



## The effect of vocabulary learning strategy training on vocabulary strategy use

Abebaw Dessalew Bayabel<sup>✉1</sup>, Nuru Mohammed Tahir<sup>1</sup>

<sup>1</sup>Addis Ababa University, Ethiopia

### Article Info

Article History:  
Received on 18 July  
2023  
Approved on 22  
November 2023  
Published on 30  
November 2023

*Keywords: memory;  
meta-cognitive;  
cognitive;  
determination; social*

### Abstract

Nowadays, it is recommended to train students on how to learn vocabulary, for it is not practicable to teach all the English language words. The purpose of this article was to find out the effect of vocabulary learning strategy training on vocabulary learning strategy use of university students. The research design used in this study was experimental. 40 students (20 students in each group) from both experimental and control groups completed the adapted Schmitt's (1997) Vocabulary Learning Strategies Questionnaire (VLSQ) before and after the vocabulary learning strategy training. After the students completed the pre-training questionnaire, only the experimental group learners received vocabulary learning strategy training for 16 hours. The researcher prepared the vocabulary strategy training material by integrating the vocabulary lessons incorporated from different books. Paired samples t-test was computed on SPSS version 24 to find out if there was a statistically significant difference between the experimental and control groups regarding vocabulary learning strategy use. The study found that the experimental group participants improved their vocabulary usage significantly better than the control group participants in the five among six major categories of vocabulary learning strategies (less than the p-value of 0.05). Future researchers can study the effect of training in learning strategies of other language skills and sub-skills and can improve their strategy usage. One of the significance contributions of this study could be curriculum designers might employ this article as an input to incorporate vocabulary learning strategies into English language training materials and improve students' vocabulary strategy use.

<sup>✉</sup>Correspondence Address:  
Addis Ababa University, Addis Ababa, Ethiopia  
E-mail: [abgreat.2002@gmail.com](mailto:abgreat.2002@gmail.com)

## INTRODUCTION

English language experts classified all the major language skills (speaking, listening, reading and writing) strategies and the language items (vocabulary and grammar) strategies. Since the focus of this research is on vocabulary, vocabulary learning strategies are emphasized below. It is challenging to come up with all-inclusive vocabulary learning strategies. One of the reasons may be the following as put by Schmitt (1997): the process of learning L2 vocabulary is a mental process in the first place and because this process interlocks with the more general language learning and production strategies. Therefore, it is quite difficult to settle on a non-debatable taxonomy of VLSs (vocabulary learning strategies).

Like language learning strategies, vocabulary learning strategies are classified differently by many authors. Among these scholars, Schmitt (1997) and Nation (2001) have widely known VLSs taxonomies. Schmitt (1997) has developed a taxonomy of vocabulary learning strategies based on an extensive language learning strategies' taxonomy organized by Oxford (1990), including Memory, Cognitive, Compensation, Metacognitive, Affective, and Social categories.

The following is the strategy inventory offered by Schmitt (1997): Category 1: Strategies for the discovery of a new word's meaning • Determination Strategies (DET): analyze part of speech, analyze affixes and roots, check for L1 cognate, analyze any available pictures or gestures, guess meaning from textual context and use a dictionary (bilingual or monolingual) • Social Strategies: ask teacher for a synonym, paraphrase, or L1 translation of new word and ask classmate for meaning. Category 2: Strategies for consolidating a word once it has been encountered • Social Strategies: study and practice meaning in a group and interact with native speaker. • Memory Strategies: connect word to a previous personal experience, associate the word with its coordinates, connect the word in its synonyms and antonyms; use semantic maps, image word form, image word's meaning, use Keyword Method, group words together to study them, study the spelling of a word, say new word aloud when studying and use physical action when learning a word • Cognitive Strategies: verbal repetition; written repetition; word lists; put English labels on physical objects and keep a vocabulary notebook • Metacognitive strategies: use English-language media (songs, movies, newscasts, etc.); test oneself with word tests; skip or pass new word and continue to study word over time.

Cohen (2003) states the most efficient way to enhance learner knowledge is to offer strategy training. He adds that Strategies-Based Instruction (SBI) is a student-centered method to teaching and it may include both implicit and explicit integration of strategies into the course content. In his book, it is stated that in a usual SBI environment, instructors explain and mock-up strategies, take facts from students' learning experiences, lead discussions about strategies, encourage students to try to employ a variety of strategies and integrate strategies into class materials. This suggests that we should incorporate strategy training in our classes, but raises the question of how effective such training is.

The results of research on Strategies-Based Instruction (SBI) on learners' language development aren't consistent: some studies report a reasonable degree of success, whereas others report only limited success, or even student resistance (Schmitt, 1997). But in his survey of classroom-based studies, McDonough (1995) concludes that improvements from training are weak, culturally dependent, and show up only in certain measures. Meanwhile, Stoffer (1995) states strategy training was the solitary excellent forecaster of the employment of vocabulary-learning strategies, while Hulstijn (1997) quotes various research depicting benefits in the effective utilization of one specific mnemonic strategy, the keyword technique, after strategy instruction. Nation (2001) sums up related results for the strategy of contextual guessing. All these conflicting research results indicate that much more research is needed regarding training on vocabulary learning strategies. So, it is very difficult to suggest training of strategies to improve students' language skills before we apply it in a classroom and check its result.

