immediate post-test and asked to match the numbers with the words. There were two distracters on each slide. The order of images was also changed. The participants finished the delayed post-test in 10 minutes.

Results and Discussion

To analyse the data gathered from the three experiments and post-tests;we used SPSS 28 program. First, we will show the descriptive results from the tests Table 2 displays the mean scores and standard deviations from three treatments.

Table 2 Means and Standard Deviations for Immediate and Delayed Post-Tests

Treatments	K	N		Immediate Post-test			Delayed Post-test	
				M	SD		M	SD
Rote Memorisation	8	16		7,31	1,30		2,94	1,73
Keyword Method	8	16		7,69	1,01		3,75	1,65
Semantic Mapping	8	16		6,44	1,75		2,81	1,55

The highest mean score of 7,69 was gained with the keyword technique in the immediate post-test. The claim that "Students applying the keyword method typically outperform no-strategy or other strategy controls by a wide margin on tests administered the following learning immediately" by Carney and Levin (1998, p.276) can roughly be supported by the findings of the current study. The immediate post-test results from the data showed that the highest grades were obtained from the keyword method, the medium from rote learning and the lowest from the semantic mapping.

Due to the small number of participants and non-normally distributed data, we decided to use non-

parametric tests for further analysis. The analysis by the Friedman test revealed a statistically significant difference between the immediate post-test scores from the three different learning conditionsc2(2, N=16) = 5.813, p = 0.05. We conducted Wilcoxon signed rank tests to follow up on this finding. Table 3 provides the first comparison of rote learning and semantic mapping techniques in the immediate post-tests.

Table 3 A Wilcoxon Signed-Ranks Test on Rote and Semantic Immediate Post Tests

Rote-Semantic Immediate Post Tests	N	Mean Ranks	Sum of Ranks	Z	P
Negative Ranks	7	5.21	36.50	-1.672	0.095
Positive Ranks	2	4.25	8.50		
Ties	7				

Based on negative ranks

A Wilcoxon Signed-Ranks Test did not indicate any statistical differences between the rote learning and semantic mapping immediate post-test scores z=-1.672, p >0.05. The participants had similar levels of word retention while using these two techniques. Table 4 shows the second comparison of keyword learning and semantic mapping techniques in the immediate post-tests.

Table 4 A Wilcoxon Signed-Ranks Test on Keyword and Semantic Immediate Post Tests

Keyword-Semantic Immediate Post Tests	N	Mean Ranks	Sum of Ranks	Z	P
Negative Ranks	7	5	35	-2.413	0.016
Positive Ranks	1	1	1		
Ties	8				

Based on negative ranks

When the score differences between the keyword method and semantic mapping immediate post-tests were analysed, a Wilcoxon Signed-Ranks Test indicated statistically significant differences z=-2.413, p< 0.01. The pre-service teachers recalled a significantly higher number of words using the keyword technique than the semantic mapping technique. Table 5 shows a comparison of keyword and rote learning technique scores on the immediate post-test.

Table 5 A Wilcoxon Signed-Ranks Test on Keyword and Rote Immediate Post Tests

Keyword-Rote Immediate Post Tests	N	Mean Ranks	Sum of Ranks	z	p
Negative Ranks	3	3.83	11.50	-1.084	0.279
Positive Ranks	2	1.75	3.50		
Ties	11				

Based on negative ranks

A Wilcoxon Signed-Ranks Test did not indicate any statistical differences between the keyword method and the rote learning immediate post-test scores z=-1.084, p >0.05. Both methods facilitated similar levels of success.

To further explore our data, we intended to check the delayed post-test results as well. The comparison of scores from the three delayed post-tests by the Friedman test revealed that the scores were not significantly different c2(2, N=16) = 2.172, p >0.05. Thus, no follow-up tests were conducted.

Since it was observed there were no significant differences between the delayed post-test scores; we decided to explore further whether there were any significant changes in the immediate and delayed post test scores from three vocabulary methods. We applied Wilcoxon Signed-Ranks Tests to check these cases. Table 6 shows a comparison of keyword method scores in the immediate and delayed post-tests.

Table 6 A Wilcoxon Signed-Ranks Test on Keyword Immediate and Delayed Post Tests

Keyword Immediate- Delayed Post Tests	N	Mean Ranks	Sum of Ranks	Z	P
Negative Ranks	16	8.50	136	-3.526	0.001
Positive Ranks	0	0	0		
Ties	0				

Based on negative ranks

A Wilcoxon Signed-Ranks Test indicated that the keyword delayed post-test scores were statistically significantly lower than keyword immediate post-test scores z=-3.526, p < 0.001. Although the results indicate a sharp decrease of scores still the teacher candidates obtained the highest scores for the immediate and delayed post-test scores in the keyword treatment. At the end of the seven-week interval, the pre-service teachers still successfully retained half of the eight vocabulary items. Table 7 shows a comparison of role learning method scores in the immediate and delayed post-tests.

