



Investigating the Effect of Morphology Instruction through Semantic Mapping on Vocabulary Learning of Iranian Intermediate EFL Learners

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Abstract

The aim of this study was to investigate the effect of morphology instruction through semantic mapping on vocabulary learning of Iranian intermediate EFL learners. To do so, 50 out of 70 students were selected from one English language institute by administrating a PET test. Then, they were assigned into two groups randomly as experimental and control groups. A pretest (teacher made) was administered to both groups for ensuring their level of vocabulary knowledge. After ten sessions of treatment only for the experimental group, a teacher made posttest was given to both groups. To analyze the data, independent samples t-test and paired samples t-test were conducted .The results revealed that there was a statistically significant difference between two groups but no significant difference was found between the female and the male participants.

Keywords: morphology, semantic mapping, vocabulary learning

INTRODUCTION

Learning vocabulary is a significant issue for both EFL and ESL language learners. Majority of students fail the understanding of the new terminology they are exposed to. Gu (2002) asserted that because of the lack of appropriate mental lexicon, they cannot have dynamic participation in the classroom activities. In fact, it is the knowledge of words that can position students into different proficiency levels. For this, the way of remembering words plays a vital role in language learning. Min and Hsu (2010) stated that vocabulary learning is closely associated with foreign languages. In the foreign language learning process, the readers need to comprehend most of the vocabulary and the related meanings used in the passage.

According to Kamil and Heibert (2005), vo

cabulary can be basically defined as understanding of words or word meaning. They emphasized that vocabulary is the foundation of language without vocabulary, however, one cannot acquire any language.

Brown (2004) suggested that basic building blocks of language are words; in fact, when people bond words together without using any grammatical rules at all, survival level communication can occur quite comprehensibly.

Rivers (1983) has claimed that the acquisition of an acceptable vocabulary is critical for successful second language learning because without widespread vocabulary, the learners will be incapable to use the structures and functions that they have learned for comprehensible communication.

This research attempted to use one of the beneficial ways of learning words, which is

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related to morphology. The idea came from Sattary's (2004) suggestion that many words could be broken down in smaller units named morphemes.

According to Dalton-Puffer (1996) morphology consists of two parts: inflection and derivation. Inflection makes word-forms, which reflect the grammatical functions within sentences, such as case, number or tense. Moreover, derivation is the process of forming a new word out of an old word, usually by adding a prefix or a suffix.

Semantic mapping is another strategy for learning vocabulary. Pearson and Johnson (1978) asserted its use for a group of words, which are related to one single topic. It is a graphical model designed to help students recognize important ideas that they match together in a text, and there are multiple relations between a concept and the associated knowledge with the concept. The researchers believe that graphic organizers are great tools for retention information and an outstanding technique that can support students with learning disabilities. Gajria et al. (2007) explained that graphic planners create materials that are more problematic for learners with learning disabilities by semantic maps to make it more understandable and easier.

Graphic organizers can be used in an unrestricted number of techniques. They can be used through the learning periods as well as independently. Ellis (2004) emphasized several stages that instructors can employ when using graphic organizers. They must first clarify how the organizer is used. In this way, pupils will acquire about both how content is organized and how the graphics work in these graphic plans. Then, there must be displaying on how to use the process, monitored by guided practice. Guided practice can be done in several phases. First, pupils practice as a whole class. Here the teacher and all students give ideas on how to a complete graphic organizer. Second, there can be small group practice, where students learn from their peers. Lastly, students work with the organizer on their own but get support when required .

A semantic map can be used as an instrument for determining the abstract relationships between vocabulary items. Semantic amplification seems to enrich word learning and retention, through a learning phase called 'integration' (Shostak, 2003). According to Meyen, Vergason and Whelan (1996) graphic organizers are "visual displays teachers use to organize information in a manner that makes information easier to understand and learn" (p.132).