Vocabulary learning strategies training originated in the general area 'learning strategies'. As an instructor who has taught for the past 12 years, mostly in universities, this researcher has been questioning about the reason behind the gap of English language educational achievement of his students. English language teaching scholars also began to observe the significance of individual variation in language learning (Brown, 2007). We see some students achieve faster and better academically while other students achieve sluggishly because of what is commonly called learning strategies. "Language aptitude and motivation constitute general factors that influence the rate and

level of L2 achievement. But how does their influence operate? One possibility is that they affect the nature and the frequency with which individual learners use learning strategies” (Ellis, 1997, p. 76).

An attempt was made to review studies related to vocabulary learning strategies. The first group of studies focused on identifying the learners’ vocabulary strategy use (e.g., Aladdin et al., 2015; Al-Fuhaid, 2004; Baldoumi, 2016; Easterbrook, 2013; Fan, 2015; Khair, 2017; Noormohamadi & Amirian, 2015; Siriwan, 2007). The second emphasis was given to the effect of learners’ use of vocabulary learning strategies on their vocabulary development (e.g., Alharthi, 2014; Banisaeid, 2013; King, 2011; Llamosas, 2011; Ostovar-Namaghi & Rajaei, 2013; Rahimi & Shams, 2012; Teng, 2015). The third attention was offered to the effect of vocabulary learning strategies training on students’ vocabulary development (e.g., Aktekin & Guven, 2013; Ebrahimi et al., 2015). The fourth was about the effect of vocabulary learning strategies training on students’ vocabulary strategy use (e.g., Lui & Pang, 2017; Rahimi & Allahyari, 2019). The fifth focal area of the studies about vocabulary was on the relationship between vocabulary learning strategies and reading comprehension (e.g., Al-Nujaidi, 2003; Burkhour, 1999; Kafipour & Naveh, 2011).

It was believed that teachers could not teach all the words that students should know. Especially at tertiary level, it was recommended that teachers should teach their students how to learn vocabulary independently. One of the ways to do this was making students exposed to varied vocabulary learning strategies so that they could pick the strategies they were interested in their vocabulary study. However, there were conflicting research results regarding the effect of vocabulary learning strategy training in improving students’ strategy use. Therefore, the main aim of this study was to examine how far the training improved the students’ vocabulary strategy use. Meanwhile, the researchers believed that adequate study was not studied in this area. Particularly in Ethiopia (the home country of the researchers), as far as the researchers were concerned, there was not any study conducted on the effect of vocabulary learning strategies training on vocabulary strategy use. Therefore, the main purpose of this research was to fill in this gap. The specific purpose of this study was to find out the effect of vocabulary learning strategy training on vocabulary learning strategies use of university students.

## METHODS

As a research design, experimental research design was employed. Both the control group and the experimental group completed pre-training vocabulary learning strategy questionnaire. In between the pre-tests and post tests, vocabulary learning strategy training was offered to only the experimental group. At the end, the results of the two groups were compared.

The present study used Schmitt’s (1997) Vocabulary Learning Strategies Questionnaire (VLSQ). The participants rated their frequency of vocabulary learning strategy use, using a 5-point Likert scale. This questionnaire was adapted; some amendments were made. The words and phrases were changed into sentences and examples were given to some of questions, which this researcher thought unclear. The questionnaire was written in English language because it was believed that university students were capable of understanding a simplified questionnaire in the medium of English language. The thesis advisor and researcher’s experienced colleagues were asked to comment on the questionnaires concerning content validity, face validity and clarity of the items.

The researcher of this research served as an instructor and handled both the experimental and control groups of the study because the researcher believed that the training would be effective when it was offered by the person that was studying about the issue instead of training other instructors and let them give the training and to avoid the influence of extraneous variables that may appear because of the trainers’ difference (regarding ability, gender and classroom management).

The vocabulary learning strategy training was offered for 16 hours in 16 weeks (1 hour per week). This time allocation is made considering the 48 hours (3 credit hours x 16 weeks) offered for Communicative English Skills Course in the semester.

The vocabulary strategy training material was produced by integrating the vocabulary lessons incorporated in Communicative English Language Skills I module and the vocabulary learning strategies identified by Schmitt (1997) and renowned vocabulary books of various authors such as Oxford (1990), Nation (2001), Carter (1998) and Tacaé (2008).

The training material begins with the cover page entitled as “Vocabulary Learning Strategies Training Material for First Year Students. The cover page also includes date, the writer’s name, and address. The second page comprises the table of contents incorporating general objectives of the training material, the two units’ topics and subtopics, answer key for the instructor, references and

appendices. The main topic of unit one reads as: strategies for the discovery of a new word's meaning. The main topic of unit two is 'consolidation strategies'. At the end of the training material the following contents are incorporated: answer key for the instructor, references, appendix a- the general service list and appendix b- academic word list.

The sampling technique that was employed to choose the university was convenience sampling. Using this sampling technique, Addis Ababa University was taken. Two sections of Natural Science Stream were randomly selected and offered to the English Language part-time instructor (also this researcher). Besides, simple random sampling or lottery method was employed to select specific sections. First an attempt was made to let all the students in each class participate in the study. However after letting students take the tests and fill in the questionnaire it was found that the average number of students, 20, was employed for analysis.

