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The Effect of Semantic Mapping on Develop Primary Stage Pupils' EFL Vocabulary Use

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Abstract

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The present study developed EFL vocabulary use skills via a semantic mapping of Abdelsalam Abdelkader Primary Institute in Almanahret, Diar Negm Azhari Administration, Sharkia. They were chosen for the intervention and their ages ranged from twelve to thirteen years old. Vocabulary use skills questionnaire was juried by a group of specialists. Then a vocabulary use skills test was prepared by the researcher and juried as well. The study material was prepared and administered to twenty-six pupils of the experimental group while the control one studied the study material via the regular methods in the second term of 2021/2022 academic year. Results of the study revealed that the experimental group exceeded the control group in the post-administration of the instruments. Moreover, it could be concluded that the semantic mapping was effective in developing vocabulary use skills.

Key words: EFL Semantic Mapping, Vocabulary Use skills. Zagazig, Egypt.

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Background and the problem

One of the main indicators of pupils' advance is their vocabulary. This is because the information a pupil has about a topic is based on vocabulary of that information. The reality of school today is that pupils demand to have academic language to accomplish well. This embrace realizing, gras and using content vocabulary.

Richards and Renandya (2002) repeated that vocabulary is the core of language with its meanings and sounds, which interconnect to allow pupils to communicate with each other and it has an essential role in learning a foreign language. It is an element that links the four linguistic skills of listening, speaking, reading and writing together. Vocabulary provides much of the basis for how well they listen, speak, read and write. Its learning is a fundamental section of instruction because widespread of vocabulary use benefits creating a basis for listening, writing, reading and speaking that associate obviously with academic success (Schmitt & Schmitt, 2020).

Authors have stated that learning vocabulary is a vigorous component for pupils to be functional in the EFL context. As communication can not be accomplished without vocabulary and nothing can be executed as well. It is frustrating when something needs to be mentioned and is obstacle because the semantic is not

obtained for even a simple verb. Thus, they will always want to enhance their dimensions of expanding their stored number of semantics (Folse, 2004, p. 23).

Learning vocabulary is more than realizing its meaning. To have substantial vocabulary learning, pupils can be assisted by furnishing them with more information about the vocabulary and identifying how to learn them. They must obtain a lot of things about vocabulary such as phrases and semantics they need to learn and the amount of knowledge depth of each vocabulary. Pupils can utilize some methods to learn vocabulary such as; using and practicing them in a natural context that is suitable and frequent to their needs. Learning vocabulary can be better through teaching different strategies and techniques that can be even employed outside the classroom (McCarten, 2007).

Many authors portrayed various methods for raising vocabulary acquisition and use such as; Key language acquisition in mind, providing opportunities to mention new vocabulary and delivering chances for writing new vocabulary. Also, offering opportunities to read new vocabulary, using semantic walls, utilizing semantic mapping and using pictures and key semantics to help learners make connections. Realizing which common sounds in English cope with the first language and affording contexts and

using new vocabulary outside of class are methods for raising vocabulary (Hulstijn, 2003).

Many researchers enhanced vocabulary acquisition and use via different strategies, Oberg (2011) compared two approaches, a card-based approach and a CALL-based approach to advance vocabulary retention and acquisition. Pérez & Alvira,(2017) raised the acquisition of vocabulary by three memory strategies; (association with a picture, semantic cards and association with a story or topic).

Furthermore, Salama (2016) developed vocabulary learning via brain-compatible teaching strategies. Qoura (2014) enhanced vocabulary learning through the metacognitive strategy training. Wafi (2013) employed an animated pictures program to enhance vocabulary learning.

Concerning retention, the process of vocabulary retention comprises stating meanings of sentences, paragraphs, semantics and also associating ideas. This is essential for pupils when challenging new vocabulary (Teng, 2019). Vocabulary retention is vitally needed in learning as it is closely attached to reading comprehension skills. It offers more chances for studying fundamental vocabulary instructional techniques (Graves, 2006).

One of the causes of pupils' low vocabulary retention and retrieval can be reported in their learning habits. They are such as

noting down semantics on a piece of paper, studying semantics by heart, heavily depending on semantic lists in a text book and passively waiting for the teacher's explanation for new semantics that seem to be ineffective and make them uninterested in learning vocabulary. For memorizing new items, pupils often use rote memorization techniques, write down the semantics several times, speak aloud the semantics and structure sentences with semantics (Chiu & Liu, 2013).

