

Investigating the Effects of Memory Strategies on Vocabulary Learning

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Abstract:

Vocabulary is an integral part of language learning; however, it is very challenging for foreign language learners to develop vocabulary in English. Therefore, training learners to use memory strategies would help them learn, memorize, and use vocabulary efficiently. Subsequently, this study is an attempt to investigate the effects of implementing memory strategies on vocabulary learning to the students of the National High School of Mines and Metallurgy (NHSMM) of Annaba. To fulfill the purpose of the study, fifty students were selected and divided into two groups: experiment and control group. Twelve memory strategies were chosen to train the experiment group when learning vocabulary, alongside with pre and post tests for both groups. The results showed that there were significant differences between the pre test and the post test and proved the efficiency of memory strategies training on vocabulary learning.

Keywords: vocabulary learning, memory strategies, effects of memory strategies



1.Introduction

It is believed that learners' vocabulary development is an important aspect of language proficiency. In EFL learning, learning vocabulary items alone is insufficient; retaining vocabulary knowledge is another challenging task that faces learners while acquiring another language. Vocabulary can be taught in different ways, and one way to tackle the large number of unknown words is through applying Vocabulary Learning Strategies (VLSs). By applying them appropriately, language users (learners) will develop their vocabulary repertoire, which leads to develop their use of language, and their writing, speaking, and reading skills. Among these learning strategies,

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Memory Strategies (MSs) are used to process and memorize the huge amount of vocabulary items, particularly among language learners. MSs help language learners overcome vocabulary learning difficulties and enhance memorization and retention. Therefore, in a language course based on learning vocabulary items (technical vocabulary), it is necessary to apply MSs to enhance the memorization of the long lists of these technical items and to help students to overcome vocabulary learning difficulties that hinder learners' vocabulary development. Hence, an experimental study was conducted to investigate the impact of MSs on vocabulary learning, through training students multiple MSs to be used in learning and memorizing technical vocabulary items. Two groups were randomly selected; one represents the experimental group and the other stands for the control group to test how they will perform and what are the main effects of MSs on the experimental group's vocabulary learning.

2.Literature Review

According to Celik and Topas (2010),vocabulary learning is an important and central area in second or foreign language learning. Therefore, Wilkins (1972) declared that “without grammar little can be conveyed, but without vocabulary nothing can be conveyed”(p.111). Folse (2004, p. 25) also agreed that “without vocabulary, no communication is possible”. The idea was also supported by Madiha and Enisa (2014) who claimed that communication cannot take place without having enough vocabulary (cited in Pérez and Alvira, 2017). However, it is also regarded as the most difficult and challenging area in language learning. Folse (2004) maintained “how frustrating it is when you want to say something and are stymied because you don't know the word for a simple noun!” (p.23).

Hence, to acquire the necessary vocabulary, Thornbury(2004) stated that “ acquiring vocabulary requires not only labeling but categorizing skills”(p.18). Therefore, vocabulary learning is an inevitable process to use a language, in addition to other components (grammar, semantics); Oxford (1990) states that some elements of language use are at first conscious as a result of direct instruction but then become unconscious or automatic through practice (cited in Pérez and Alvira,2017). Hence, in order to build a store of vocabulary items learners need to be trained to be able to organize, interconnect, and link previous word knowledge to the new one in order to process new information. (Pérez & Alvira, 2017)

A study conducted by Rubin et al (2007) showed that teaching learners Language Learning Strategies (LLSs) does not only help them acquire more vocabulary items but also encourages them to have a better performance. Another study conducted by O'Malley and Chamot (1990) indicated that LLSs are mostly used in vocabulary learning. Nation (2001) supported that vocabulary learning can be enhanced when the learners' attention is consciously directed to vocabulary items and to the strategies used to learn them.

Among the most used VLSs are Memory Strategies(MSs) which according to Levin (1983) enhance remembering through connecting the new knowledge with familiar words and images. Sozler (2012) argued that MSs as one of the most effective strategies in the vocabulary learning process are extremely powerful mental tools. Moreover, they include activities for remembering and retrieving the new information such as, acronyms, key words, images, etc. Oxford (1990) divided MSs into four categories and each one with different techniques, the four categories are; Creating Mental Linkage, Applying Images and Sounds, Reviewing Well, Employing Action. In order to enhance memory, Nation(2001) suggests some principles such as: repetition and retrieving. Thornbury(2004) adds Spacing, pacing, use, cognitive depth, organization, imagining, and mnemonics to ensure that information moves to permanent LTM. Oxford (1990, as cited in Pérez &Alvira,2017) agreed that "arranging in order, making association, and reviewing" are techniques of MSs and following them vocabulary can be learnt and used in a meaningful way.