The following steps were followed to assign students into experimental and control groups in the study. First, the following pre-tests were administered: Schmitt et al. (2001) Vocabulary Level Tests (VLT) to test the learners' vocabulary breadth and Read's (1998) The Word Associates Test (WAT) to test the students' vocabulary depth. Second, the test paper of each student was marked objectively, based on the answer keys of the tests for Word Associates Test (WAT). Third, Independent-Samples T Test was computed on the SPSS version 24 to see if the two groups had similar performances on each of the vocabulary knowledge and reading comprehension tests. There were no significant difference between the control group and experimental group regarding the scores in the Vocabulary Levels Test (VLT) and Word Associates Test (WAT). Therefore, this situation made the process of the experiment easy to be carried out. Finally, the groups were named experimental and control by drawing lots. According to the lot, from Natural Science Stream Arat Kilo Campus, Section 4B class was named as control group where as Section 5B was named as experimental group. Thus, this allowed the groups to have equal chance of being selected as experimental or control. In another expression, this randomization helped the researcher to minimize the influence of extraneous variables.

The post-training questionnaire was completed by the participants of the experimental and control groups. The contents of the pre-training questionnaire and the post-training questionnaire are similar, in order to examine the vocabulary learning strategy usage difference.

Previous to the training, to compare homogeneity of the experimental and control group of learners regarding their score on vocabulary learning strategy use (in the pretest) is a crucial step in any experimental study. Thus, in order to check the equivalence of the two groups, the Leven's Test of Homogeneity of variance was computed, and the following result was found. There is no significance difference between the control group and experimental group in the usage of all vocabulary learning strategies. The p-values are above .05 (determination: .520, social for discovery: .51, social for consolidation: .18, memory: .30, cognitive: .48 and meta-cognitive .22). In addition, after the end of the experiment, normality test of data distribution was conducted in order to decide whether parametric or non-parametric test to be employed. Therefore, Kolmogorov-Smirnov test was computed and the result of the pre-questionnaire and post-questionnaire of the control group shows that the data was normally distributed because in each learning strategy of vocabulary the p-value is greater than the cut-off point, 0.05 (determination: .20, social for discovery: .13, social for consolidation: .10, memory: .20, cognitive: .16 and meta-cognitive .06). Hence, parametric test was computed. Moreover, Kolmogorov-Smirnov test was calculated for the pre-training and post-training scores of the experiment group in the vocabulary learning strategies. The result illustrates that the data was normally distributed because in 5 among the six categories of vocabulary strategies, the p-value is greater than 0.05 (determination: .09, social for discovery: .20, social for consolidation: .003, memory: .20, cognitive: .20 and meta-cognitive .08). Therefore, parametric test was calculated.

Paired Sample T-test was computed on the SPSS to see if there was a statistically significance difference between the pre and post mean scores of the students in the experimental and control group regarding their vocabulary strategy use. To compute the vocabulary learning strategies use of the students, values 1 to 5 were given for never, rarely, sometimes, usually, and always respectively. T-test was employed by considering all major assumptions. First, the variables of the research are continuous. Effect size was also calculated for the Paired Sample T-tests in the main study. Before conducting the main study, the pilot study was carried out.

## FINDINGS AND DISCUSSION

### Results of Paired-Samples t-test in vocabulary learning strategies

This section presents answer for the main research question of this research: is there any significant difference in vocabulary learning strategies use between students who receive vocabulary learning strategies training and those who do not receive the training?

To provide response to the above research question, both control group students, who did not receive vocabulary learning strategies training, and experimental group students who took the training completed vocabulary learning strategies questionnaire adapted from Schmitt's (1997) Vocabulary Learning Strategies Questionnaire (VLSQ) before and after the training of the experimental group. Then the 55 vocabulary learning strategies incorporated in the questionnaire were classified into 6 types (determination, social for discovery, social for consolidation, memory, cognitive and meta-cognitive). Finally, paired samples t-test was computed on SPSS version 24 and the following students' strategy use in each type before and after the training was found.

Before the discussion of the vocabulary learning strategies questionnaire, the results of the pre-tests in vocabulary knowledge and reading comprehension are presented below.

### Independent Samples t-test result of reading comprehension pre-test

At the beginning of the experiment, it was appropriate to check whether experimental group and control group students had equivalent reading comprehension skills. Therefore, the two randomly selected groups sat for TOEFL reading comprehension test. The test scores of the learners are presented in the table below.

Table 1. Independent Samples t-test result of reading comprehension pre-test of the experimental and control groups

Group	No. of Students	Mean	Standard Deviation	DF	T-value	P-value
Experimental Group	20	17.82	6.30	35.54		
Control Group	20	15.75	4.81	38	-1.16	.076

As presented in Table 1 above, the mean score of the experimental group was 17.82 and the mean score of the control group was 15.75 regarding reading comprehension pre-test scores of first year students. The calculated standard deviation of the experimental group was 6.30, and that of the control group was 4.81. The t and p-values were described as -1.16 and .076 respectively. This shows that the students assigned to the experimental and the control groups had similar performance in reading comprehension of the pre-test ( $t = -1.16$ ,  $df = 38$  for the control group and 35.54 for the experimental group,  $p > 0.05$ ).

Based on the data indicated above, it could be stated that there was no statistically significant difference between the experimental group and control group in the pre-test of reading comprehension because the p-value (sig. value) was greater than the cut-off points .05. Of course, there was minor mean difference between the two groups which is 2.07. However, since there was no statistically significant difference between the two groups, it was possible to express the two groups had equivalent performance in reading comprehension pre-test and it was logical to carry out the experiment.

### Independent Samples t-test result of vocabulary levels (vocabulary breadth knowledge) pre-test

To compare the vocabulary breadth knowledge difference between learners in the experimental group and control group, the two group students took a standardized vocabulary levels test before the experimental group students receive training of vocabulary learning strategies. The pretest enabled us to know the probable vocabulary breadth knowledge change brought by the training. The result of the control group and experimental group students in vocabulary breadth knowledge pretest is provided below.

