



## The effects of explicit and implicit instructional techniques (glossing semantic mapping, and imagery) on L2 vocabulary comprehension and production

<sup>1</sup> Abbas Ali Zarei, <sup>2</sup> Soheila Sepahian

<sup>1</sup>Associate professor, Imam Khomeini International University, Iran

<sup>2</sup>MA, Islamic Azad University, Qazvin Branch, Iran

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**Abstract:** The present study investigated the effects of explicit and implicit use of three presentation techniques (glossing, semantic mapping, and imagery) on Iranian EFL learners' vocabulary comprehension and production. The participants were 175 intermediate learners at Marefat Language Institute in Qazvin, Iran. To make sure they had no previous knowledge of the target words, a pretest was administered. Those words which were already familiar to the participants were excluded from the post tests. The participants were then divided into six groups, with each group receiving a semester-long instruction through one of the three methods of vocabulary presentation either explicitly or implicitly. At the end of the treatment period, the participants' knowledge of receptive vocabulary was assessed through a multiple-choice test, and their knowledge of productive vocabulary was measured through a fill-in-the-blanks test. The collected data were analyzed using four separate one-way ANOVA procedures. The results showed that explicit instruction affects L2 vocabulary comprehension and production. It was also revealed that implicit use of these techniques only affects vocabulary comprehension.

**Key words:** Explicit . Implicit . Glossing . Semantic mapping . Imagery . Vocabulary comprehension . Vocabulary production

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### INTRODUCTION

Vocabulary is a central part of language proficiency and accounts for much of how well learners interact with each other. This makes it critical to learn a large body of vocabulary.

Vocabulary teaching has caused a substantial amount of debate during its fairly long and colorful history. Owing to recent advances in the field, much of the argument has now been settled. For instance, the traditional decontextualized memorization of vocabulary lists has now lost much of its credibility. At present, there is a consensus on how words should 'not' be learned. However, there is still a lot of controversy concerning how they 'should' be learned. The introduction of new strategies and techniques for teaching vocabulary has sparked off even further debate about which method is the best.

Zimmerman (1994) believes that teaching vocabulary was underestimated in the area of second language learning. However, in recent years, the teaching of vocabulary has gained the attention it deserves. This shift of attitude has been for three reasons (Nunan, 1999): (a) theoretical developments in the linguistic

study of vocabulary, (b) opening up of new possibilities as a result of the development of computer-based language corpora, and (c) the impact of comprehension- and strategy-based methods on language improvement. The question of which strategies and tasks are more effective in helping students learn words in the most economical way has long been of interest to many second language teachers. Laufer (2010) holds that attention should be focused on the implementation of more useful approaches and techniques for the teaching of vocabulary. Different approaches, methods, and techniques have so far been suggested.

More attention has been paid to word learning strategies in recent years as a way of aiding L2 word learning. Such strategies include the use of a dictionary, repetition and rote learning, guessing from context, making inferences from the vocabulary form, linking to the prior knowledge, connecting to cognates, and classifying vocabulary items in the mind (Cook, 2001). Gu (2003) points out that from note taking to practice and guessing to dictionary use, word learning is a dynamic procedure entailing metacognitive options and cognitive realization of strategies. Hulstijn (1993) also argues that teaching vocabulary does not inevitably

entail teaching particular words, but rather presenting learners with the strategies crucial to enlarging their vocabulary.

Vocabulary learning has been a matter of long standing concern for researchers, and many studies have been conducted to explore how L2 words can be learned more effectively and how teachers can aid learners to achieve this goal. However, a few studies have compared explicit and implicit methods of teaching vocabulary. The present study is an attempt to partially fill this gap. It aims to address the following research questions:

1. Are there any significant differences among the effects of explicitly-used presentation techniques (glossing, semantic mapping, and imagery) on L2 vocabulary comprehension?
2. Are there any significant differences among the effects of explicitly-used presentation techniques (glossing, semantic mapping, and imagery) on L2 vocabulary production?
3. Are there any significant differences among the effects of implicitly-used presentation techniques (glossing, semantic mapping, and imagery) on L2 vocabulary comprehension?
4. Are there any significant differences among the effects of implicitly-used presentation techniques (glossing, semantic mapping, and imagery) on L2 vocabulary production?