 Pupils admitted that they failed in recalling most semantics they have learned before as there were no clues. Furthermore, their bad memory can be referred to the lack of suitable vocabulary memorizing strategies. They are not furnished with different vocabulary learning strategies and are not stimulated to use them. They also have no opportunity to utilize semantics in a deeper process, though, working with semantics can be pleasant and satisfying for them (Thuy, 2013).

Thus, there is a vital need to empower pupils with strategies that aid them to upsurge their semantic knowledge. Teaching vocabulary via strategies can benefit them make decisions about their use and also become more autonomous by using stated strategies (Mediha & Enisa, 2014). Consequently, vocabulary learning, acquisition, retention, and use can be meaningfully enhanced. Teaching vocabulary for primary schoolers   needs proper

strategies in order that they do not feel uninterested and become energetic in the classroom. One of the strategies is semantic mapping. It paves the way to make teaching vocabulary effective and easy. By employing it, pupils at the primary stage can discover the connection between the vocabulary semantics (Susanto, 2017).

To classify the reasons for reticent language pupils in the FL classroom, supporters have carried out various studies worldwide. El-Koumy (1999) acknowledged that the semantic mapping has been emerged as a teaching strategy to increase comprehension and become popular in the teaching of reading skills because of its multiple benefits in this field.

Semantic mapping is one of the effective approaches to teaching vocabulary as it involves pupils in thinking about semantic connections. The strategy helps pupils' lively exploration of semantic relationships, thus leading to a deeper understanding of semantic meanings by improving their conceptual knowledge correlated to semantics (Aşıksoy, 2019). Morgan (2003) indicated that exercises of semantic mapping can prepare learners for understanding, assimilating, and evaluating the information they read.

Via this strategy, pupils learn about semantics through mapping as it helps them to probe the characteristics of the semantic concepts, classify semantics and state connections among semantics

that are alike as well as those that may be dissimilar. Such activities are parts of the semantic mapping strategy that lead to a proper understanding of semantics and the ideas that they signify (Pailai, Wunnasri, Yoshida, Hayashi & Hirashima, 2017).

Via this strategy, pupils can identify and grasp the relationship among semantics that relay to vocabulary semantics and their own background or knowledge experience. The pupils are expected to be able to administer them in sentences and even with real practice. With the semantic mapping strategy, the pupils can study reading and writing. It engages them as active learners and also supports them to advance broader definitions and concepts or synonyms/antonyms (Tabatabaei & Radi, 2013).

So, there are various benefits of using the semantic mapping , such as consulting it as a thesaurus and spell-check during writing projects. Pupils can shape semantic power through implicit learning, explicit instruction, multiple exposures and chances for making meaningful connections among semantics (Anuthama, 2010). According to Debate (2006), the semantic mapping strategy can help generating an outline of main ideas and build up schema which do not yet hold. Abdollahzadeh & Amiri (2009) enhanced vocabulary instruction via semantic mapping versus the established traditional vocabulary teaching techniques in Iran.

Context of the problem

There are numerous challenges confronting EFL learners vocabulary use. These include forgetting new vocabulary as they do not use them in their daily life and they are not endorsed by English speakers. This necessitates looking for effective strategies so as to overcome this problem and increase functional levels, stimulate learning and attain vocabulary. To pinpoint the problem, many studies have been carried out in the field of vocabulary use. In their studies, Wang, Teng and Chen (2015); Dewan and Sripetpun (2014) asserted that many EFL pupils' and Akhlaghi and Zareian (2015) performance in vocabulary use was weak and needed to be improved. Semantic mapping may be effective in solving the problem. A pilot study was conducted on thirty primary pupils. Table(1) showes its results.

The problem

Concerning EFL vocabulary use, primary stage pupils lack this skill and have challenges concerning it. To assure the problem, a pilot study was carried out on the stated pupils to determine their actual level in practicing the EFL above mentioned area of vocabulary use. The results revealed that the pupils lack the ability to use vocabulary items correctly. Thus, the recent study tackled this problem via using a semantic mapping to enhance vocabulary use skills. The following results were documented statistically to show

the percentages and frequency of errors in the vocabulary use pilot study.

Table (1) Results of vocabulary use pilot study.

