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Research:13

The effectiveness of using six memorization strategies to enhance students' memorization of English vocabulary

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Abstract : *Teaching English in Saudi Arabia is very important to both teachers and students in both private and public education. When considering memorization as a method of teaching vocabulary, we note that English courses include much more information than other courses. Accordingly, it is argued that a proper method of teaching all this amount of information is needed in order to lead students to acquire as much of English vocabulary as possible through memorization skills. This study mainly explores the effectiveness of six memorization strategies in EFL vocabulary building in a 2nd year communication skills course taught in English at the college of Education at King Abdulaziz University in Jeddah. Participants were 40 EFL students. The methods employed in this study were pre and post multiple choice vocabulary tests of newly learned vocabulary and the six most crucial strategies used are: awareness, association, link system, ridiculous association, substitution word system and keyword. In the light of issues reviewed and raised in literature and upon the completion of the study, the following research question was asked and answered: Are the six major memorization techniques effective for vocabulary gain? And the following hypothesis has been considered: There is a difference in knowledge gain of vocabulary before and after the pre and post test. This study proves that the six memorization strategies provide an excellent opportunity for both teachers and students to practice thinking skills and at the same time gain the knowledge. The six strategies facilitate visual and linguistic skills in authentic real life images and connections.*

Keywords: vocabulary gain, memorization, skills, teaching vocabulary, substitute-word system, human memory, ridiculous association, aware- ness , keyword.

Introduction:

Words are the basic of language, and thus the basic of communication. Without words, it is possible to know everything about the grammatical structure of a language, but yet to be unable to make a single utterance. (Bowen, T. & Marks, J., 2002). Learning a foreign language involves the development of different skills such as reading, writing,

listening and speaking (Memorizing vocabulary words, 2007). Although specific skills may be focused on separately for pedagogical reasons, two elements are crucial to the process of acquiring and using a language: vocabulary and grammar (Celce-Murcia, 2001). The importance of grammar has been widely recognized in ELT (English Language Teaching) methodologies (Celce-Murcia, 2001; Nunan, 2001; Swan, 2002). This situation seems to be a little different with vocabulary. Effective second language vocabulary acquisition is particularly important for English as foreign language (EFL) learners, who frequently acquire impoverished lexicons despite years of formal study (Hunt, A., & Beglar, D., 2005). In comparison to other fields of research in language learning, it is possible to state that vocabulary teaching / learning has been left to a position of secondary importance (Richards, J.C. & Renandya, W.A., 2002). According to DeCarrico, “ Vocabulary has not always been recognized as a priority in language teaching.” (2001).

This paper comprehensively reviews some strategies of effective memorization and proposes that EFL teachers and administrators adopt to speed up vocabulary development and gain .This research encompassed a pre and post tests and analysis of data collected from using these tests at the faculty of education of King Abdulaziz University in Jeddah.

This framework incorporates promoting the use of multiple memorization strategies. The six most crucial strategies are awareness, association, link system, ridiculous association, substitution word system and keyword. These strategies can take many forms including the use of integrated tasks; however, this framework emphasizes extensive reading, which is arguably the primary way that EFL learners can build their vocabulary to an advanced level.

Vocabulary knowledge has long been considered critical to children’s successful reading comprehension and

writing. When children increase their reserves of word meaning, they also broaden their thinking and become aware of new semantic and conceptual relationships. Their broadened awareness, in turn, increases reading comprehension and writing abilities. Many barriers prevent English Language learner from grasping new vocabulary, but one of the biggest challenges is the minimal time teachers devote to vocabulary instruction (Brassell, D., & Furtado, L., 2008). Although research has shown that vocabulary knowledge plays a critical role in students' literacy development, many teachers devote little class time to vocabulary instruction (Scott, J., Jamieson-Noel, D. & Asselin, M., 2003). Beyond reading, no single vocabulary strategy works best, as no two ESL and EFL students are alike. Some students respond better to flashcards, while others may prefer collaborative discussions. Teachers who do devote time to vocabulary instruction often use strategies that fail to increase students' vocabulary and comprehension abilities (Blachowicz, C., & Fisher, P. J., 2002; Nagy, 1988). Essentially, many ESL teachers use inefficient strategies. (Brassell, D., & Furtado, L., 2008).

