

Effect of Keyword Mnemotechnics on Second Language Vocabulary Learning

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Abstract

This article reports the results of a study carried out to establish the effectiveness of mnemonics used in facilitating learning of second language vocabulary. This experimental study was conducted among 24 low proficiency freshmen of the Faculty of Arts of the University of Jaffna, Sri Lanka with the objective of finding the extent of effectiveness the keyword method has on facilitating second language acquisition. The results revealed a positive relationship between the keyword method and learning of vocabulary.

Keywords: memory, languages, mnemonics, keyword technique, second language learning.

Introduction

The need to guarantee mastery of more than one language is, without a doubt, one of the most pressing concerns of the current world and as such Sri Lanka is not an exception to this phenomenon. Thus, teaching and learning of English as a second language has become one of the most widespread social phenomena and is currently a guarantee of social, work and personal development in students especially in Sri Lanka.

In this area of language proficiency, our ability to evoke from memory the resources necessary to be able to use a language becomes the main tool for reaching the natural understanding and expression of messages. However, despite the great variety of elements that make up a language, mastering a broad vocabulary is one of the most important elements when acquiring a second language, since it not only allows for spontaneous conversations but also favours move on to the bilingual world (Piribabai & Rahmany, 2014).

For this reason, the main objective of this article is to evaluate to what extent the memory techniques used in the learning of a second language lexicon among low proficiency freshmen of the Faculty of Arts of the University of Jaffna, Sri Lanka, in order to achieve improvement in the proper planning and programming of teaching vocabulary.

Review of Related Literature

In this sense, the relationship between language learning and memory has been marked by the constant changes with respect to the unequal evaluation that memory has received in the different methods of language acquisition. The controversy regarding this area maintained since the 19th century has opened the way to recent methodological proposals that, far from being firmly established, are subject to constant review. Thus, it is within the teaching of the vocabulary where we find the application of the well-known memory techniques as a way of learning but also as a tool to combat the forgetting of vocabulary.

Derived from the ancient Greek word 'mnemonikos', the term mnemonics is defined as that technique by which memory is reinforced (Mastropieri and Scruggs, 1991) and allows information to be stored in it in order to be able to obtain it when needed (Higbee, 2001) without thereby replacing the basic principles of learning if not using them to make sense of the material to be learned.

Thus, the vast majority of the techniques used affect the recovery stage, based on the idea that the more associations are established between the vocabulary learned and the schemata that the subject already has in his long-term memory, the greater the possibilities of successfully recover it (Higbee, 1991).

Therefore, there are many existing memory techniques that present associations of very different types such as semantics (contrast, similarity, etc.), phonetic (phonetic similarities between items to be learned), visual, etc. to promote memory. Despite the great variety of forms of presentation of mnemonic methods, we can mention the keyword technique (Atkinson, 1975) as one of the most widely used methods for learning and remembering vocabulary in foreign languages.

The keyword system describes the mnemonic class whose purpose was to improve the learning of a second language lexicon. Based on the principle of association of new words or concepts with key words or images that have a similar sound (Woolfolk, 2019, p. 262), the connection between an unfamiliar word and one that is familiar and between which there is acoustic similarity divides the study of each new word to be learned into two consecutive steps: verbal and visual.

In the first, the subject associates the foreign word object of learning with another one of his/her own language (key word) that she keeps with that certain phonetic similarity. The second of the steps involves the elaboration of a mental image in which the translation of the foreign word and the key word interact. With this, we establish two different associations in succession: a phonetic one that connects both words, and a visual association that connects the keyword and

the translation. During recollection, — the pronunciation of the [English] word will provoke, by phonetic similarity, the evocation of the key word and this, in turn, the recollection of the image that contains the meaning that the subject seeks (Pressley, Levin & Delaney, 1981). We therefore use a combination of words with acoustic, semantic and visual associations with this technique. The retrieval of stored information leads us to long-term memory and, specifically, to semantic memory, whose presence in this technique of the keyword is very relevant since it is at the base of practically all the procedures used in mnemonics by providing the student with the basic element for language learning: the meaning and relationship between concepts.

There are numerous investigations that have had as main objective to know, analyze and deepen the knowledge of the role that the keyword technique has in learning a second language (Campos, Amor & Gonzalez, 2004; Baleghizadeh & Ashhori, 2010; Campos & Ameijide, 2011; Soleimani, Saeedi & Mohajerna, 2012; Köksal, 2013; Davoudi & Yousefi, 2016; Consiglo, 2018) where the evidence suggests that the relationship between them extends through all the processes of memory (from encoding to retrieval, from sensory memory to long-term memory) that contribute in different degrees of language development.

Seeing the line of these investigations, the present work is especially relevant in that it delves into the previously documented relationship between second language learning and mnemonics. However, this research seeks to empirically verify the degree of importance of the techniques used to optimize these memory mechanisms in students.

As has been pointed out, memory techniques are an element of undeniable relevance for the acquisition of other languages. So it was considered to scrutinize the following research problem: Is the use of memory techniques effective when learning the vocabulary of a second language?