Table 2. Independent Samples T-test Result of Vocabulary Levels (Vocabulary Breadth knowledge) Pre-Test of the Experimental and Control Groups

Group	No. of Students	Mean	Standard Deviation	DF	T-value	P-value
Experimental Group	20	158.6	33.40	38	.010	.986
Control Group	20	158.5	31.96	37.92		

The table above illustrates the mean score of vocabulary levels pre-test of the experimental group was 158.6 while the mean score of the control group in the pre-test was 158.5. The standard deviation of the experimental group was 33.40 and the standard deviation of the control group was 31.96. Moreover, the table shows that the t-value of the two groups was .010 and the p-value of the two groups was .986.

From the data of the above table it can be seen that no significant difference was found between the experimental group and the control group in vocabulary levels (vocabulary breadth knowledge) pre-test ( $t = .010$ ,  $df = 38$  for the control group and 37.92 for the experimental group,  $p > 0.05$ ).

The result clearly showed that it was scientifically correct to begin the experiment because there were experimental and control groups of students who were equivalent in vocabulary breadth knowledge.

#### **Independent Samples t-test result of word associates (vocabulary depth knowledge) pre-test**

Before answering one of the research questions, that is, whether there is significant difference in vocabulary depth knowledge between students who receive vocabulary learning strategies training and those who do not receive the training; it was significant to identify there were equivalent performance in vocabulary breadth knowledge between learners assigned to experimental and control groups. Therefore, independent samples t-test was computed, and the following result was found.

Table 3. Independent Samples t-test result of word associates (vocabulary depth knowledge) pre-test of the experimental and control groups

Group	No. of Students	Mean	Standard Deviation	DF	T-value	P-value
Experimental Group	20	121.65	17.42	35.39	-.40	.19
Control Group	20	119.65	13.19	38		

The table above shows the mean score of the pre-test of the experimental group was 121.65 while the mean score of word associates pre-test of the control group was 119.65. The standard deviation of the experimental group was 17.42 and the standard deviation of the control group was 13.19. In addition, the table presents that the t-value of the two groups was -.40 and the p-value of the two groups was .19.

From the data of the above table it is shown that no significant difference was found between the control group and experimental group in vocabulary levels (vocabulary breadth knowledge) pre-test ( $t = -.40$ ,  $df = 38$  for the control group and 35.39 for the experimental group,  $p > 0.05$ ).

The result clearly indicates that it was sound to conduct the experiment because there were control and experimental group of students who were equivalent in vocabulary depth knowledge.

#### **Results of Paired-Samples t-test in determination vocabulary learning strategies**

Determination Vocabulary Learning Strategies includes the following strategies: analyze part of speech, analyze affixes and roots, check for L1 cognate (equivalence), analyze any available pictures or gestures, guess meaning from textual context and use a dictionary. Students were asked how frequently they use each strategy and using the rating scale below, they circled the number that best describes their actual strategy use: 1 Never or almost never, 2 Seldom 3 About half the time, 4

Usually and 5 Always or almost always. Eventually, students' response was calculated on SPSS and an attempt was made to know whether students who took vocabulary learning strategies training improve their strategy usage or not. For comparison purpose, control group students' vocabulary usage was also computed. The table below shows the frequency difference in usage of determination Vocabulary Learning Strategies between the pre-training and the post-training.

Table 4. Results of Paired-Samples t-test of the experimental and control groups in determination vocabulary learning strategies during the pre-training and the post-training

Group	Pre-Training			Post-Training			DF	T	P-value
	No.	Mean	Standard Deviation	No.	Mean	Standard Deviation			
Experimental	20	28.55	4.89	20	29.25	4.68	19	-2.15	0.04
Control	20	27.50	5.74	20	29.00	3.79	19	-1.03	.31

The above table illustrates that experimental group students' mean score was 28.55 in the pre-training questionnaire but 29.25 in the post training questionnaire. The experimental group, in the pre-training questionnaire, had a standard deviation of 4.89 and in the post-training questionnaire their standard deviation was 4.68. The table also presents the t-value and p-value of the experimental group as -2.15 and .04. The data provided in the table shows that the experimental group students significantly improve their frequency in the usage of determination vocabulary learning strategies (t-value: -2.15, p value: .04). The result is consistent with the alternative hypothesis of this study: training in the learning strategies of vocabulary significantly improves students' use of vocabulary learning strategies. The effect size was weak (Cohen's d: 0.15).

Table 4 also shows that the control group students scored a mean result of 27.50 in the pre-training questionnaire whereas they scored a mean result of 29.00 in the post-training questionnaire. The control group had a standard deviation of 5.74 in the pre-training questionnaire but had 3.79 in the post-training questionnaire. Their t and p values were .31 and .31 respectively. The data indicates that the control group, who did not receive training of vocabulary learning strategies, did not significantly improve their frequency in usage determination vocabulary learning strategies (t-value: -1.03, p value: .31).

**Results of Paired-Samples t-test in social for discovery strategy**

For the discovery of a new word's meaning, a learner may use social strategies, such as ask teacher for a synonym, paraphrase, or L1 translation of new word and ask classmate for meaning. Students both in the control and experimental groups offered response, to the pre-training and post-training questionnaire, on how frequently they ask a teacher, a classmate, or a mother tongue speaker to learn a new word. Their responses were calculated on SPSS and the following results were found.