Literature Review:

In this section, the researcher reviews the related literature of memory, old methods of memorization, new strategies and techniques of memorization and vocabulary acquisition.

Foreign language teachers have the difficult task of teaching vocabulary. If we go back to our early years in school, as Joyce & Weil stated, we could remember an image of struggles to master lists of unstructured material such as new words, new sounds, the days of the week, the four directions, and the nations of the world. Some of us became effective at memorizing and some of us did not. As we look back, it is easy to dismiss much of this information as trivial. However, imagine for a moment what our world would be like without the information we acquire in those

years of school. We need information. One of the most effective forms of personal power comes from competence based on knowledge; it is essential to success and a sense of well being. Throughout our lives, we need to be able to memorize skillfully as this need will increase learning power, save time, and lead to a better warehouse of information (1996).

Strategies in vocabulary teaching:

The teaching of learning strategies has been extensively discussed in different aspects in foreign and second language teaching (Cohen, *Strategies in Learning and Using a Second Language*, 1998; Ellis, 2001; Oxford, 2002; Vilaca 2008). Researchers have pointed out that strategies may help students *learn to learn* (Oxford, 2002; Cohen, 2003; Mariani , 2004; Chamot, 2004; Vilaca, 2008), contributing to a better development of linguistic, communicative and pedagogical skill, including autonomy and the management of the learning process. In this section of the research, key strategies of memorization in vocabulary teaching will be discussed.

Both scholarly and popular sources agree that the ability to remember is fundamental to intellectual effectiveness. Memorizing is an active pursuit. The capacity to take information, to integrate it meaningfully, and later, to retrieve it is the product of successful memory learning. Most important, individuals can improve this capacity to memorize a material so that they can recall it later. That is the objective of memorization. Over the last 20 years, an important line of research has been conducted on what is termed the *link-word method*. The result is a considerable advance in knowledge about memorization as well as the development of a system that has practical implications for the design of the instructional materials, for classroom teaching and tutoring, and for students. (Joyce, B., & Weil, M., 1996).

If we estimate that students can learn about ten new words every class, they would learn between 3200 and 3500 words in four years of study. It may be a considerable achievement but some students may need a larger vocabulary to speak, write and read in English in several different situations and contexts. (Vilaça, 2008).

How We Remember:

From the academic skills center at California Polytechnic State University, the following conclusions have been reached on how we remember (<http://sas.calpoly.edu/asc/ssl/memorization.html>):

- 1) Memory itself probably cannot be developed; however, improvement in remembering comes from correcting certain habits or thoughts so that we use our memory to its fullest potential. Remembering is like seeing; improvement in either function does not depend upon how much we use it but, rather, how we use it.
- 2) The first and most important rule for remembering is: cultivate the habit of close attention to the thing you wish to remember. Be sure you have a clear, sharp future time. If you wish to remember a fact, make it meaningful to you.
- 3) When we are learning, we should try not only to get a strong impression but also to obtain as many different kinds of impressions as possible. Some people can remember colors distinctly, but have a poor memory for shapes. But anyone, by putting together and using all of the impressions our sense organs bring us about a thing, can remember it much more clearly than if we rely on sight or sound alone. For example, try reading your lesson aloud. In doing this, your eye takes in the appearance of the printed word, your ear passes the sound of the words to your brain, and even the tension of the muscle of your throat add their bit to the total impression which your mind is expected to store away.
- 4) Try to visualize it. Either remember a diagram or a picture of the material to be remembered, or take short notes about it, which you can visualize.
- 5) Intend to remember. The mere intention to remember puts the mind in a condition to remember, and if you will make use of this fact in studying you will be able to recall between 20 and

60 percent more of what you read and hear than you would if you were not actively trying to remember.