To answer this question, a general objective and two specific objectives were established. The general objective tries to verify the effectiveness of the association as one of the basic principles used by memory techniques through one of these techniques - those of the key words - to verify its effects on the acquisition of second language vocabulary in students at the university. And this general objective is specified in two more specific objectives:

- Analyze the relationship between the use of these memory techniques based on association or no method and the number of words remembered.

- Compare immediate recall and memory footprint with delayed recall between the two groups.

To do this, the hypotheses proposed are directly related to the aforementioned objectives. Thus, and as a first hypothesis, the use of the mnemonic technique is expected to be stable over time (delayed recall). In other words, it is hoped that as we advance in the use of this technique for learning a second/foreign language, the more effective will be the recovery of the lexicon by the students, since in the acquisition of a second language we understand and express messages thanks to the ability to quickly recognize and understand previously recorded words (Jiménez, 1997). Therefore, memory techniques should have a relevant role in this process.

More specifically and as a second hypothesis, it is expected to find evidence about the relationship between the use of an association-based memory technique and the learning of vocabulary in the English language (immediate recall).

In the case of confirming these points from which we start, the intervention design for the improvement of this learning will delve into them for their development.

Method

The present study analyzes the results of two groups of students from the low proficiency freshmen from the Faculty of Arts of the University of Jaffna, Sri Lanka in the variable of recovery of second language vocabulary, measured through the use of a memory technique — mnemonics of the keyword. The design of this research is experimental since there is manipulation of one of the variables (the independent variable: use or absence of the memory method). There is a control group and the subjects have been randomized between the groups. Similarly, this research is defined as relationship (memory-retrieval of the lexicon of a second language) and difference (comparison between the results of the two groups: those who use the association technique and those who do not). The variables of this design are included in two different groups according to their role in the research:

- Independent variable: type of method used in learning: keyword method or no indication about the method.
- Dependent variables: these in turn are divided into two. On the one hand, the number of words correctly translated at first (immediate recall) and on the other, the stabilization of the memory footprint to the extent of delayed recall.

Participants

To carry out this study, a total of 24 freshmen, consisting of 16 females and 8 males, who were admitted to the university in the year 2018 by the University Grants Commission were selected, using a non-probabilistic procedure in which the selection from a larger population (148) who scored below 20 marks out of 100 in the preliminary screening test conducted at the beginning of the course has followed specific criteria (access and availability) and has not been

dependent on chance. Specifically, two groups of 12 students between the ages of 21 and 23 have been chosen, one will be the experimental group and the other the control group.

The choice of this age group responds to the desire to deepen the role played by memory techniques in learning a second language in the university environment in order to contribute more data to language teaching in compulsory education.

Each of the two groups mentioned had different guidelines. On the one hand, the experimental group was made up of subjects to whom the technique of the key words was explained and who carried out the learning according to the approaches already explained. On the other hand, the second group of 12 subjects (the control group) were unaware of the technique and will not be given any indication on how to carry out the learning.

Instruments

The instrument applied for this research is mainly related to the retrieval phase the last of the three main memory processes: encoding, storage, and retrieval although, as we have already seen, to successfully reach it, good coordination with the two previous processes (encoding and storage) that are also present in this type of technique. Specifically, the keyword mnemonic technique has been used (Atkinson, 1975), using the following material for its implementation: list of 15 words in English, answer record sheets, 15 cards showing the Tamil translation of each of the 15 English words, 15 cards showing the key word to use (presented to the subjects in digital PowerPoint format), stopwatch, instruction sheets and laptop.

Procedure

To carry out the study, the sample was divided into two groups of 15 subjects, and the evaluation was carried out in two separate classrooms where they received the treatment. For the total assessment, it was necessary to go to each group for 2 days (with an interval of 7 days between the two).

After explaining the instructions to each group, they both carried out two test trials and only started the learning phase after checking that the instructions had been correctly understood.

During the learning phase, the computer was placed in a zone of maximum visibility for all the subjects in the group in question. When you started the pronunciation of each word, it appeared on the screen. After reading it, the translation (control group) or the key word to be used with each and the translation (experimental group) were automatically given and the subject was given 10 seconds to carry out the learning. After these 10 seconds, the next word will start appearing automatically.

This procedure was followed with 15 words and, once finished, the test phase began. In it, each English word was spoken again and the subject was given another 10 seconds to record their translation on the distributed answer sheet.

After 10 days, a new test phase was carried out on both groups in order to also obtain delayed recall and analyze the differences with respect to immediate recall.

For the analysis of the data, the Excel program was used, carrying out the following analyzes:

For the verification of the first hypothesis, a first analysis was performed contrasting the immediate recall and delayed recall between both groups with the T test and another with the same test to verify the equality of means between the control and experimental groups. Regarding the second hypothesis, a comparative analysis of the differences between both tests was carried out separately for both groups. Subsequently, the Pearson's linear correlation index was calculated.