Table 5. Results of Paired-Samples T-Test in Social for Discovery of Control and Experimental Groups in Pre-Training and Post-Training

Group	Pre-Training			Post-Training			DF	T	P-value
	No.	Mean	Standard Deviation	No.	Mean	Standard Deviation			
Experimental	20	12.05	4.55	20	14.15	4.74	19	-2.31	.03
Control	20	14.85	2.32	20	15.20	1.93	19	-1.37	.18

As shown in table 5, experimental group students scored an average result of 12.05 before they took vocabulary learning strategy training while they scored an average result of 14.15 after they took training in social strategies for the discovery of a new word. Their standard deviation before the training was 4.55; however, their standard deviation after the training was 4.74 in the strategy. Their t and p values in the strategy were -2.31 and .03 respectively. This implies that there was significant difference between the pre-training and post-training frequency in the usage of social strategies to know a new word by experimental group students (t value: -2.31 and p value: .03. This result agrees with the alternative hypothesis: training in the learning strategies of vocabulary significantly improves students' use of vocabulary learning strategies. The effect size was modest (Cohen's d: 0.45).

The above table also presents that control group students' mean score in the frequency usage of social strategy for discovery of a new word was 14.85 in the pre-training and 15.20 in the post-training. The group's standard deviation in the strategy in the pre-training was 2.32 and 1.93 in the post-training. The t-value was -1.37 and p-value was .18. This result suggests that control group students did not significantly improve their frequency of the usage for social strategy for the discovery of a new word (t value: -1.37 and p-value: .18).

**Results of Paired-Samples t-test in social for consolidation strategy**

Social strategy for consolidating a word once it has been encountered comprises of study and practice meaning in a group and interact with native speaker. First year Addis Ababa University learners were asked how frequently they employ social strategies for consolidating a word once it has been encountered before and after vocabulary learning strategies training. The results of the responses given by both control and experimental groups to this strategy in vocabulary learning strategies questionnaire were computed by employing paired samples t-test on SPSS. The result of the test is presented below.

Table 6. Results of Paired-Samples T-Test in Social for Consolidation Strategy of the Experimental and Control Groups in Pre-Training and Post-Training

Group	Pre-training			Post-training			D F	T	P-value
	No.	Mean	Standard Deviation	No.	Mean	Standard Deviation			
Experimental	20	5.15	2.34	20	5.40	2.32	19	-.77	.44
Control	20	5.90	1.41	20	5.10	1.80	19	1.93	.06

Table 6 shows that the mean score of experimental group learners in social for consolidation strategy was 5.15 in the pre-training and 5.40. The standard deviation of the experimental group in the strategy was 2.34 in the pre-training and 2.32 in the post-training. The t-value and p-value of the group are -.77 and .44 respectively. From the data, it can be seen that experimental group students did not significantly improve the vocabulary learning strategy called social for consolidation though they took training of vocabulary learning strategies (t-value: -.77 and p-value: .44). The result supports the null hypothesis: training in the learning strategies of vocabulary does not significantly improve students' use of vocabulary learning strategies. Moreover, it is against the findings of Wu (2019) which states that after students were trained for a month in social strategies, they knew the strategies very well and showed great motivation to employ them.

As it is illustrated in the above table, the mean score of the control group students in social for consolidation strategy was 5.90 in the pre-training and 5.10 in the post-training. The standard deviation of the group indicates that it was 1.41 in the pre-training and 1.80 in the post-training. The t and p values show at 1.93 and .06 correspondingly. None of these differences were statistically significant (t-value: 1.93 and p-value: .06).



### Results of Paired-Samples t-test in memory strategy

Memory Strategies refer to connect word to a previous personal experience, associate the word with its coordinates, connect the word in its synonyms and antonyms; use semantic maps, image word form, image word's meaning, use Keyword Method, group words together to study them, study the spelling of a word, say new word aloud when studying and use physical action when learning a word. Respondents were asked about their frequency usage of these strategies and their responses were analyzed on SPSS, using paired samples t-test. The result of the t-test is provided underneath.

Table 7. Results of Paired-Samples t-test in memory strategy of the experimental and control groups in pre-training and post-training

Group	Pre-training			Post-training			DF	T	P-value
	No.	Mean	Standard Deviation	No.	Mean	Standard Deviation			
Experimental	20	72.40	13.60	20	82.40	19.62	19	-2.48	.01
Control	20	79.75	18.20	20	80.25	10.47	19	-.13	.89

As shown in the table, the mean score of the experimental group students in memory strategy was 72.40 in the pre-training but it was 82.40 in the post-training. The standard deviation of the group in the pre-training was 13.60; however, it was 19.62 in the post-training session. The t-value was registered as -2.48 and the p-value was .01. The data indicates that experimental group students significantly improve their frequency of memory strategy usage after receiving the training (t-value: -2.48 and p-value: .01, <0.05). It seems that the experimental group students improved their usage of memory strategy because the training of vocabulary learning strategies helped them to get acquainted with and employ various memory strategies. The effect size was moderate (Cohen's d: 0.60). The result is in line with the null hypothesis: training in the learning strategies of vocabulary does not significantly improve students' use of vocabulary learning strategies. It also corroborates the finding by Sozler (2012, p.1352) which reads as, "Memory strategies training enable students to study on the vocabularies in such a way that they can not only deal with the unknown words and discover their meaning but also use them meaningfully in a context and have little chance to forget them".

Table 7 also presents the paired samples t-test result of control group students in memory strategy. The group's mean score was 79.75 in the pre-training and 80.25 in the post-training. The group's standard deviation was 18.20 in the pre-training and 10.47 in the post-training. The t-value was -.13 while the p-value was .89. No significant difference between the results of the two tests was evident (t-value: -.13 and p-value: .89).