- 6) Think about it. A fact doesn't belong to you until you have used it. In making use of this principle, plan to spend not more than one-half of your study period in reading your lesson. Use the other half in doing something with what you learn. Think about what you have studied, write down notes on it, and explain it to somebody else.
- 7) Logical memory. One of the most important of all aids to the remembering process is the habit of associating a new idea immediately with facts or ideas that are already firmly lodged in the mind. This association revives and strengthens the old memories and prevents the new one from slipping away by anchoring it to the well-established framework of your mental world.
- 8) Remembering by brute force. We will forget more, on the average, during the first hour after learning than during the next 24 hours; and we will forget more, on the average, during the first day than we will during the next thirty days. Whatever is left after thirty days time, we will probably be able to hold on to without much further loss for years to come.
- 9) Reviewing is much more effective if carried out before memories have entirely escaped than it is after considerable time has elapsed. Repetitions should be strung out over as long a time as is available. We remember better if we pause a little between periods of study.
- 10) How much study? You should study more than enough to learn your assignment. Experiments have proven that 50% more resulted in 50% better retention. After a week had passed, it was found that extra work had salvaged six times as much of the material as in the case when it was barely learned.(Walter, 1974)

Memorizing Vocabulary Words:

Vocabulary building is very beneficial, but it can be very difficult to memorize new vocabulary words. Vocabulary is difficult to memorize because it can be very abstract and there is often little connection between the word and its meaning. While the connection between the vocabulary word and the meaning does not exist in reality, it is formed in your head. There are some good ways to make memo-

rizing vocabulary easier. First and foremost, you should understand that vocabulary can't always be understood just from a dictionary definition. In order to really understand a new vocabulary word, you need to know how to use it in a variety of contexts. Just knowing a vocabulary word enough to recognize it later on is not sufficient enough to memorize it. You really need to know what the vocabulary word sounds like and how it is spelled.

You must know the vocabulary word visually and phonetically. For the visual part of the vocabulary word look at the spelling, close your eyes and say the spelling out loud, then open your eyes and check that you spelled it correctly. For the phonetic part of the vocabulary word read the vocabulary word, look away from the page and say it out loud, then check that you have said the vocabulary correctly. If you can learn the vocabulary word both visually and phonetically, you know the vocabulary word really well.

Once you know the vocabulary word really well, you need to connect that vocabulary word to what you already know. You need to turn the vocabulary word into a memorable image in your imagination. Consider what the new vocabulary word reminds you of that can be easily visualized. Try to pick the first thing that comes into your head because when you re-encounter the vocabulary word you're likely to think the same way again. It's a simple concept but it may take a while to master. Some vocabulary is going to be more difficult to translate into an image than other vocabulary words. It can be done with any vocabulary word however. The more you practice, the more you'll improve, and the easier it will get to memorize new vocabulary. (Memorizing vocabulary words, 2007).

Theory of human memory:

The study of memory has a long history. Although the goal of a unified coherent and generally satisfying theory of human memory (Estes, 1976) has not been achieved, progress has been made. A number of instructional principles are

being developed whose goals are both to teach memorization strategies and to help students achieve more effectively.

For instance, the material on which a particular teacher chooses to focus will affect what information the students retain: "Many items are presented to an individual in a short time, and only those to which attention is directed enter into memory" (Estes, 1976). Simply, if we do not pay attention to something, we do not remember it.

Short term memories are often associated with sensory experiences of various kinds. For a long term recall, we may associate things according to episodic cues; that is having to do with the sequences of experience to which we have been exposed to (Joyce, B., & Weil, M., 1996).

Techniques for Enhancing Memorization:

The following are essential techniques for enhancing our memory of learning materials. (Joyce, B., & Weil, M., 1996).

AWARENESS:

Before we can remember anything, we must give attention to, or concentrate on, the things or idea to be remembered: "observation is essential to original awareness (Lorayne & Lucas, 1974). According to Lorayne and Lucas, anything of which we are originally aware cannot be forgotten. During the application of this technique after the pre test of this study, students successfully remembered the meaning of conflict since they were aware of the word cornflakes.

ASSOCIATION:

The basic memory rule is, "You Can Remember Any New Piece of Information If It Is Associated with Something You Already Know or Remember"(Lorayne & Lucas, 1974). For example, to help students remember the spelling of *piece*, teachers will give the cue a *piece* of *pie*, which helps with both spelling and learning. During the application of this technique after the pre test of this study, students

were able to remember both the spelling and meaning of *mutual* when they associated the first two letters of this word to *me* & *u*, and to recognize that mutual is something shared between two participants.