Huge amounts of vocabulary items are difficult to remember and this becomes a serious problem for foreign language learners. Lord states *"vocabulary is by far the most sizable and unmanageable component in the learning of any language whether a foreign or one's mother tongue"* because of *"tens of thousands of different meanings"*(as cited in Hague, 1987). Therefore, MSs help language learners to cope with this difficulty, because they have highly specific function in that they enable learners to store and retrieve new information (Oxford,1990, p.39).

To achieve a rich vocabulary repertoire, learning and training MSs is a must. Subsequently, and based on Oxford's language learning strategies classifications, twelve (12) MSs were selected to be part of the language course (technical English course). These MSs are: Acrostics, Acronyms, linking words to previous knowledge, word cards, chunking, chaining, putting

words in sentences, Loci method, rhyming, decomposition, imagery, mind mapping. In each session a new MS was trained, with new lesson and new vocabulary list each time, in addition to activities to enhance learning and memorization through MSs.

3.Statement of the Problem

The long, endless lists of words that the language learners should memorize to facilitate their use of a language is not an easy task, especially for those who learn a language for specific purposes. First year students of the NHSMM acknowledged the great role that vocabulary plays in order to use language(interact, communicate, express ideas and feelings,...etc). Therefore, students at this level felt blocked when using the English language, and asked the teacher to provide or advise them with practical solutions to overcome problems like the lack of vocabulary knowledge and the inability to memorize vocabulary items. Consequently, the teacher proposed a number of memory strategies for training to help learners acquire vocabulary easier and faster.

4.Research Questions

This study attempts to investigate and answer to the following questions:

1/What are the effects of MSs training on learners' vocabulary learning?

2/How do Memory strategies(MSs) help in solving the students vocabulary learning difficulties?

5.Research Hypotheses

In order to answer the research questions, it is hypothesized that:

1/MSs have positive effects on vocabulary learning as enhancing vocabulary memorization and enrich the learners' vocabulary repertoire

2/MSs solve the students' main vocabulary learning difficulties, mainly vocabulary knowledge and vocabulary memorization.

6.The study Design

An experimental study seeks to shed light on the National High School of Mines and Metallurgy (NHSMM) students' English vocabulary

learning. It tries to investigate the impact of including Memory Strategies (MSs) training in the language course, and MSs impact on the learner's vocabulary development and language use. Therefore, a vocabulary pre-test was submitted to assess the learners' (experiment and control groups) vocabulary knowledge and their language use, before any treatment. The pre-test is followed by twelve sessions of MSs training for the experimental group only. While, the control group learns and memorizes the vocabulary items without MSs training. By the end of the twelve sessions of MSs training a post-test was submitted to both groups to compare the results of the two groups and the two tests.

The study treatment is made during the academic year 2020/2021; it lasted for one semester (the second semester). It starts from 25/02/2021, until the end of the academic year. The experiment focused on learning vocabulary, the size of vocabulary items learnt per week, and the exercises used to enhance vocabulary learning. In addition, to the MSs trained and used to facilitate and enhance the memorization of vocabulary items, their impacts on learners' language use, and vocabulary development.

To examine the impact of MSs on vocabulary learning, a comparison has been made between an experimental group and a control group. The former contains 30 students selected randomly to learn vocabulary (technical vocabulary) through the use of MSs. The latter comprises of 20 students also randomly selected to learn vocabulary (technical vocabulary) without using MSs.

The course content and the vocabulary items selected for both groups are the same. In other words, the experimental group and control group learn under the same conditions, the only difference between the two groups is the use of MSs. Therefore, the two groups have one hour and a half per week to learn vocabulary (technical English), and in each reading lesson the teacher selected a scientific text for analysis which is the same for both groups as well.

The reading session was divided into three phases: pre reading in which the teacher prepared the learners for a new topic and new list of vocabulary items. Before that she revised the previous session list. During the reading phase, learners read the text and together explained all the unfamiliar words(either technical or general vocabulary); by using synonyms, opposites, and definitions. Students were asked to write down the explained words. In

the post reading phase, learners answered exercises attached to the text; this was for the control group. However, the experimental group was trained each session on using MS before answering exercises. By the end of each session, learners got a list of vocabulary items to memorize, as well as, exercises and a MS to apply for vocabulary memorization. Therefore, each week learners from the two groups have the same list of vocabulary items to memorize in two different ways.