As the aim of this research was based on the impact of the morphology instruction through semantic mapping for vocabulary learning, the researchers endeavored to use the morphology and the semantic mapping together to present words by means of a more effective technique that students did not use very often. The assumption was that by combining these two ways, vocabulary learning would improve.

Review of Literature

Students of language are generally aware of the importance of vocabulary knowledge. They believe that, it plays a crucial role in their learning process. Hansen (2012) has pointed out that word knowledge, accepted now as fundamental part of the language learning process is considered a vital element in L2 competence. Bagheri and Namdar (2011) proposed that the objectives of vocabulary teaching must be more than simply translating and defining certain number of words. There is no aspect of language that is more significant than vocabulary building and comprehension. For many academic disciplines, having a good understanding of technical vocabulary is a necessity. Takac (2008) asserted that vocabulary learning is the acquisition of memorized lexical items that attend as a form in mental lexicon when the learner produces new words. The main task is to realize the patterns in the language, beginning from phonological classes, phonotactic sequences (i.e. permissible planning of phonemes), and morphemes, to collocations and lexical phrases, and their analysis into meaningful units or chunks (which are units of memory union).

L2 vocabulary acquisition is different from L1 vocabulary acquisition, Takac (2008) asserted that it is because an L2 learner has already developed conceptual and semantic schemes linked to their L1. The reason is that L2 acquisition, at least in its early stages, often includes a mapping of the new lexical system, which is presented as abstract meaning or translational equivalent in L1. Depending on the amount of equivalency between languages however, a certain L1 might play different roles in this regard: while in some circumstances it may simplify the acquisition or use of L2 lexical items, in others it might cause difficulty. Understanding an L2 lexical item contains several constituents. Mostly, it is categorized by numerous scopes of word familiarity (i.e. phonological and orthographic, morphological, syntactic and semantic) and by information of abstract basics that govern the location of the vocabulary item in our conceptual system. In conclusion, it certainly embraces the capability of productive use, i.e. well-organized retrieval of the lexical item for dynamic use.

Semantic mapping

According to Holme (2009) there is hyponymic relationship between category members of the words. The superordinate word in the category in a hyponym hierarchy is the more abstract and the more schematic, and the subordinate, the less so. In all languages, the more schematic categories do not always exist. The least schematic categories, the more subordinate one, may not be recognized by some languages, or even if recognized they may not be known by all the native speakers of a language. It is challenging for some people when questioned to name some quite common flowers, whilst others will have problems with car parts. Generally, we seem to descend to middle-range categories, talking about 'cars' or 'flowers' as contrasting to specific examples of the same, or some highly abstract and general term such as 'organism'. In Greek, the meaning of 'schema' is 'appearance'. In Gestalt psychology, this is a noticeable shape or figure planned memory

(Stafford, 2007).

Allwood and Gardenfors (1999) asserted that the semantic approach is characterized by the fact that it is cognitive, dynamic and context-sensitive. Meaning and concepts are primarily taken to be cognitive phenomena and are studied in terms of operations on information rather than as static entities. Cognitive semantics is still rather undeveloped. Its most detailed applications have been areas where language is tightly bound to perception as, for example, in spatial prepositions.

Taking into account semantic mapping as an motivating strategy introducing new vocabulary to students, Klingner, Vaughn, and Boardman (2007) proposed that semantic maps are used to support students acquire main words and to make connections with related key words or ideas. Semantic maps are as webs with connections shown by lines. Teachers may create a semantic mapping activity before presenting key terms to activate background knowledge. On the other hand, semantic maps may also be used after reading to summarize and reviewing key terms and concepts, and to casually evaluate student understanding. Semantic maps introduce numerous key terms and concepts and permit students to realize how the ideas are related to one another. Klingner, Vaughn, and Boardman (2007) have pointed out that the process of forming relations between related vocabulary terms is especially useful for students with a restricted vocabulary or understanding of the concept; these students need support to make connections and expand their understanding.