LINK SYSTEM:

The heart of the memory procedure is connecting two ideas, with the second idea triggering yet another one, and so on. Although generally we only expand energy to learn meaningful material, an illustration with material that is not potentially useful helps us see how the method works. For example, we want to remember the following five words in order: *house, glove, chair, stove, tree*. We should imagine an unusual picture, first with a house and a glove, then with a glove and a chair. For example, in the first picture we might imagine a glove opening the front door of a house, greeting a family of gloves. The second picture might be a huge glove holding a tiny chair. Taking the time to concentrate on making up these images and then to visualize them will develop associations that link them in order. During the application of this technique after the pre test of this study, students were able to remember both the spelling and meaning of *jittery* and *insult*, students imagined a picture of a nervous person riding a jet ski moving toward his friend to throw salt on him as to *insult* him.

Many memory problems deal with association of two ideas. We often want to associate names and dates or places, names and ideas, words and their meaning, or a fact that establishes a relationship between two ideas.

RIDICULOUS ASSOCIATION:

Even though it is true that association is the basis of memory, the strength of the association is enhanced if the image vivid and ridiculous, impossible, or illogical. A tree laden with gloves and a family of gloves are examples of ridiculous association. There are several ways to make an association ridiculous. The first is to apply the rule of substitution. If you have a car and a glove, picture the glove

driving the car. During the application of this technique after the pre test of this study, students were able to remember meaning of *conflict* when we draw pictures of *corn flakes* fighting with each other!.

SUBSTITUTE-WORD SYSTEM:

It is a way of making "an intangible, tangible and meaningful" and it is quite simple when you take any word or phrase that seems abstract and think of something that sounds like or reminds you of the abstract material and can be pictured in your mind (Lorayne & Lucas, 1974). In the post test of this study, the abstract word aggression is substituted with a wolf producing the sound of "grrrrrrrrr" that reminds us with aggression and hostility.

KEY WORD:

The essence of the key-word system is to select one word to represent a longer thought or several subordinate thoughts. In other words, to remember a phrase or an important point, we identify one word from a main idea that reminds us of the entire thought. In the post test of this study, the word circumscribe has been memorized through choosing the word circle to represent circumscribe, and when you are in a circle, your movements are limited. Through this key word, the student will remember that the circumscribing stage in any interpersonal relationship means limited relations and limited activities during this stage.

While traditional memorization drills continue to dominate the landscape of vocabulary teaching, Graves and his colleagues (Graves, 2000 and Graves & Watts-Taffe, 2002) advocate broader classroom vocabulary programs for students. ESL teachers who want to improve students' vocabularies realize that they have to create classrooms that accommodate multiple learning intelligences. (Brassell & Furtado, 2008).

Steps of a Memory Session:

Developed from the work of Pressley and his associates (Pressly, 1977; Pressley, Levin, and Miller; 1981

a , 1981b). A memory session includes the following four phases:

- 1) Phase one: attending to the material where students are required to concentrate on what is to be learned and organize it in a way that helps them to remember it. Underlining, listing and reflecting on the learned materials are examples of techniques during this phase. Example: diminish, vulgar, participant, olfactory, insult, repress, and mutual can be organized alphabetically or classified according to the part of speech they belong to.
- 2) Phase two: making the learned material familiar and developing connections in which students use the memorization techniques such as key-word, substitute word and so on.
- 3) Phase three: expanding the sensory images in which students use additional memorization techniques such as ridiculous association.
- 4) Phase four: asking students to practice recalling the material until it is completely learned.

Conceptual Framework and Research Question:

Teaching English in Saudi Arabia is very important to both teachers and students in both private and public education. When considering memorization as a method of teaching vocabulary, we note that English courses include much more information than other courses. Accordingly, it is argued that a proper method of teaching all this amount of information is needed in order to lead students to acquire as much of English vocabulary as possible.

In the light of these issues raised in literature, the following research question was asked:

- Are the six major memorization techniques effective for vocabulary gain?

And the following hypothesis has been considered:

- There is a difference in knowledge gain of vocabulary before and after the pre and post test.

Methodology:

A pre - and post- multiple choice vocabulary tests were conducted in the College of Education at King Abdulaziz University in Jeddah with 39 students from the English department. Each test includes 50 items (words with multiple meanings in which students select the correct answer for each word). Words are taken from Communication Skills course.

Pre - and post - tests measure outcomes and demonstrate success. Pre - and post-tests act as a thermostat, providing real-time feedback of program efforts, to help teachers and program directors decide whether or not to make changes in the implementation of activities throughout the implementation of methods of teaching. (Donald, 2002).