The treatment took 12 sessions for the experimental group, in each session there is a new topic, new MS to train, and new exercises to tackle. The experiment contained 12 MSs training (Acrostics, Acronyms, Chaining, Rhyming, Chunking, Loci method, Linking words to previous knowledge, Decomposition, Mind mapping, Word cards, Imagery, Grouping words together). Exercises are different and related to the selected topics. Their purpose is to enhance the memorization and retention of technical vocabulary, such as: Matching, fill in gaps, words definitions, words close in meaning,...etc. Exercises are the same for both groups. Extra special exercises were assigned for the experimental group to facilitate the MSs application and enhance memorization such as using list of learnt words in writing stories or in sentences, creating maps for words close in meaning,...etc.

7.Population and Sampling

As it is mentioned, the targeted population is the first year students of the National High School of Mines and Metallurgy (NHSMM) in Annaba, that was consisted of 75 students divided into four groups. The study sample contains 50 students divided into two groups; one was the experiment group, contained 30 students, and received MSs training and the second was the control group consisted of 20 students, did not receive MSs training. Both groups were randomly selected.

8.Data Collection Tools

The study data collection tools are vocabulary pre and post- tests. The former (pre test) is administered to the whole sample (two groups) to confirm and get a general idea about learners' level concerning vocabulary knowledge and to see how they perform without MSs training. After the treatment that took twelve sessions of MSs training with practice, the post-test is submitted

to investigate whether MSs training succeed to solve some of the students' main vocabulary and language learning difficulties or not.

9.Pre and post test Description

To answer the research questions, and to investigate the effects of MSs training on learners' vocabulary learning. The pre and post-tests were submitted at different phases; the first is submitted before the experiment (MSs training). It is submitted to both groups (the experimental group and the control group) to ensure that the two groups have the same proficiency in the English language. The test consists of six different exercises were designed to know the students vocabulary learning level, how they will perform, and to know their main problems in learning vocabulary. The first exercise is kind of definitions and students are supposed to provide the right words for each definition, the second exercise contains a list of random words to be grouped by their categories, functions,... The third exercise contains another list of technical items and four MSs to process the list; moreover, the fourth exercise includes two different lists one for synonyms and the other for opposites. The fifth one consists of items in bubbles and students are supposed to provide any item that has relation with the one in the bubble using arrows; while the sixth exercise contains a number of pictures for machines and tools to name. The latter (post-test) is submitted to both groups after the experiment. The post-test is submitted twelve weeks later to measure the effects of the treatment by testing the differences between the two groups' main scores on the pre and post-tests. The pre-test and post-test were constructed to cover twelve units in the students' textbooks entitled "Technical English vocabulary and Grammar" by Nick Brieger and Alison Pohl, "Professional English in Use" by Mark Ibbotson.

9.1.Analysis of the results of the Pre and Post tests

To find an answer to the first research question (what are the effects of MSs on vocabulary learning, and on the learners? Paired (dependent sample) and independent sample t-tests are used to measure statistically significant differences, if exist between (1) the means between the experiment and control groups' participants of the pre-test. (2) the means of the control group in the pre-test and post-test. (3) the means of the experiment group in the pre-test and post-test. (4) the means of the experiment and control groups participants in the pre-test and post-test.

The aim of the statistic analysis was to investigate if there is a statistically significant difference between the two groups. Therefore, the means of the groups (experiment and control groups) are compared to determine if they (groups) have equivalent English language proficiency and vocabulary knowledge, before starting the experiment (MSs training). As a result, the independent sample t-test is used to examine equality of the two groups. Results are presented in table (01):

groups	Number	Mean	SD	t-value	df	P<
experiment	30	4,441	2,340	0,342	48	0,7336
control	20	4,675	2,411			

Table 01 : independent-sample t-test for the experiment and control groups' means of the pre-test.

Results in table (01) show that the experiment group's mean scores in the pre-test is (4,441) with a standard deviation (SD) of (2,340), likewise the control group's mean scores is (4,675) with an SD of (2,411). The t-value is (0,342) with a significance level of $p < (0,733)$ which is larger than (0,005). Results can be interpreted as that there is no statistically significant difference (in the pre-test) between the two groups' language level proficiency and vocabulary knowledge before the experiment.

After knowing that the two groups have similar vocabulary knowledge and language proficiency, a paired-sample t-test is used to examine whether there is a statistically significant difference between the means of the control group in the pre-test and post-test. The analysis sought to determine whether the control group vocabulary knowledge developed twelve weeks later or not; keeping in mind that the control group did not receive MSs training. Results are presented in table (02):

Test types	Number	Mean	SD	t-value	df	P<
Pre-test	20	4,675	2,411	3,584	38	0,000
Post-test	20	7,575	2,698			

Table 02 : Paired-sample t-test for the difference between the control group's means in the pre-test and post-test.