## REVIEW OF THE RELATED LITERATURE

One of the most important issues in L2 vocabulary research is whether instruction should be explicit or implicit. Many attempts have been made to compare the effectiveness of the two approaches. For instance, Coady (1993) explicitly taught teaching high-frequency vocabulary to 42 university students at different levels of proficiency enrolled in an intensive English program. He concluded that explicit instruction of vocabulary is more beneficial and leads to longer retention than implicit instruction.

Furthermore, Norris and Ortega (2000) reported a clear advantage for explicit instruction, and Hunt and Beglar (2005) argue that explicit instruction seems to be more effective than those modes of teaching that exclusively rely on indirect means. Moreover, Hulstijn (2005) and Schmitt (2008) point out that mere exposure to target vocabulary will not guarantee an adequate level of comprehension. Overall, previous research seems to suggest that little vocabulary can be learned through implicit instruction (e.g., Horst, 2005; Hulstijn, 2001; Macaro, 2006; Watanabe, 1997).

It is also apparent from previous research that explicit and implicit modes of instruction should be considered as complementary, and a mixed approach should be

taken (Nation, 2001; Schmidt, 1990). What is more, Ellis (1995) holds that the two approaches are applicable to different aspects of vocabulary learning, adding that the implicit approach is preferred in cases where shallow processing of words is required, whereas the explicit approach is suitable for deep processing. Also, Hunt and Beglar (2005) contend that the form and meaning of words are best learned explicitly, but phonetic features are best learned implicitly.

Since the present study is an attempt to compare the effects of explicit and implicit use of three teaching techniques (glossing, semantic mapping, and imagery) on L2 vocabulary comprehension and production, it is useful at this point to take a look at these techniques.

**Glossing:** Simply speaking, a gloss is a list of brief definitions or synonyms, either in L1 or L2, for the new words in a text (Nation, 2001), and is intended to save the reader from having to continually consult a dictionary (Lomicka, 1998).

Nagata (1999) points out that glosses have a positive effect on vocabulary learning in that they (1) are easier to use than a dictionary, (2) draw learners' attention to target words, (3) help learners immediately connect words to meanings, and (4) encourage learners to perform lexical processing. Also, Lin and Huang (2008) state that glossing makes reading more enjoyable through decreased interruption and helps the reader establish associations between form and meaning.

The advantages of using glosses in reading are relatively well documented. For instance, Otto and Hayes (1982) argue that glossing boosts understanding and aids less skilled learners to improve on their comprehension skills and strategy use. In addition, the results of a study conducted by Smallwood (1995) on 115 secondary students in Hong Kong showed that the provision of gloss can lead to better performance in vocabulary acquisition.

Moreover, Hulstijn, Hollander, and Greidanus (1996) had a group of Dutch students of French read passages under three conditions: marginal gloss, use of a bilingual dictionary, and reoccurrence of unfamiliar words. The results showed that glossing had the most significant effect on incidental vocabulary acquisition.

In a study by Chang (2002), a group of 92 students read a short story in three different conditions: with bilingual marginal glosses, with electronic dictionaries, and with no assistance. Marginal glosses were found to have a greater effect than electronic dictionaries on a test taken immediately after the reading experience, but no positive effect was seen on a delayed test of vocabulary retention.

**Semantic mapping:** Semantic mapping is a technique for teaching vocabulary which involves drawing a diagram of the relationships between words according to their use in a particular context (Oxford, 1990). To

put it differently, this technique entails categorizing words in relation to other words using diagrams.

Semantic mapping can raise learners' consciousness of the relationships in a text, thus leading to a broader understanding of a text and the creation of associative networks for words, and it is best described as a collaborative effort between the teacher and the students (Nation & Newton, 1997). Since the method of presentation is visual, it will be easier for the brain to make sense of incoming information. Also, Sanchez (2004) believes that teaching vocabulary through semantic mapping brings about significant changes in EFL learners' cognitive structures.

There are many studies that show semantic mapping is helpful for vocabulary learning. For example, a study by Morin and Goebel (2001) suggests that semantic mapping is generally an effective technique for helping inexperienced learners recall and organize L2 vocabulary. Margosein, Pascarella, and Pflaum (1982) studied the impact of semantic mapping and the use of context on word learning and found semantic mapping more effective. Furthermore, Brown and Perry (1991), in their study of the keyword method and semantic processing, found that a combination of the two techniques promotes vocabulary acquisition better than the keyword method alone.