Pre - and post - test data from students provides insight into how effectively the six strategies of memorization improve students' acquisition of vocabulary. Students were taught how to use the six strategies after the pre test wide. The purpose of these tests was to measure incremental gains in vocabulary knowledge before and after using the suggested memorization strategies.

In order to maintain a degree of sensitivity, and thus be able to measure gains in partial knowledge, it was important that the test did not provide any information about the meaning of the words. Upon completion of the vocabulary pre-test, the students were taught the different strategies of memorizing vocabulary including the six mentioned above. Students are asked to suggest different uses of the strategies which was an attempt to measure if they were able to retrieve the vocabulary item from their memory. They were encouraged to employ guessing strategies.

Immediate post-test:

In the next session, the students will be given the same vocabulary recognition test, in which the items were organized in a different order.

Data Analysis:

To answer the research question and examine the research hypothesis, pre - and post- multiple choice vocabulary tests were conducted in the College of Education at King Abdulaziz University in Jeddah with 40 students from the English department. Each test includes 50 items. Their performance before using the memorization strategies has been measured through a variety of multiple choice questions. Their performance has been re-measured through the same tool after using the memorization strategies.

The research hypothesis assumes that there is a difference in students' performance in memorizing vocabulary before and after the pre-post tests.

Group mean in pre-test = μ_y

Group mean in post-test = μ_x

So, the differences become $=d_i$, where $i =$ random samples of 39 students with a mean of $(\mu_x - \mu_y)$. Accordingly, the null hypothesis indicates no differences in students performance and it can be defined as:

$$H_0: \mu_x - \mu_y = 0$$

This is against the alternative hypothesis that indicates significant differences in students' performance and can be defined as:

$$H_1: \mu_x - \mu_y \neq 0$$

T statistics is used to examine the null hypothesis as follows:

- The null hypothesis is rejected when:
- Reject H_0 if $\frac{\bar{D}}{s_D / \sqrt{n}} < -t_{n-1, \alpha/2}$ or

$$H_0 \text{ if } \frac{\bar{D}}{s_D / \sqrt{n}} > t_{n-1, \alpha/2}$$

Where SD: standard deviation, \bar{D} : mean of differences (di) and , n: number of observations. The random variable t_{n-1} follows student's t distribution with (n-1) degree of freedom.

To test the null hypothesis, the computed t is compared with the critical t value with 38 degree of freedom at 5%.

Table 1: Description of study variables.

Selected Statistics	PRE	POST
Mean	21.08	34.79
Median	19.00	34.00
Mode	18	40
Std. Deviation	6.305	8.037
Variance	39.757	64.588
Skewness	.865	-.455
Kurtosis	.489	.177
Range	28	36
Minimum	12	12
Maximum	40	48
N	39	39

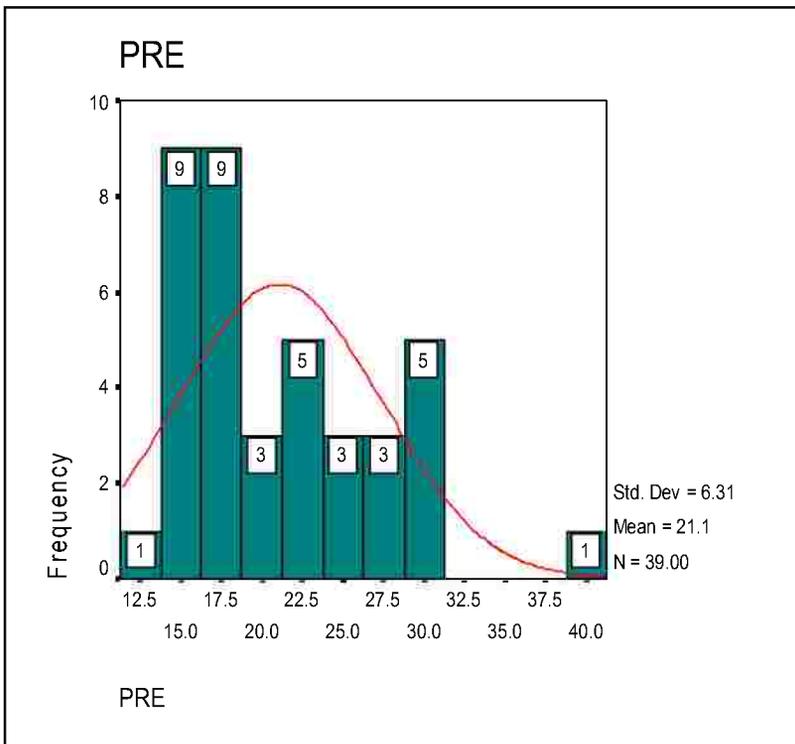
Analysis of Statistics:

- The (mean): students gained higher scores after using memorization strategies than their scores before using the memorization strategies. Their pre-test mean was 21.08 while their post-test mean was 34.79 and that declares a difference of 13.71 and explains a great change in their means scores which is 65%.
- The (median) is the score value located in the middle of total scores mean. The post-test median (34) is higher than the pre-test median (19), and that indicates the median increase after using the memorization strategies.
- The (mode) is the most repeated score in the group. It is noticed that the mode in the post-test group (40) is higher than the mode in the pre-test group (18).
- The (standard deviation) is one of the dispersion measurements. It is the (positive) square root of the variance and it measures the absolute dispersion of the study samples. It is clear that the standard deviation of the post-test group is (8.037), which is higher than that of the pre-test group and this indicates its high dispersion and variance around its mean. By using the coefficient of variation to measure the partial dispersion where we divide the standard deviation on the mean:

$$\left(\frac{S.D}{mean} \times 100 \right)$$

The coefficient of variation for the pre-test group (29.9%) is higher than that of the post-test group (23.10%). The conclusion in this case is that students scores in the pre-test are more variant and disperse than those in the post-test and that means students scores in the post-test are more relevant and homogenous than those of the pre-test.

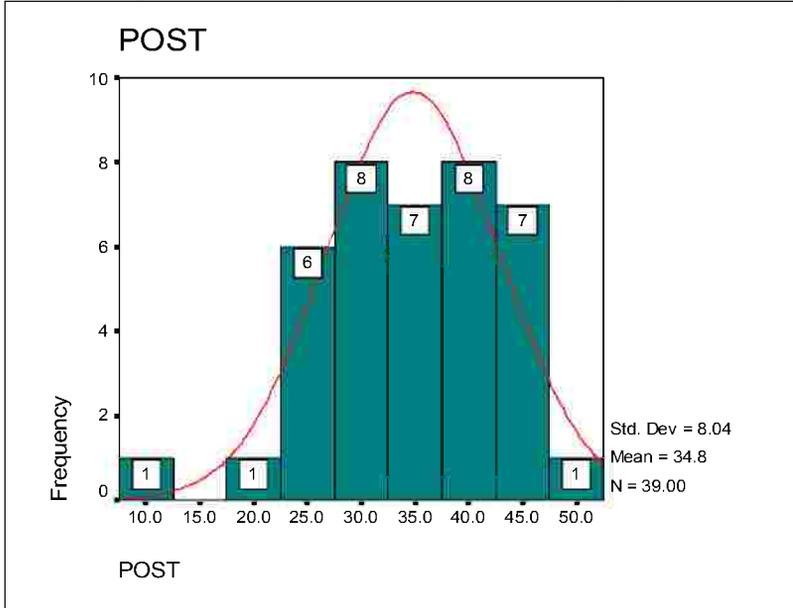
Figure1: Histogram and Normal Distribution Curve of pre-test scores.



1-Notes on the histogram:

From the frequency and the distribution curve of the scores, it is clear that the majority of scores are accumulated toward the small scores more than toward the high scores. The shape of the curve seems positively skewed or skewed to the right.

Figure 2. Histogram and Normal Distribution Curve of post-test scores.



2-Notes on the histogram:

From the frequency and the distribution curve of the scores, it is clear that the majority of scores are accumulated toward the high scores more than toward the small scores. The shape of the curve seems negatively skewed or skewed to the left.