The skills	Freq.	Percent.
1. Use an antonym of vocabulary.	76	40%
2. Connect the target vocabulary with its meanings.	80	34 %
3. Identify synonyms of vocabulary in a sentence.	74	44%
4. Modify the odd vocabulary and replace it.	82	36%
5. Insert the correct vocabulary in multiple choice sentences.	78	42%
6. State harmony of words according to their pronunciation	81	35%
7. Identify the spelling of vocabulary.	76	40%
8. Utilize vocabulary in collocations correctly.	74	44%

Reviewing the pilot results, Percentages of pupils scores of the test were below (50%) concerning vocabulary use. So, the problem raise to be treated. Utilizing the semantic mapping   may be an appropriate administration for the primary stage.

Questions of the study

More precisely, the study addressed the following main
question:

How can the semantic mapping develop EFL primary stage pupils'
vocabulary use skills?

This main question was sub-divided into the following
questions:

1- What are the vocabulary use skills needed for the primary stage
pupils?

2. What was the current level of the primary stage pupils in EFL
vocabulary use skills?

3. What is the effect of the semantic mapping on enhancing EFL
vocabulary use skills of primary stage pupils?

Instruments of the study

The following instruments were designed in order to achieve
the purpose of the study:

1. The vocabulary use skills questionnaire.

2. The vocabulary use skills test.

Significance of the study

This study was hopefully significant in these respects:

1. Adopting the semantic mapping strategy might help primary
stage pupils in developing vocabulary use skills.

2. Providing teachers with effective information for enhancing vocabulary use skills.

3. Results of this study would assist curriculum designers in building up vocabulary items and teaching techniques that might develop them.

Delimitations

This study was delimited to following:-

1. A group of primary six pupils because they lack vocabulary use skills.

2. Some vocabulary use skills of the primary pupils' prescribed book.

3. A semantic mapping program for developing vocabulary use.

4. The academic all the year .

Research design

The research adopted the quasi experimental design of two groups. Participants of the study were assigned as experimental and the control groups. Before and after the experiment, both groups were administered the pre-post test of vocabulary use skills.

Figure (1) The experimental design of the study

Group	Key Procedures		Independent Variables
	Pre-test Administration	Post-test Administration	
Experimental	✓	✓	

Instruments

In the light of the study variables, the following instruments were designed by the researcher and comprehended:

1. The vocabulary use skills questionnaire.
2. The vocabulary use skills test.

Definition of terms

Semantic mapping:-

Semantic mapping :- is a tool for discovering the conceptual relationship between vocabulary items (Nilforoushan, 2012). The semantic mapping strategy is one of the most powerful approaches to teaching vocabulary because it engages pupils in thinking about semantic relationships. (Graves, 2008: p. 94).

The semantic Mapping :- is one of the most powerful approaches to teaching vocabulary because it engages pupils in thinking about semantic relationship.(Graves,2008:p.94).

Operational definition of semantic mapping:-

 In the study, it was used to mean a method of vocabulary instruction that allows pupils to make connections between vocabulary items and other related semantics or semantics that are already known. It uses symbols, pictures, colors and lines.

Vocabulary can be defined as "semantics, we must know to communicate effectively; semantics in speaking (expressive vocabulary) and semantics in listening (receptive vocabulary)" (Neuman & Dwyer, 2011, p. 385).

Vocabulary use can be defined operationally as the primary stage pupils` capability to use the vocabulary and employ it outside the classroom and in their daily life.

The vocabulary use skills test

Purpose

This test was designated to:

-Equivalence the participants' pre/post vocabulary use skills.

-Measure the impact of SMS on enhancing the participants' vocabulary use skills.

Content and description of the test

The test consisted of twelve questions under the main domain, and modifications were proposed. Based on the list of the vocabulary use skills absorbed through the results of the questionnaire.

The test entailed items about spelling, meanings, antonyms and modification of the odd vocabulary and replacing it with a convenient one. Utilizing collocations correctly, inserting the correct

vocabulary in multiple-choice sentences and attaching the target vocabulary with its picture were inserted as well. Furthermore, the test comprehended producing the appropriate word form to express the target meaning and identifying the synonym of vocabulary in a sentence. Stating harmony of words according to their pronunciation, identifying the meaning of vocabulary in a context, offering a situation for using the vocabulary in a sentence and connecting the target vocabulary with its context were comprised.