**Imagery:** The imagery technique involves the use of pictures and illustrations for introducing new words. Research has shown that using pictures can make vocabulary instruction easier and more effective (e.g., David & Kang, 1998; Richards & Rodgers, 2001; Smith, 1997). Doff (1988) attributes this to the fact that using pictures is direct, interesting, and impressive.

Lewis and Hill (1985) contend that presenting new vocabulary through visual aids can both clarify the meanings of words and fix them in the learners' mind. Oxford and Crookall (1990) suggest that a combination of pictures and texts leads to greater depth of processing than when the text is used alone. Moreover, Sokmen (1997) believes that word-picture activities can form a mental link at the early stages of L2 learning, especially if they are created by the students themselves.

Richards and Rodgers (2001) point out that visual aids can better demonstrate the relationships between form and meaning, and Shapiro and Waters (2005) hold that visual stimuli create very strong memories. In addition, Ellery (2009) states that if vocabulary is taught through imagery, students will create an image that represents the definition of the word and recall this image whenever they encounter the word again.

A large number of studies have attempted to explore the effectiveness of explicit and implicit instruction in the area of vocabulary instruction. What justifies this study is the fact that the three techniques of glossing,

semantic mapping, and imagery have not, to the best of our knowledge, been examined together in one study. Also, most of the studies already conducted concerning the techniques at issue have only dealt with reading comprehension. Few of them have been concerned with vocabulary knowledge, and hardly any has been about the effect of these techniques on vocabulary comprehension and production. We hope the results can provide a better understanding of the explicit/implicit dichotomy and the effect of instruction on L2 vocabulary comprehension and production.

## METHOD

**Participants:** The participants of the present study were initially 250 female intermediate-level Iranian EFL learners studying English at Marefat Institute in Qazvin, Iran. However, only 175 of them were included in the study after a placement test (described below) was administered. Their age ranged from 18 to 28, and their native language was Persian.

**Instrumentation:** The materials and data collection instruments utilized in this study were the following:

1. The standard test of Nelson (Fowler & Coe, 1976, series 200 B) was employed to secure the homogeneity of the participants in terms of language proficiency. This test consists of three parts: cloze items, structure, and vocabulary. All the parts are in the form of multiple-choice questions. There are a total of 50 items, which should be answered in 45 minutes. The reliability of the test was estimated through KR-21 formula, and it turned out to be 0.71.
2. A multiple-choice vocabulary pretest consisting of 100 items was used to determine the students' vocabulary knowledge prior to the treatments. Each item included one target word which was underlined. The participants were required to write the meaning of the target word in their native language.
3. A test of receptive word knowledge was employed as a posttest to determine the effects of three vocabulary teaching techniques (glossing, semantic mapping, and imagery) on learners' vocabulary recognition. This test consisted of 30 multiple-choice items which required the participants to choose one of the four alternatives that most appropriately filled a blank.
4. A test of productive word knowledge was administered to measure the students' productive knowledge of vocabulary taught through each of the techniques under investigation. This test consisted of 30 fill-in-the-blank items which required the participants to supply the correct words.
5. The instructional materials used for the purpose of the present study included 100 words extracted from

Oxford Picture Dictionary (Adelson-Goldstein & Shapiro, 2008).

**Procedure:** To begin with, 250 intermediate-level learners were selected. Then, the Nelson test was administered in order to determine the homogeneity of the sample. This resulted in the selection of 175 learners whose scores were between one standard deviation above and below the mean. These learners were randomly placed in six groups, with each group receiving instruction under one of the experimental conditions for over 10 sessions twice a week. Each session lasted about one and a half hour, with about 30 minutes allocated to the treatment. Each group was presented with 10 words every session. The treatment consisted of three different techniques (glossing, semantic mapping, and imagery) of teaching those words, which were the same for all groups, implemented either implicitly or explicitly. A brief description of what happened in each group follows.

- a) **Explicit glossing:** The teacher taught the words using their English definitions. The students were allowed to write the words and their meanings in their notebooks.
- b) **Explicit semantic mapping:** Since semantic mapping requires the learners to relate the new words to their previous experiences and their prior knowledge, the teacher first asked the participants to share what they knew about the target words with the purpose of activating their prior knowledge. Next, the teacher taught the words by drawing semantic maps on the board with the help of students.
- c) **Explicit imagery:** The teacher taught the words using their actual pictures. The students were

allowed to see the images of the words individually and were even given a chance to take pictures.