Discussion of study hypothesis:

The null hypothesis: no significant difference between students scores in both tests:

$$H_0: \mu_x - \mu_y = 0$$

The alternative hypothesis: there are significant differences between students scores in both tests:

$$H_1: \mu_x - \mu_y \neq 0$$

Test of data normality:

Before using t-statistics to test the study hypothesis, it is important to make sure that all data follow the normal distribution. In case these data do not, a non-parametric test should be used, specifically, wilcoxon test:

Testing Normality:

In order to examine the distribution of data, we use (Shapiro-Wilk test) if the study participants are less than 50, or (Kolmogorov-Smirnoc test) if the study participants are more than 50:

Table 2. Tests of Normality

	Kolmogorov-Smimov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
PRE	.174	39	.004	.925	39	.012
POST	.100	39	.200*	.964	39	.250

1-This is a lower bound of the true significance

2- a. Lilliefors Significance Correction

According to the previous table, we depend on (Shapiro -Wilk test because the total number of participants is 39. The test examines the null hypothesis with the normal data distribution, i.e, the test insignificance indicated the acceptance of the null hypothesis. For example, at a sig. level of 5% and the computed value in the test is higher than 5%, the null hypothesis is accepted and the data are normally distributed.

By looking at the results of (Shpiro-Wilk test), some contradictions appear between the pre and post test data. For example, students scores in the pre test are not normally distributed because the statistics according to Shpiro-Wilk test is (0.925) at a degree of freedom of (39) and that is significant at a level of 5%. On the other hand, students scores in the post test are normally distributed because the statistics according to Shpiro-Wilk test is (0.964) at a degree of freedom of (39) and that is insignificant at a level of 5%. Previous description of statistics have indicated that post test data are more relevant and homogenous than pre test data.

Upon the contradiction the tests of both groups, two types of tests were applied: (t-test) for normally distributed data, and (Wilcoxon test) for data that do not follow the normal distribution. These two tests are to indicate the

differences between the two data and to indicate whether the Sum of the positive ranked differences is higher than Sum of the negative ranked differences.

T-Test:

Table 3. Paired Samples Correlations

	N	Correlat	Sig.
Pair 1 PRE & POST	39	.747	.000

Table 4. Paired Samples Test

	Paired Differences				t	df	Sig. (2-tailed)	
	mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
PRE - POST Pair 1	-13.7179	5.35060	.85678	Lower	Upper	-16.011	38	.000
				-15.4524	-11.9835			

From the test results, we notice that the computed (t) is (16.011-), and this value is statistically significant because the value of the computed significance is (0.000) and this is less than 5% which in turn rejects the null hypothesis (no significant differences between both scores of pre and post tests) and admit the alternative hypothesis (there are significant differences between both scores of pre and post tests). The conclusion states that students' scores after using the memorization strategies are better than those before using the memorization strategies, and the difference between the two scores is significant which leads us to the importance of using those strategies in memorizing the English vocabulary.

Table 5. Ranks

	N	Mean Rank	Sum of Ranks
POST - PRE Negative Ranks	1a	1.00	1.00
Positive Ranks	38b	20.50	779.00
Ties	0c		
Total	39		

- a. POST < PRE
- b. POST > PRE
- c. PRE = POST

Table 6. Test Statistics

	POST - PRE
Z	-5.436 a
Asymp. Sig. (2-tailed)	.000

1-a. Based on negative ranks.

2-b. Wilcoxon Signed Ranks Test

From the results, the test statistics is (5.436-), and this value is statistically significant because the value of the computed significance is (0.000) and this is less than 5% which in turn rejects the null hypothesis (no significant differences between both scores of pre and post tests) and admit the alternative hypothesis (there are significant differences between both scores of pre and post tests)

Conclusion:

Through using the two tests: (T-test) for data with normal distribution and (Wilcoxon test) for data with no normal distribution, results assure the rejection of the null hypothesis which indicates no differences in students scores before or after using the memorization strategies, and assures the acceptance of the alternative hypothesis which indicates significant and positive change in students scores after using the memorization strategies. These strategies provide an excellent opportunity for both teachers and students to practice thinking skills and at the same time gain the knowledge of vocabulary meaning, spelling, and pronunciation. The six strategies facilitate visual and linguistic skills in authentic real life images and connections. For further research, attention should be directed to developing more strategies that connect memorization skills with the support of technology especially through virtual learning.

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Dedication:

This work is dedicated to my father and mother who wanted me to be a brain artist. I exceeded their expectations and became a scholar. It is also dedicated to my children, my sisters, brothers and best friends for their vital encouragement and support.