Results

Initially, in relation to the first hypothesis, a first contrast analysis was performed between the variable immediate recall and delayed recall between the control and experimental groups (Table 1).

Table 1: Group statistics

	Group	N	Mean	SD	Std. Error Mean
Immediate	Control	12	8.59	1.956	0.504
	Experimental	12	8.86	1.994	0.514
Delayed	Control	12	5.72	1.790	0.463
	Experimental	12	7.52	2.324	0.600

The t-test for equality of means (Table 2) shows significant differences $p= 0.025$ which is less than 0.05 for the variable delayed recall, but not for the immediate one ($p= 0.714$). In delayed recall, the experimental group had a higher mean word recall (mean= 7.52) than the control group (mean= 5.72). The difference is 1.8 words, which is very high considering that the standard error of the difference is 0.757, so the effect size is important.

Table 2: T-test for equality of means

	t	df	Sig.	Std. error of the difference
Immediate	-.369	28	0.714	0.721
Delayed	-2.374	28	0.025	0.757

Second, to test the second hypothesis, the differences between the two tests were compared, making the analysis separately for both groups (Table 3).

In both cases, there are very significant differences ($p < 0.0001$). In the control group, the result in immediate memory reached an average (8.60) that is much higher than the delayed one (5.73), there is a difference of 2.87 points (the effect size is very large considering the standard error for mean differences is .192).

In the experimental group, the immediate memory (mean= 8.87) is also higher than the delayed memory (7.53), but the effect size is smaller, since the difference in the means is 1.33 points, being the standard error of the mean 0.232.

Table 3: Test of related samples.

Paired Differences						
		Mean	Std. Error Mean	t	df	sig
Control	Immediate-Delayed	2.86	0.191	14.937	14	.000
Experimental	Immediate-Delayed	1.32	0.231	5.738	14	.000

Subsequently, the Pearson's linear correlation index was calculated, obtaining a value of 0.876, which is very high, which indicates that there is a very strong relationship between both variables (the relationship is highly significant: $p < 0.00001$).

As has been demonstrated in hypothesis one, there is an effect of the intervention in the experimental group, so the scores have been affected. Therefore, the correlations for both groups (control and experimental) were recalculated separately, obtaining in both cases a Pearson correlation very similar and close to 0.925. Thus, the correlation has increased (Table 4).

Table 4: Correlations of related samples

Group			N	Correlation	Sig.
Control	Pair 0	Immediate-Delayed	12	0.9250	.000
Experimental	Pair 1	Immediate-Delayed	12	0.9244	.000

A new test confirms these data, since the calculation of the partial correlation eliminating the group factor (control: 0; experimental: 1) gives us a Pearson correlation of 0.918. This data unifies both hypotheses; since it proves that there is a strong relationship between both variables and that the intervention has had an effect.

Discussion and Conclusion

Regarding the first hypothesis, it has been proven that there really is a positive effect on the use of mnemonics in the learning of a second language. As the contrast analysis shows between the results of immediate recall and delayed recall between the control and experimental groups, the differences are very significant in the case of delayed recall. Thus, as we advance in the use of this learning technique, the more effective is the recovery of the lexicon by the students, that is, more words are remembered.

However, the results of the first analysis on immediate recall reveal that although the number of remembered words is slightly higher in the group trained in the technique, the difference is not significant. This may be due to the difficulty of some of the proposed words that may have influenced the responses to the test carried out, as well as the reduced number of sessions carried out, which is why the effect that repetition has on memory has not could occur.

Regarding the second hypothesis, the relationship between the use of the memory technique and the significant learning of vocabulary in the English language has been verified. Thus, we see a strong effect between the recall variable and the intervention in the experimental group, which affects the results.

This is corroborated by previous studies focused on the relationship between semantic memory and visual memory that show that the use of images influences the memory, in its quantity, in recognition and in access to content.

Therefore, after analyzing the data obtained and as a general conclusion of this study, we can really corroborate the effectiveness of the association as one of the basic principles used by memory techniques through the keyword technique in the acquisition of second/foreign language vocabulary as the study by Soleimani, Saeedi and Mohajernia (2012) had already shown.

Thus, association techniques must be taken into account as a necessary methodological element in language teaching in the school context. Based on the complex system that is memory, its use in this field not only enables our students to work on the functioning of their memory and the mechanisms closely related to it (sensory, short and long term) at the moment of learning. , but it is developed to ensure its future success.

As has been verified, the use of mnemonic techniques means knowing how to take advantage of the resources available to our students to facilitate the task of teaching languages. With this, this study opens new ways for these techniques and this memory process to be considered by teachers when teaching a foreign language and thus facilitate effective acquisition.

As Mayer (2008) points out, it is essential to facilitate learning to the maximum with the instructional applications that each subject requires or with the different processes involved in each specific learning task. Although the questioning of the mnemonic technique for meaningful learning is evident, we think that its usefulness for acquiring and consolidating vocabulary (semantic memory) can be effective.

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