Sources of the tests

For preparing the test, the following procedures were stated:

-The test comprised twelve questions administered to the participants out of their prescribed curriculum.

- Questions of the test were designed according to the target-six units of the second term, Teachers' Guide for primary six, The Ministry of Education Directives (2021-2022) and the identified skills to be gauged by the test through the yields of the EFL vocabulary use skills test.

- Instructions of the test were detailed such as; providing sufficient time for reading, preserving objectivity and avoiding vagueness.

Validity of the test

The test was delivered to a group of EFL specialists and professors at the Faculties of Education and Faculty of Languages and Translation, teachers and supervisors. Jurors mentioned their perspectives abthe out obviousness and suitability of each item rendering the significance of the skills of the participants and layout transparency and agreement. At the end, all required modifications were accomplished according to the jurors' explanations. Jurors limited the needed suggestions and modifications as the following:

Table (2) Statistics of vocabulary use skills test.

Skill	Very important	Important	Less important
1	75%	23%	2%
2	76%	18%	6%
3	39%	22%	39%
4	28%	45%	27%
5	44%	30%	26%
6	25%	23%	52%
7	70%	25%	5%
8	28%	39%	33%
9	62%	22%	16%

10	22%	66%	22%
11	39%	28%	33%
12	25%	23%	52%
Per.	100%	100%	100%

Table 2 shows the validation percentage of the test rendering to the jurors' perspectives. Jurors reviewed the sha difficulty of questions included in the test.

In the light of the jury members' modifications, perspectives and results of piloting the tests, the final version was equipped.

Validity was valued through the following formula:

Test validity = $\sqrt{reliability}$

It was (0.94) and this designated that it was valid for administration

Reliability of the test

The reliability of the test was measured by different techniques. The first was the split-half technique, its results exposed that the reliability of the test was (0.87). Spearman and Brown technique was (0.69) and Alpha-Cronbach method was (86%). These results approved that the test was statistically reliable.

The following table showed its reliability.

Table (3) Reliability of the vocabulary use skills test

The test	Split half technique	Spearman and Brown	Alpha – Cronbach
The vocabulary use skills test	0.87	0.69	.86

According to Table 3, the reliability was (0.86), this result emphasized the high reliability of the test.

Instructions of the test

Content and instructions of the test were described orally and obviously by the researcher for the participants when pre-used to sidestep misunderstanding.

Scoring the tests

Scoring the test was attached by a key answer organized by the researcher. It comprised twelve questions and the total score of each test was twelve grades with a model answer for all the questions.

Piloting the test

Piloting the test aimed at stating the allotted time and determining its simplicity/difficulty.

A. Timing the test

Time of the test was identified by measuring the whole time spent by all participants and dividing it by number of the pilot study.

The time spent by all participants (minutes)

Participants' number

900/ 15 = 60

Therefore, the fixed time for answering each test was sixty minutes.

Difficulty coefficients

As the vocabulary use skills test included various questions, to determine its difficulty, discriminations and the difficulty coefficients of these questions were accomplished. the following steps were traced: Detecting 25% answers of the highest participants' and the lowest answers to each question. Categorizing the total scores of each question. Determining the difficulty coefficients through calculating the percentage of each question with wrong answers rendering to the following formula:

Difficulty co. =Total groups marks of the question
Total participants' number X mark of the question

Results revealed that the difficulty coefficient of questions of the test was rated between (0.65-0.75). So, the difficulty and the simplicity of the test were suitable for the pupils and all the questions were accepted. Piloting the test nominated that they were clear enough with no difficulties. So, they were complete to be administered.

Discrimination coefficient

It aimed at stating the virtue of questions of the test to capitalize between the low and the high level of the participants. It was schemed according to this technique:

Discrimination Co. =

Total marks of the higher group-total marks of the lower group

One group number X mark of the question

Table 4 labelled the difficulty and discrimination of the questions of the test:

Table (4) Discrimination coefficients of questions the test

Ques No.	Total marks of the higher group	Total marks of the lower group	Difficulty Co.	Dis Co.

1	58	43	0.72	0.21
2	67	55	0.76	0.15
3	85	57	0.71	0.28
4	84	48	0.66	0.36

In table (4) the discrimination coefficient was rated between (0.15-0.36). These standards were acceptable. So, all the questions of the test were accepted for administration.