Table 7 A Wilcoxon Signed-Ranks Test on Rote Immediate and Delayed Post Tests

Rote Immediate- Delayed Post Tests	N	Mean Ranks	Sum of Ranks	Z	p
Negative Ranks	14	8.50	119	-3.363	0.001
Positive Ranks	1	1	1		
Ties	1				

Based on negative ranks

A Wilcoxon Signed-Ranks Test indicated that the rote memorisation delayed post-test scores were statistically significantly lower than rote memorisation immediate post-test scores z=-3.363, p< 0.001. These results show that recall rate for the immediate post-test was really high, yet the participants could only remember the half of the words after seven weeks. Table 8 shows a comparison of semantic mapping technique scores in the immediate and delayed post-tests.

Table 8 A Wilcoxon Signed-Ranks Test on Semantic Immediate and Delayed Post Tests

Semantic Immediate- Delayed Post Tests	N	Mean Ranks	Sum of Ranks	Z	P
Negative Ranks	14	7.50	105	-3.307	0.001
Positive Ranks	0	0	0		
Ties	2				

Based on negative ranks

A Wilcoxon Signed-Ranks Test indicated that the Semantic Mapping delayed post-test scores were statistically significantly lower than Semantic Mapping immediate post-test scores z=-3.307, p < 0.001. The results point that pre-service teachers' level of retention decreased through the course of seven weeks at a higher rate than rote learning and almost to a level of 25% of the words learnt through semantic mapping technique.

Conclusion

The results of the present study have indicated that the keyword method and rote memorisation methods have served for higher success points in immediate and delayed post-tests, the former providing the highest. Even though the semantic mapping technique was effective, it yielded the lowest scores of all in both post-tests. Nevertheless, the findings of the study should be approached with precaution regarding the very small size of participants. The present research refuted van Hell and Mahn's (1997) argument that advanced-level language learners will not benefit from keyword methods and, contrarily, should avoid using them. The findings of the study also supported the results provided by Sagarra and Alba's (2006) experimental design that even the order of successful methods was identical.

Even though many criticisms have been directed at the keyword method, the scientific proof of its success makes its use inevitable. "Unless any notable

adverse effects associated with the keyword method can be empirically documented, it will continue to be a vocabulary-learning strategy that cannot be easily dismissed" (Pressley, Levin & Miller 1981, p.225). Its benefits should be investigated, and confounding factors for criticisms should be taken into consideration. It should be very well kept in mind that no one technique might work well in every context. Given the complexities of learning a language which is unique in every aspect, it should be approached with a multifaceted design.

The closure on this issue can be stated as follows: "Although mnemonic strategies may not be for all students all of the time, the research evidence overwhelmingly suggests that they are for many students some of the time (Levin, 1993, p.242).The present study is planned to serve as a pilot study for larger scale research that will be carried out in three different institutions with a larger population and not only limited to English pre-service teachers but also will include German and French language teaching departments to further elaborate the effectiveness of vocabulary learning methods and techniques.

References

Carney, Russell N., and Joel R. Levin. "Do Mnemonic Memories Fade as Time Goes By? Here's Looking Anew." *Contemporary Educational Psychology*, vol. 23, no. 3, 1998, pp. 276-97.

Cobb, T. *Web Vocab Profile*. 1999.

Cook, Vivian. *Second Language Learning and Language Teaching*. Routledge, 2017.

Fritz, Catherine O., et al. "Comparing and Combining Retrieval Practice and the Keyword Mnemonic for Foreign Vocabulary Learning." *Applied Cognitive Psychology*, vol. 21, no. 4, 2007, pp. 499-526.

Kayaaltı, Mahmut. "Mnemonic Technique - An Effective Vocabulary Teaching Method to Plurilingual Students." *Modern Journal of Language Teaching Methods*, vol. 8, no. 5, 2018, pp. 388-400.

Levin, Joel R. "Mnemonic Strategies and Classroom Learning: A Twenty-Year Report Card." *The Elementary School Journal*, vol. 94, no. 2, 1993, pp. 235-44.

McDaniel, Mark A., and Michael Pressley. "Putting the Keyword Method in Context." *Journal of Educational Psychology*, vol. 76, no. 4, 1984, pp. 598-609.

McDaniel, Mark A., and Vincent P. Tillman. "Discovering a Meaning versus Applying the Keyword Method: Effects on Recall." *Contemporary Education Psychology*, vol. 12, no. 2, 1987, pp. 156-75.

Motlagh, Fatemeh Ahmadniay, and Naser Rashidi. "A Comparison between the Effectiveness of Mnemonic versus Non-mnemonic Strategies in Foreign Language Learning Context." *International Journal of Language and Applied Linguistics*, vol. 1, no. 1, 2015, pp. 19-26.