Morphology

Morphology is an essential subfield of linguistics; Hamawand (2011) stated that, generally, morphology targets to define the organizations of words and arrangements of word formations in a language. The study of morphology reveals the lexical properties of language, helps students to obtain the skills of using them artistically, and subsequently prompt their opinions and feelings with articulateness.

According to Álvarez, Urrutia, Domínguez, and Sánchez-Casas (2010) inflectional and derivational morphology show two types of morphological relationships, inflections (gender, number and verbal) have syntactic functions facilitating the agreement between words (e.g., “the boy plays” vs. “the boys play”), without changing in the basic meaning of the word. On the other hand, derivations have thematic role (for example, converting nouns into agents, “walk”-“walker”), do not have syntactic role, and are specially related to the semantic variation of words.

Lexical word-formation is related to the dictionary. Huddleston and Pullum (2002) believe that it defines the developments by which new vocabulary bases are designed. Word-formation studies the formation of new words and the ideologies involved in doing so. It comprises different manners, which are used to figure new vocabulary items from existing ones. Word-formation is a vital tool in the hands of speakers because it supports them to generate words that represent the experiences they meet in the world. Each word replicates a distinct conceptualization that embodies a different mental experience. In this way, morphology is concerned with the processes of creating words, that is, how words are formed from minor units and how the smaller units cooperate in speech. In the course of forming words, two main processes occur: derivation and compounding.

Plag (2002) stated that by ‘word-formation’ proposes, we are dealing with the formation of words ,thus, before turning to the usage of the terms presented in this part, it is better to clarify the division between ‘root’, ‘stem’ and ‘base’, because these terms are not always obviously defined in the morphological texts and are consequently a latent source of misperception. The reason for this regrettable lack of clearness is that languages vary oddly in their morphological make-up, so that different vocabularies imitate different organizational values in different languages. The part of a word, to which an affix is attached, is called “base”. We will use the term

“root” to state the bases of words that cannot be evaluated further into morphemes. For bases of inflections the term ‘stem’ is usually used, and infrequently also for bases of derivational affixes. To avoid terminological misperception, only the terms root and base will be used in this study. In all other forms, whether the position of a form is inseparable or not is not at issue, only the term bases or base-words will be used. The derived word will be mentioned as a derivative.

In order to investigate the impact of the morphology instruction through semantic mapping for vocabulary retention, the following questions are generated:

1. Does the morphology instruction through semantic mapping have any statistically significant impact on Iranian intermediate EFL learners' vocabulary learning?
2. Is there any statistically significant difference between male and female EFL learners in terms of the morphology instruction through semantic mapping?
3. Is there a statistically significant change in participants' knowledge of vocabulary before and after the treatment?

Method

Participants

The participants of this study were selected from one of the English language institutes in Tehran named Pishgaman Karenoo Safir. Seventy students aged 16 to 25 were selected from both male and female intermediate level EFL learner.

To ensure the homogeneity, the PET (Preliminary English Test) was administered. Participants were selected by estimating standard deviation; those whose scores were one standard deviation above and one standard deviation below the mean score were selected for this study. After choosing the participants, each of them was put randomly into two different groups, the experimental group (who received the treatment) and the control group (who did not receive the treatment).

Instruments

The Preliminary English Test (PET): A version of Preliminary English Test written by Quintana (2003) was administered to the participants before the treatment in order to compare their means and make sure that there was no difference between them.

Material: This study tried to investigate the impact of the morphology instruction through semantic mapping for the vocabulary learning, for this, the researchers designed a booklet containing the maps of different vocabularies retrieved from the books (Touchstone Intermediate level) and vocabulary book (Oxford Word Skill Intermediate level) based on morphology and semantic mapping as the course book at the institute.

Pretest and Posttest: The researchers of the present study made a seventy-item multiple choice vocabulary test, devised and prepared from two hundred and forty words, retrieved from the material before the treatment. After piloting the test to a similar group, the non-functioning and malfunctioning items were omitted and the imperfect stems were revised. After omitting the defective items, the remaining sixty multiple choice questions, based on odd and even numbers of the tests, were divided into two sets of tests as a pretest and post-test (every test contained thirty items). Having piloted the tests, ten of the defective questions were deleted, those malfunctioning and non-functioning distracters were altered, and the defective stems were redefined.