Administration of the test

Pre-administration of the test was carried out to the participants in the seventeenth of October of the second term 2022 of the academic year. The post-administration was accomplished three days after conducting the intervention. Participants were given instructions for answering the test before they began. Their comments were bizarre as they voiced their illiteracy of these skills.

Results and discussion
Results

To state whether participants' vocabulary use skills improved after adopting the experimental intervention or not. Hypotheses of the study were verified by the *Statistical Package for Social Science*

(SPSS). Statistical analysis of the test and the scale conducted for the study encompassed the *paired samples t-test* and *the one-way analysis of variance (one-way ANOVA)*.

Verifying the study hypotheses

The first hypothesis: *It was hypothesized that there was a statistically significant difference between the mean scores of the post-test of the experimental and the control groups in the vocabulary use skills in favor of the experimental group.*

For validating this hypothesis, the one-way ANOVA was adopted and the results were registered in table 5.

Table (5): Comparing post vocabulary use skills of the control and the experimental groups.

Skill	Group	N	M	D S.	df	t-value	Sig
Vocabulary use skills test	Control	30	14.17	4.37	58	12.85	0.000*
	Experimental	30	35.87	8.14			

In table 5, the mean scores of the experimental group, (35.87), was higher than that of the control, (14.17), group. Also, the standard deviation of the experimental was (8.14) and the control gained (4.37). Thus, the experimental group excelled the control group. A statistically significant difference at (0.05) level was documented

between the whole attained mean scores of the experimental and the control groups in favor of the experimental one of the post administration of the vocabulary use skills test. This mean that the SMS among other variables, not measured by this study, was effective in improving the participants' vocabulary use skills.

The third hypothesis: *It was hypothesized that there was a statistically significant difference between the mean scores of the post-test of the experimental group in their vocabulary use skills in favor of the post-administration.*

For verifying this hypothesis, the one-way ANOVA-test was adopted and documented in table 6.

Table (6): Post results of the experimental group in vocabulary use skills test.

Skill	Test	N	M	S.D	df	t-value	Sig
vocabulary use skills	Pre	30	14.70	3.385			0.000*
	Post	30	35.87	8.144	29	14.58	

Results in table 6 designated that the pre mean scores of the experimental group of their vocabulary use skills were (14.70). But, the mean scores of the post-administration were (35.87). It could

also be noticed that t-value for the overall vocabulary use skills test was (14.58). S. D. of the pre-administration was (3.38) but for the post-administration, it was (8.14), this means that there was an enhancement of the vocabulary use skills and the value is significant at 0.05 level in favor of the SMS. So, this hypothesis was valid and accepted.

The effect size

The sixth hypothesis: *It was mentioned that the SMS was effective in develop the primary stage pupils' vocabulary use skills*.

To validate this hypothesis, the effect size was gauged by using the paired sample t-test to equivalence the scores of the experimental group in their vocabulary use skills as a whole of the pre and the post test exploiting Cohen's formula.

The results were documented in table 7.

Table (7): The effect size of the experimental group in the pre and post vocabulary skills test.

Skill	Test	N	M	S.D.	t-value	Eta square	Effect size
Overall EFL vocabulary use	Pre	30	14.70	3.385	14.58	0.749	1.727 *Large*
	Post	30	35.87	8.144			

In table 7, scores of the post test were higher and greater than the pre-scores of the vocabulary use skills test, the effect size was, large, (1.72) for overall level. Consequently, this hypothesis was asserted and these differences could be designated to the SMS.

Results of the study

The SMS was effective in developing the primary six pupils' vocabulary use skills.

Conclusion

The following items were outlined;

1. The recent study proposed evidence that the primary six pupils' vocabulary use skills can be developed via SM.

2. Teaching EFL vocabulary use skills through SMS bring about remarkable learning outcomes.

3. Using SMS was so helpful in presenting a lot of choices rather than the regular one.

4. Getting instructions from the study material enabled pupils to ask and answer questions about vocabulary use skills then it aided them to understand what they were accomplishing.

5. The pupils became excited to make use of the SMS in their learning; therefore, they were supposed to utilize them in their future teaching practices.

6. The participants fabricated many ideas for the problem and possessed the ability to grasp it and share in the solution.

7. Likewise, using SMS developed cooperative learning among the same group and competitions among themselves. Shy low-achievers and participants become more activated to interact and participate.

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