The table shows that while the control group's mean scores in the pre-test is (4,675) with an SD of (2,411), the mean scores of the control group in the post-test is (7,575) with an SD of (2,698). The comparison between the two means of the control group in the pre-test and the post-test, presents that there is an improvement in the control group's vocabulary knowledge. The t-value is (3,564) which is statistically significant at $p < (0,000)$ which is less than (0,005). Therefore, it is concluded that there is statically significant difference between the control group's mean in the pre-test and post-test.

This procedure has also been followed with the experiment group's mean scores in the pre-test and post-test. The results are presented in table (03).

Test types	Number	Mean	SD	t-value	df	P<
Pre-test	30	4,441	2,340	15,089	58	0,000
Post-test	30	12,591	1,810			

Table 03 : paired-sample t-test for the difference between the experiment group's means in the pre-test and post-test.

Results in table (03) reveal that while the experiment group's mean in the pre-test is (4,441) with an SD of (2,340), its mean in the post-test is (12,591) with an SD of (1,810). Therefore, comparing between the group's means shows that the experiment group participants show a progress regarding vocabulary knowledge during the experiment period. The t-value is (15,089) which is statistically significant at $p < (0,000)$, which is less than (0,005). Therefore, the experiment group achieved statistically significant improvement in vocabulary knowledge.

In a comparison of the improvement of both groups after the experiment (MSs training), an independent-sample t-test is used to compare the means of both groups in the post-test. Results are indicated in table (04).

groups	Number	Mean	SD	t-value	df	P<
experiment	30	12,591	1,810	7,881	48	0,000
control	20	7,575	2,698			

Table 04: Independent-sample t-test for the difference between the experiment and the control groups' means in the post-test.

Table (04) shows that the experiment group's mean is (12,591) with an SD of (1,810), while the control group's mean is (7,575) with an SD of (2,698). The t-value is (7,881) which is statistically significant at $p < (0,000)$. The difference between the two groups' means in the post test shows that the experiment group achieved greater improvement regarding vocabulary knowledge than the control group. Furthermore, the t-test analysis shows statistically significant difference, and hence it is possible to say that there is a statistically significant difference between the experiment group and the control group in favor of the experiment group.

9.2.Discussion of the results

Results obtained from table (03) contributed in validating the first research hypothesis that stated "MSs have positive effects on vocabulary learning such as: enhancing vocabulary memorization and enrich the learners' vocabulary repertoire". The experiment group's mean in the post-test (12,591) is higher than the mean in the pre-test (4,441). The t-value is (15,089) which is statistically significant at $p < (0,000)$, which means that there is obviously statistically significant differences between the group's mean scores in favor of the post-test (after MSs training).

Based on the results obtained from table (04) that shows the two groups performance in the post-test, the same research hypothesis is validated. In other words, the control group's mean scores in the post-test is (7,575) with an SD of (2,698), the experiment group's mean scores in the same test is (12,591) with an SD of (1,810). The t-value is (7,881) which is statistically significant at $p < (0,000)$. By comparing the two groups' means in

the post-test it is possible to state that there is statistically significant differences between the two groups in favor of the experiment group. That validates the first hypothesis that predicted positive effects of MSs on vocabulary knowledge development.

Furthermore, the first research question that is “what are the effects of MSs on learners’ vocabulary learning?” is answered when the first research hypothesis is validated. MSs do have positive effects on vocabulary learning (increasing the size of learners’ vocabulary knowledge), and on learners’ ability to memorize vocabulary items and achieve better performance in vocabulary tests. Saying that, the second research hypothesis that stated “MSs can solve the students’ main vocabulary learning difficulties, mainly vocabulary knowledge and vocabulary memorization” is also validated. The good performance of the experiment group in the post test with a mean of (12.591) in table (04) validates the second hypothesis. Thus the second research question “Do Memory strategies(MSs) help in solving the students vocabulary learning difficulties such as: lack of vocabulary knowledge and the failure to memorize and retain the learnt vocabulary items?” is answered as well.

10.Conclusion

The study reports the importance of learning a language vocabulary as preliminary and inevitable step to achieve language proficiency. It investigated the impact of training students multiple memory strategies to achieve that goal (language proficiency). The findings of the study sheds light on the crucial role that MSs play in enhancing and developing learners’ vocabulary knowledge. Applying MSs in vocabulary learning leads to a good performance in the vocabulary post test by the experimental group, whose mean shows a significant progress in the students’ vocabulary knowledge in comparison with the pre test mean of the same group. However, the absence of memory strategies that enhanced and reinforced the experiment group memorization of vocabulary items leads to a general failure in the vocabulary pre and post tests regarding the control group results. Therefore, training students multiple memory strategies have positive impacts on the learners’ vocabulary knowledge. Whereas, ignoring and illuminating them from the process of vocabulary learning causes serious problems to learners’ vocabulary knowledge and language use in general.

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