### Results of Paired-Samples t-test in cognitive strategy

Cognitive Strategies include verbal repetition, written repetition, word lists, put English labels on physical objects and keep a vocabulary notebook. First year AAU university students who were both in the control and experimental groups also responded to the questions, in the vocabulary learning strategies questionnaire, about their cognitive strategy use frequency before and after the training. Their answers of pre-training and post-training questionnaires were calculated using paired samples t-test on SPSS and the following results were found.

Table 8. Results of Paired-Samples t-test in cognitive strategy of the experimental and control groups in pre-training and post-training

Group	Pre-Training			Post-Training			D F	T	P- value
	No.	Mean	Standard Deviation	No.	Mean	Standard Deviation			
Experimental	20	23.30	6.40	20	24.25	6.64	19	-2.33	.03
Control	20	23.30	6.40	20	23.45	6.39	19	-.21	.83

The above table depicts that the average result of the experimental group participants was 23.30 in the pre-training and 24.25 in the post-training. The standard deviation result of the group in the pre-training was 6.40 and it was 6.64 in the post-training. The t-value of the group was registered as -2.33 and the p-value of the group was registered as .03. From the data, we can understand that no significant difference was found between the pre-test and post-test result in cognitive strategy of the experimental group (t-value: -2.33 and p-value: .03). The result supports the alternative hypothesis: training in the learning strategies of vocabulary significantly improves students' use of vocabulary learning strategies. The effect size was weak (Cohen's  $d$ : 0.14).

It can also be seen from the data in the table that the control group participants registered an average result of 23.30 in the pre-training and scored an average result of 23.45 in the post-training. The standard deviation in the pre-training scored by the group was 6.40 and the standard deviation registered by the group in the post training was 6.39. The group's t-value and p-value are -.21 and .83 respectively. From the data of the table, it can be seen that no significant difference was found between the pre-test and post-test results in cognitive strategy use of the control group (t-value: -.21 p-value: .83).

### Results of Paired-Samples t-test in meta-cognitive strategy

Metacognitive strategies consist of using English-language media (songs, movies, newscasts, etc.), testing oneself with word tests, skipping or passing new word and continuing to study word over time. Respondents of this study were asked to give response on how frequently they use met-cognitive strategies to study vocabulary. The answers offered by the participants were analyzed using paired samples t-test of SPSS and the results obtained from the test are presented as follows.

Table 9. Results of Paired-Samples t-test in meta-cognitive strategy of the experimental and control groups in pre-training and post-training

Group	Pre-training			Post-training			DF	T	P- value
	No.	Mean	Standard Deviation	No.	Mean	Standard Deviation			
Experimental	20	14.05	3.36	20	15.70	3.35	19	-2.13	.04
Control	20	14.60	2.43	20	15	2.42	19	-.68	.54

Table 9 provides data about the average score of the experimental group students in the pre-training questions about meta-cognitive strategy as 14.05 and the mean score of the group in the post-training questions of the strategy was 15.70. The standard deviation of the group in pre-training questions of the strategy was scored as 3.36 and it was scored as 3.35 in the post-training questions of the strategy. The t-value and p-value were -2.13 and .04 respectively. This data is quite revealing

that there is significant difference between the results of experimental group participants in the pre-training and post-training questions about meta-cognitive strategy (t-value: -2.13 and p-value: .04). The positive significant change probably was brought because the group received training on vocabulary learning strategies for 16 weeks. The effect size was modest (Cohen's *d*: 0.49). The result supports the alternative hypothesis: training in the learning strategies of vocabulary significantly improves students' use of vocabulary learning strategies.

On the other hand, the table also shows that control group participants mean score about meta-cognitive strategy in the pre-training was 14.60 and it was 15.00 in the post-training. The group's standard deviation in the questions of the strategy in the pre-training was 2.43 whereas it was 2.42 in the post-training. The t-value of the group about the strategy was -.68 while the t-test was .54. The data indicates that there is no statistical mean difference between the pre-questionnaire and post-questionnaire score of the control group (t-value: -.68 and p-value: .54).

### Major findings of the study

Paired samples t-test was computed in order to examine whether the vocabulary learning strategies training brought significant change or not in the students' usage of vocabulary learning strategies and the experimental group participants showed positive result in the five among six major categories of vocabulary learning strategies. The data indicates that experimental group students significantly improve their frequency of memory strategy usage after receiving the training (t-value: -2.48 and p-value: .01, <0.05). The data is also quite revealing that there is significant difference between the results of experimental group participants in the pre-training and post-training questions about meta-cognitive strategy (t-value: -2.13 and p-value: .04). From the data, we can understand that significant difference was found between the pre-test and post-test result in cognitive strategy of the experimental group (t-value: -2.33 and p-value: .03). The data also shows that the experimental group students significantly improve their frequency in the usage of determination vocabulary learning strategies (t-value: -2.15, p value: .04). In addition, there was a significant difference between the pre-training and post-training frequency in the usage of social strategies to know a new word (t value: -2.31 and p value: .03). However, it can be seen that experimental group students did not significantly improve their usage of the vocabulary learning strategy called social for consolidation (t-value: -.77 and p-value: .44).

### Discussion

The result of this study regarding determination vocabulary learning strategies is in line with those of the previous studies such as Ebrahimi et al. (2015) which show that contextual guessing affected the students' vocabulary learning and helped them keep the second language vocabulary in their minds longer". As it is stated in the literature review section, contextual guessing is grouped under determination strategies.