Noprianto, Eko, and Pupung Purnawarman. "EFL Students' Vocabulary Learning Strategies and their Affixes Knowledge." *Journal of Language and Linguistics Studies*, vol. 15, no. 1, 2019, pp. 262-75.

Pressley, Michael, et al. "How does the Keyword Method affect Vocabulary Comprehension and Usage?." *Reading Research Quarterly*, vol. 16, no. 2, 1981, pp. 213-26.

Pressley, Michael, et al. "The Keyword Method Compared to Alternative Vocabulary Learning Strategies." *Contemporary Educational Psychology*, vol. 7, no. 1, 1982, pp. 50-60.

Thornbury, Scott. *How to Teach Vocabulary*. Longman, 2002.

Tılfarlıoğlu, F. Filiz Yalcin, and Yunus Bozgeyik. "The Relationship between Vocabulary Learning Strategies and Vocabulary Proficiency of English Language Learners." *International Journal of Applied Linguistics & English Literature*, vol. 1, no. 2, 2012, pp. 91-101.

Ur, Penny. *A Course in English Language Teaching*. Cambridge University Press, 2012.

Webb, Stuart, and Paul Nation. *How Vocabulary is Learned*. Oxford University Press, 2017.

Van Hell, Janet G., and Andrea Candia Mahn. "Keyword Mnemonics Versus Rote Rehearsal: Learning Concrete and Abstract Foreign Words by Experienced and Inexperienced Learners." *Language Learning*, vol. 47, no. 3, 1997, pp. 507-46.

Yolcu, Melek, and Meryem Mirioglu. "Investigating the Importance Level and Utilization of Vocabulary Learning Strategies among Turkish EFL Learners." *Asian Journal of University Education,* vol. 16, no. 1, 2020, pp. 32-45.
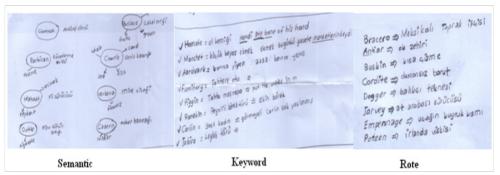
Appendices
Appendix 1:
Words used in the study

	Experimental Word	English Definition	Turkish Definition used in the study
1	ANTIAR	An arrow poison prepared from the sap of a certain tree.	Ok zehiri
2	AARDVARK	A large burrowing nocturnal mammal that feeds especially on termites and ants	Karınca yiyen
3	BARBICAN	An outer defensive work; especially a tower at a gate or bridge	Gözetleme kulesi
4	BUSKIN	A thick-soled laced boot or half-boot.	Kısa çizme
5	BRACERO	A Mexican labourer admitted legally into the U.S. for a short period to do farm labour.	Meksikalı Toprak İşçisi
6	BULLACE	The bluish-black, juicy plum borne by the damson tree.	Çakal eriği
7	CARLIN	A woman, especially an old woman.	Yaşlı Kadın
8	CASERN	A military barracks.	Asker barınağı
9	COWRY	A polished, coloured seashell used in some places as money.	Deniz kabuğu
10	CORDITE	A smokeless explosive powder which is drawn into strands.	Dumansız barut
11	DOGGER	A broad-bowed two-masted fishing boat used esp. by the Dutch in the North Sea.	Balıkçı teknesi
12	DOTTLE	A plug of half-burnt tobacco in the bottom of a pipe after smoking.	Pipo tütün artığı
13	EMPENNAGE	The rear parts (tail) of an aeroplane.	Uçağın kuyruk kısmı
14	FUMITORY	Any of a genus (the fumitory family) of erect or climbing herbs.	Şahtere otu
15	GERENUK	A large-eyed antelope with a long neck and limbs	Antilop türü
16	HAMMATE	A wedge-shaped bone in the wrist.	El kemiği
17	MAHOUT	a keeper and driver of an elephant.	Fil binicisi
18	JABIRU	A large stork, of the warmer regions of America.	Leylek türü
19	JARVEY	The driver of a hackney coach or jaunting car in Ireland.	At arabası sürücüsü
20	MANCHET	A kind of white bread made from the finest of flour.	Küçük beyaz ekmek.
21	PIGGIN	A small wooden bucket, with the handle sticking above the rim on one side.	Tahta Maşrapa
22	POTEEN	An illicitly distilled whiskey in Ireland.	İrlanda viskisi
23	RAMEKIN	A preparation of cheese especially with bread crumbs or eggs baked in a mold or shell.	Peynirli börek türü
24	VERBENA	Any of various plants of the genus Verbena, cultivated for their showy flower clusters.	Mineçiçeği

Appendix 2:

A sample study booklet

Author Details

Umut M. Salihoğlu, *Bursa Uludağ University, Turkey,* **Email ID***: umutms@uludag.edu.tr*

Işıl Yalçın, *Eskişehir Osmanğazi University, Turkey,* **Email ID***: isilyalcin@gmail.com*