Novelty Test: Two hundred and forty words of the booklet were chosen for the test of the novelty. Vocabularies of the booklet were derived from the books as the course book at the institute (Touchstone intermediate level) and vocabulary book (Oxford Word Skill intermediate level). The participants had already studied vocabularies during their time at the institute. The reason for designing such a test was to check whether to-be-instructed words were familiar to

the learners and to estimate the differences between implicit and explicit way of vocabulary instruction.

Procedure

In order to investigate the probable impact of the morphology instruction through semantic mapping on vocabulary retention, this study ran into three stages. In the first stage, the PET (Preliminary English Test) was given to the participants to be assured that they are at the same level of language proficiency. The number of participants who took part in this test was 70.

Based on the result of the homogenization process, those participants whose scores were one standard deviation above and one standard deviation below the mean score were selected. The number of remaining participants after passing the test was 50. In the next stage, they were assigned into 2 groups, experimental (25) and control groups (25). In the second stage, the participants in the control group did not receive any treatments; they only received the usual instruction of the institute. On the other hand, the experimental group was trained using morphology instruction through semantic mapping for ten sessions (two maps every session). In the third stage, the participants were given the post-test in order to investigate the participants' vocabulary improvement after the treatment. After collecting data, the scores for each participant were tabulated and subjected to statistical analyses in order to provide answers to the research questions.

Design

The sampling design in this research was intact group design since the researchers were not permitted to manipulate the learners grouped in classes of the institutes. The major design of the research was quasi experimental, since not all the variables were controlled but a single one, and the result of the study was of limited generalizability.

According to Dornyei (2007) because in educational contexts true experimental design is not very practicable, quasi-experimental design is proposed. To improve the internal validity: the

researchers tried to prevent self-selection of students to be in the treatment group.

Data Analysis

First Research Question

The first research question of this study was whether the morphology instruction through semantic mapping has statistically significant

impact on Iranian intermediate EFL learners' vocabulary learning.

In order to answer this question, Independent Samples t-test was employed. To perform Independent Samples t-test, first descriptive statistics of the participants' scores in the control and the experimental group on vocabulary pretest and posttest were calculated.

Table 1.
Descriptive Statistics of Two Groups' Scores on Pretest and Posttest

		Statistics			
		Control Pretest	Control Post-test	Experimental Pretest	Experimental Posttest
N	Valid	25	25	25	25
	Missing	0	0	0	0
Mean		9.08	11.20	9.88	23.44
Median		8.00	10.00	10.00	25.00
Mode		8	9	9 ^a	25
Std. Deviation		3.499	3.841	3.113	4.350
Variance		12.243	14.750	9.693	18.923
Minimum		1	5	4	11
Maximum		15	19	16	28

Independent Samples t-test (see Table 2.) indicates that there was no statistically significant difference in scores between the two groups at pretest with ($t = .146, p = .883, p > .05$) in control pretest, and ($t = .010, p = .992, p > .05$) in experimental pretest, in which the t -observed 0.146 and 0.010 was lower than the t -critical, 2.00, and the p value, .88 and .99 were higher than .05.

Independent Samples t-test (see Table 2.) indicates that there was a statistically significant

difference in scores between the two groups at posttest with ($t = .021, p = .983, p > .05$) in the control posttest, and ($t = 2.543, p = .018, p > .05$) in experimental posttest, in which the t -observed 2.543 was greater than the t -critical 2.00, and the p value, 0.18 was less than 0.05. It indicates that the null hypothesis that was "the morphology instruction through semantic mapping does not have statistically significant impact on Iranian intermediate EFL learners' vocabulary learning" **was rejected**.