The result of this research concerning social for discovery Strategy is also in accord with the study by Rousoulioti and Mout (2016) who discussed as, "Language teachers and learners are in agreement regarding the strategy of asking the instructor or fellow students for help in understanding vocabulary".

Experimental group students did not significantly improve the vocabulary learning strategy called social for consolidation though they took training of vocabulary learning strategies. However, it is against the finding of Wu (2019) which states that after students were trained for a month in social strategies, they knew the strategies very well and showed great motivation to employ them.

The finding of this study in relation to memory strategies also corroborates the finding by Sozler (2012, p.1352) which reads as, "Memory strategies training enable students to study on the vocabularies in such a way that they can not only deal with the unknown words and discover their meaning but also use them meaningfully in a context and have little chance to forget them".

The result of this research pertaining to cognitive strategies was in agreement with the study by Banisaeid (2013) which found training in cognitive strategies has completely positive effect on cognitive strategies.

Regarding meta-cognitive strategies, the result of this study also matches the research by Wu (2019, P.1061)) which states "Within four-week training, students in the experimental class are mainly introduced to several meta-cognitive strategies and become more aware of the trained strategies, and have a strong tendency to use them".

## CONCLUSION

The study reveals that there is significant difference in vocabulary learning strategies use between students who receive vocabulary learning strategies training and those who do not receive the training. It is found that students improve their frequently usage of variety of vocabulary learning strategies after taking the training. It is evident that the training makes learners know varied ways of studying vocabulary and it is clearly seen this has good effects on vocabulary knowledge increment of students. In accordance with the findings of this study, learners who do not take training of different vocabulary learning strategies and if they study a textbook with limited number of vocabularies learning strategies, there are negative effects on their usage of vocabulary learning strategies and vocabulary knowledge.

Based on the findings of the study, it is recommended that first coursebooks should include objectives, explanations, examples, and exercises of varied vocabulary learning strategies. Second, instructors of Communicative English skills are also recommended to discuss objectives, explanations, examples, and exercises of varied vocabulary learning strategies. Third, university students should try their best to use the vocabulary learning strategies they studied in their vocabulary study in and outside the classroom.

Implications of the study are discussed as follows. The current study focused on the effect of vocabulary learning strategies training. Future researchers can study the effect of training in learning strategies of other language skills and sub-skills. This study did not also have an objective of studying the relationship between vocabulary learning strategies use and students' gender, discipline, age and proficiency level. Future studies may emphasize these specific issues. The participants of the current study were first year university students. Future researchers may select second year and above university students or secondary school students.

## FUNDING STATEMENT

The researchers did not receive any financial support for this study.

## REFERENCES

- Aladdin, A., Hamza, A., & Yasin, M. (2015). The use of vocabulary learning strategies among Sudanese EFL learners. *Journal of Applied Linguistics and Language Research*, 2 (6), 93-102.
- Al-Fuhaid, Mohammad R.T. (2004) *Vocabulary learning strategies: an empirical study of their use and evaluation by Saudi EFL learners majoring in English* [Unpublished doctoral dissertation]. Durham University. <http://etheses.dur.ac.uk/1752/>
- Alharthi, T. (2014). Role of vocabulary learning strategies in EFL learners' word attrition. *International Journal of English Language and Linguistics Research*, 2 (3), 13-28.
- Al-Nujaidi, A. (2003). The relationship between vocabulary size, reading strategies, and reading comprehension of EFL learners in Saudi Arabia [Unpublished master's thesis]. Colorado State University.
- Aktekin, N. & Guven, S. (2013). Examining the Effect of Vocabulary Strategy Training on Adult EFL Students. *Mersin University Journal of the Faculty of Education*, 9, (2).
- Baldoumi, K. (2016). The employment of vocabulary learning strategies by young Greek learners of English: Differences in relation to gender and grade. *Selected Papers of the 21st International Symposium on Theoretical and Applied Linguistics*, 21 (16), 504-515, <https://doi.org/10.26262/istal.v21i0.5209>
- Banisaeid, M. (2013) Comparative Effect of Memory and Cognitive Strategies Training on EFL Intermediate Learners' Vocabulary Learning. *English Language Teaching*; 6, ( 8).
- Brown, H.D. (2000). *Principles of language learning and teaching*. White Plains, NY: Longman.
- Brown, H. D. (2007). *Principles of language learning and teaching* (5th ed.). White Plains, NY: Longman
- Burkhour, H. (1999). *The Relationship between vocabulary and reading comprehension in junior high aged students with learning disabilities*. [Master's thesis]. 534. <http://scholarworks.gvsu.edu/theses/534>
- Carter, R. (1998). *Vocabulary: Applied Linguistic Perspectives*. London: Allen & Unwin.
- Cohen, A. (2003). *Strategy training for second language learners*. Washington: Center for Applied Linguistics.

- Dorneyei, Z. (2007). *Research Methods in Applied Linguistics. Quantitative, qualitative and mixed approaches*. Oxford: Oxford University Press.
- Easterbrook, M. (2013). *The process of vocabulary learning: Vocabulary learning strategies and beliefs about language and language learning*. (Unpublished doctoral dissertation). NP: The University of Canberra.
- Ebrahimi, Z. Azhideh, P., & Aslanabadi, H. (2015). The Effects of Teaching Vocabulary Learning Strategies on Iranian EFL Learners 'Vocabulary Development. *International Journal on Studies in English Language and Literature (IJSELL)*. 3(1).
- Ellis, N. (1997). Vocabulary acquisition, word structure, collocation, word-class, and meaning. In Schmitt, N. and McCarthy, M. (Eds). *Vocabulary: Description, Acquisition and Pedagogy*. Cambridge: Cambridge University Press.
- Fan N. (2015). A Study of Vocabulary Knowledge and Vocabulary Learning Strategies of Chinese EFL Learners [Unpublished doctoral thesis]. Sydney: Macquarie University.
- Hulstijn, J. H. (1997). Mnemonic methods in foreign language vocabulary learning: Theoretical considerations and pedagogical implications. In J. Coady & T. Huckin (Eds.), *Second language vocabulary acquisition* (pp. 203-224). Cambridge: Cambridge University Press.
- Kafipour, R. & Naveh, M. (2011). Vocabulary Learning Strategies and their Contribution to Reading Comprehension of EFL Undergraduate Students in Kerman Province. *European Journal of Social Sciences*, 23 (4).
- Khair, S. (2017). *Investigating the Use of Vocabulary Learning Strategies among English Major Students, A Case Study of Al-Fashir University*. (Unpublished doctoral dissertation). NP. Sudan University of Science and Technology.
- King, M. (2011). *Effects of teaching vocabulary using various forms of rich instruction in thematically versus randomly grouped sets* (Unpublished doctoral dissertation). Auburn: Alabama University.
- Llamosas, L. (2011). *Teaching vocabulary learning strategies: a vocabulary improvement program (VIP) for EFL beginner students from Centro Cultural Peruano Norteamericano Arequipa* [Unpublished master's thesis]. Universidad de Piura.
- Liu, X. & Pang, D. (2017). The Application of Strategy-based Instruction to Vocabulary Teaching. International Conference on Modern Education and Information Technology (MEIT 2017) ISBN: 978-1-60595-468-4
- McDonough, S. H. (1995). *Strategy and skill in learning a foreign language*. London: Edward Arnold.
- Moghadam, S., Zaidah, Z., & Ghaderpour, M. (2012). A review on the important role of vocabulary knowledge in reading comprehension performance. *Procedia - Social and Behavioral Sciences* 66, 555-563.
- Muijs, D. (2004). *Doing Quantitative Research in Education with SPSS*. London: SAGE Publications Ltd.
- Nation, I. S. P. (1990). *Teaching and learning vocabulary*. New York: Newbury House.
- Nation, I.S.P. (2001). *Learning vocabulary in another language*. Cambridge: Cambridge University Press.
- Noormohamadi, N. & Amirian, Z. (2015). The Effect of Proficiency on Vocabulary Learning Strategy Use: A Case of Iranian English Translation Students. *Journal of Applied Linguistics and Language Research*. 2 (2), 39-53.
- Ostovar-Namaghi, S. & Rajaei, M. (2013). The Effect of Strategy Training on the Vocabulary Development of EFL Learners in Public High Schools of Iran. *Theory and Practice in Language Studies*. 3, (11), 2061-2066.
- Oxford, R. (1990). *Language Learning Strategies: What Every Teacher Should Know*. Englewood Cliffs, NJ: Newbury House.
- Rahimi, M. & Allahyari, A. (2019). Effects of Multimedia Learning Combined With Strategy-Based Instruction on Vocabulary Learning and Strategy Use. *SAGE Open*. April-June 2019: 1-14 © The Author(s) 2019 DOI: 10.1177/2158244019844081 journals.sagepub.com/home/sgo
- Rahimy, R. & Shams, K. (2012). An Investigation of the Effectiveness of Vocabulary Learning Strategies on Iranian EFL Learners' Vocabulary Test Score. *International Education Studies*; 5(5).
- Read, J. (1998). Validating a test to measure depth of vocabulary knowledge. In A. Kunan (Ed.), *Validation in language assessment* (41-60). Mahwah, NJ: Lawrence Erlbaum Associates.

- Rousoulioti, T. & Mouti, A. (2016). Dealing with Unknown Words in L2 Reading: Vocabulary Discovery and Lexical Inferencing Strategies. *Colombian Applied Linguistics Journal*, 18(1), 56-70.
- Schmitt, N. (1997). Vocabulary learning strategies. In N. Schmitt and M. McCarthy, (Eds.), *Vocabulary: Description, Acquisition and Pedagogy*. Cambridge: Cambridge University Press.
- Schmitt, N. Schmitt, D. and Clapham, C. (2001). *Developing and exploring the behaviour of two new versions of the Vocabulary Levels Test*. Nottingham: University of Nottingham.
- Siriwan, M. (2007). *English vocabulary learning strategies employed by Rajabhat University students*. (Unpublished PhD Thesis). Suranaree University of Technology
- Stoffer, I. (1995). *University foreign language students' choice of vocabulary learning strategies as related to individual difference variables* [Unpublished Doctoral Dissertation]. University of Alabama.
- Sozler, S. (2012). The effect of memory strategy training on vocabulary development of Austrian secondary school students. *Procedia - Social and Behavioral Sciences*, 46 ( 2012 ), 1348 – 1352.
- Takac, V. P. (2008). *Vocabulary learning strategies and foreign language acquisition*. Clevedon: Multilingual Matters.
- Teng, F. (2015). Assessing the relationship between vocabulary Learning Strategy Use and Vocabulary Knowledge. *PASAA*, 49.
- Wu, Y. (2019). Effectiveness of the vocabulary learning strategies on English vocabulary learning for non-English college students. *Advances in social science, education and humanities research*, 310.
- Wenden, A. & Rubin, J. (1987). *Learner Strategies in Language Learning*. Cambridge: Prentice-Hall.