Table 2.
Independent Samples Test to Compare Control and experimental Groups' Scores on Pretest and posttest

		Independent Samples Test					
		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Control Pretest	Equal variances assumed	.730	.402	.149	23	.883	.222
Experimental Pretest	Equal variances assumed	1.100	.305	.010	23	.992	.014
Control Posttest	Equal variances assumed	4.401	.047	.021	23	.983	.035
Experimental Posttest	Equal variances assumed	15.607	.001	2.543	23	.018	4.160

Second Research Question

The second research question of this study was whether there was any statistically significant difference between male and female EFL learners in terms of the morphology instruction through semantic mapping. In order to answer this question, Independent Samples t-test was used. To run Independent Sample t-test, first the descriptive statistics of participants' performances of the two female and male groups on both pretest and posttest were calculated and are

presented in Table 3.

According to the table, the average mean score of female group was 9.44 with the standard deviation of 3.1, and the mean score of male group was 9.56 with the standard deviation of 3.65, which are not far from each other denoting similar ability of the two groups on pretest. Besides, on posttest, the average mean score of female group was 18.06 with the standard deviation of 7.56, and the mean score of male group was 16 with the standard deviation of 7.09.

Table 3.

Descriptive Statistics of Female and Male Groups' Pretest and Posttest

	Gender	N	Mean	Std. Deviation
Pretest	male	18	9.56	3.650
	female	32	9.44	3.151
Posttest	male	18	16.00	7.096
	female	32	18.06	7.569

Independent Samples t-test results in Table 4 shows that there was no statistically significant difference in scores between the female and the male groups on pretest with ($t = .12$, $p = .90$, $p > .05$), in which the t -observed, .12 was lower than the t critical, 2.00 and the p value, .90 was higher than .05.

T-test results (see Table 4.) revealed that there was no statistically significant difference

in scores between the female and the male groups on posttest with ($t = -.94$, $p = .34$, $p > .05$), in which the p value, .34 was more than .05 level of significance, and our t value, -.94 was below t critical, 2.00. This indicates that the second null hypothesis "there is not any statistically significant difference between male and female EFL learners in terms of the morphology instruction through semantic mapping" **was not rejected**.

Table 4.

Independent Samples Test to Compare Female and Male Group's Scores on Pretest and posttest

		Independent Samples Test					
		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Pretest	Equal variances assumed	1.585	.214	.120	48	.905	.118
Posttest	Equal variances assumed	1.500	.227	-.945	48	.349	-2.063

Third Research Question

The third research question of this study was whether there was any statistically significant change in participants' knowledge of vocabulary before and after the treatment. In order to investigate the difference between learners' knowledge of vocabulary before and after the

treatment, a Novelty test was administered.

Paired-samples t-test (also referred to as repeated measures) is used when you have only one group of people (or companies, or machines etc.) and you collect data from them on two different occasions, or under two different conditions. Pre-test/post-test experimental designs are

an example of the type of situation where this technique is appropriate.

According to the table 5, the average mean score of the experimental group before the

treatment was 63.88 with the standard deviation of 28.377, and the mean score of the experimental group after the treatment was 174.52 with the standard deviation of 30.463 in Table 5.

Table 5.

Descriptive Statistics of the Scores of the Experimental before and after the Treatment

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before	63.88	25	28.377	5.675
	After	174.52	25	30.436	6.087

Based on the statistics on Table 6, we can conclude that the p value 0.000 is less than .05 so

there is a significant difference between the two scores. So the third null hypothesis **was rejected**.

Table 6.

Paired Samples Test of the Scores of the Experimental before and after the Treatment

		Paired Samples Test				
		Paired Differences		t	df	Sig. (2-tailed)
		Mean	Std. Deviation			
Pair 1	Before -After	-110.640	58.303	-9.488	24	.000

Result and Discussion

The present study mainly aimed at verifying the effect of morphology instruction through semantic mapping on vocabulary learning of Iranian intermediate EFL learners.

The findings of the current study show significant differences between the experimental and the control groups in their knowledge of vocabulary. The present study is in the line with Oxford and Scarcella's (1994) assertion on the value and importance of vocabulary instruction. Based on their finding, there is a place for both inductive and deductive vocabulary instruction. These two ways help learners develop their knowledge of vocabulary. Inductive instruction naturally needs much more time in vocabulary learning than deductive instruction and provides learners with exposure to the forms, functions, and meanings of lexical items through meaningful communication. However, deductive and systematic vocabulary instruction also has a significant place since it underpins L2 learners' own efforts to obtain vocabulary both inside and outside of class. Oxford and Scarcella (1994) believe if vocabulary teaching is ignored in an L2 class, pupils them

selves will solely find ways to memorize words without others help. If we support students through some instructional activities, learning vocabulary can be much easier. Fully contextualized scaffolding, such as the partially contextualized practice is helpful, but it is not enough. Decontextualized activities are less useful, unless some grade of context or meaning is added, making these activities partially contextualized. In this approach, there is a position for both indirect and direct vocabulary instruction. Both provide learners with the specific types of support, which encourage language growth. Indirect instruction typically needs much more time in vocabulary learning than direct instruction and provides learners with exposure to the forms, functions, and meanings of lexical items. However, direct and systematic lexicon instruction has a significant place, and supports the L2 learners' own efforts to obtain vocabulary both inside and outside of class.

Considering semantic mapping as a useful graphic strategy, Asadollahfam and Shiri (2012) proposed that it could be an effective way to improve reading comprehension. Conducting a

research based on the effect of semantic mapping strategy, Zahedi and Abdi (2012) concluded that there is a close relationship between vocabulary learning, deep processing, cognitive processes, and better maintenance. In addition, it is claimed that the deeper the level of processing on an item, the more likely it is recalled. Baleghizadeh and Yousefpoor Naeim (2011) suggested this technique for private teachers who have a single learner classes because the number of words offered to private learners is much more than those offered to group classes, and private teachers have more time to allocate to a single learner. The researchers utilized two semantic mapping strategies and they believed that learner's retention would improve using these strategies. The findings of the study proved that semantic mapping strategy did help the learner's retrieval better. Saeidi and Atmani (2010) found a significant difference between the performance of intermediate students who used semantic mapping as a pre-reading activity for vocabulary learning and the performance of those who did not use this technique. The outcomes showed that the semantic mapping technique could be used as an effective method for teaching vocabulary in language classes. However, they did not find any significant difference between the performances of male and female students who received semantic mapping as a pre-reading activity for vocabulary learning. On the similar line of research, Smith and Humphreys (2006) asserted that semantic mapping system could allow a much larger contextual corpus of material to be mapped, which may make explicit some of the implicit background Semantics. Zaid (1995) asserted that a beneficial technique in EFL classes based on CLT activities can be semantic mapping.

Khodadoust, Aliasin, and Khosravi (2008) attempted to examine the relationship between Iranian EFL learners' morphological awareness and receptive vocabulary knowledge. A positive connection was found. In fact, this close link indicated that the more morphological awareness the learners

possess; the more easily they raise their vocabulary knowledge.

Conclusion

In summary, this study is the first of its kind to help learners boost their knowledge of vocabulary in a short time. The results suggest that using semantic mapping, as a vocabulary learning technique along with morphology may be beneficial for those who want to take part in the process of language teaching and learning. Almost all the pupils have difficulties in speaking English because their limited knowledge of vocabulary prevents them from having active participation in the classroom activities. Therefore, everyone needs a great deal of vocabulary to converse actively and convey the message more easily. Moreover, it may have some implications for syllabus designers and textbook writers. Vocabulary instruction through semantic mapping might be helpful to be incorporated in the syllabus or be used as supplementary material. It could be pointed out that in this way, learning vocabulary can be more interesting and more authentic to learners. Semantic mapping can create a more enduring information to achieve deeper knowledge of vocabulary. They could develop the amount of understanding and reduce difficulties in understanding abstract terminologies. Exploring more about the application of various semantic maps remains a fruitful area for further research.

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