- d) **Implicit glossing:** The teacher put the target words together with their L2 definitions on the wall as posters.
- e) **Implicit semantic mapping:** Every session, the teacher drew semantic maps for the words and hung them on the wall without any direct presentation.
- f) **Implicit imagery:** The teacher prepared the pictures of the related words and hung them on the wall without drawing any direct attention to them.

At the end of the experimental period, two posttests were administered to investigate the effects of glossing, semantic mapping, and imagery on learners' vocabulary comprehension and production. The collected data were organized and submitted to statistical analysis.

**Data analysis:** In order to answer the research questions, four separate One-way ANOVA procedures were utilized to compare the effects of explicit and implicit presentation techniques (glossing, semantic mapping, and imagery) on L2 vocabulary comprehension and production

## RESULTS AND DISCUSSION

**The first research question:** The first research question sought to investigate whether or not there are significant differences among the effects of explicitly used techniques of glossing, semantic mapping, and imagery on L2 vocabulary comprehension. To this end, the scores of the three groups of participants on the vocabulary comprehension test were compared. Descriptive statistics are presented in Table 1, and a graphical representation is given in Fig. 1.

Table 1: Descriptive statistics for explicit vocabulary comprehension

	N	Mean	Standard Deviation
Glossing	30	16.5667	4.98746
Semantic mapping	30	21.0000	3.19482
Imagery	25	19.8000	5.29937
Total	85	19.0824	4.88489

It can be seen that the mean score of the semantic mapping group is higher than that of the participants in the glossing and imagery groups. In addition, the imagery group has performed better than the glossing group. To see whether or not the observed differences are statistically significant, the one-way ANOVA procedure was used, yielding the results given in Table 2.

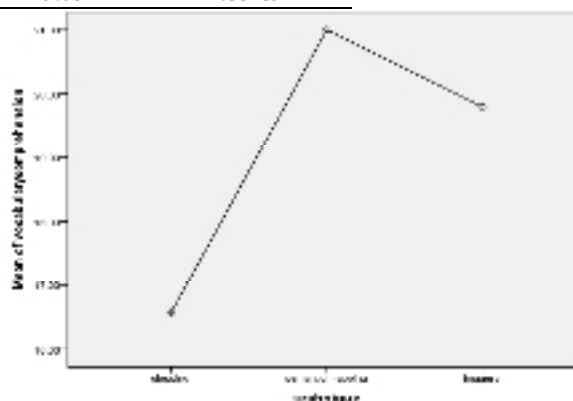


Fig. 1: Performance of the explicit groups on the vocabulary comprehension test

Based on Table 2, the differences among the three groups are statistically significant ( $F_{(2, 82)} = 7.58, P < .01$ ). Furthermore, the index of the strength of association ( $\eta^2 = .09$ ) indicates a moderate effect size,

showing that 9% of the total variance among the groups can be accounted for by the independent variable (i.e., techniques of presentation). That is, the remaining 91% of the variance has yet to be accounted for.

Table 2: The ANOVA results on explicit vocabulary comprehension

	Sum of Squares	DF	Mean Square	F	Sig.
Between groups	313.057	2	156.528	7.589	.001
Within groups	1691.367	82	20.626		
Total	2004.424	84			

$\eta^2 = .09$

To locate the differences, a post hoc Scheffé test was run (Table 3). The test showed a significant difference between the means of the semantic mapping and glossing groups. Similarly, the difference between the glossing and imagery groups was statistically

significant. The participants of the semantic mapping and imagery groups performed better than the participants of the glossing group on the comprehension test.

Table 3: Multiple comparisons of means on explicit vocabulary comprehension

(I) technique	(J) technique	Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Glossing	Semantic mapping	-4.43333*	.001	-7.3569	-1.5098
Glossing	Imagery	-3.23333*	.036	-6.2996	-.1671
Imagery	Semantic mapping	-1.20000	.623	-4.2663	1.8663

**The Second research question:** The second question aimed to see if the explicit use of glossing, semantic mapping, and imagery has any effect on L2 vocabulary production. For this purpose, the scores of the participants on the vocabulary production test were

compared. Table 4 summarizes descriptive statistics, and Fig. 2 provides a graphical representation of the performance of the participants.

Table 4: Descriptive statistics for explicit vocabulary production

	N	Mean	Standard Deviation
Glossing	30	11.9333	7.21078
Semantic mapping	30	14.6333	3.95216
Imagery	25	16.9200	5.67832
Total	85	14.3529	6.05276

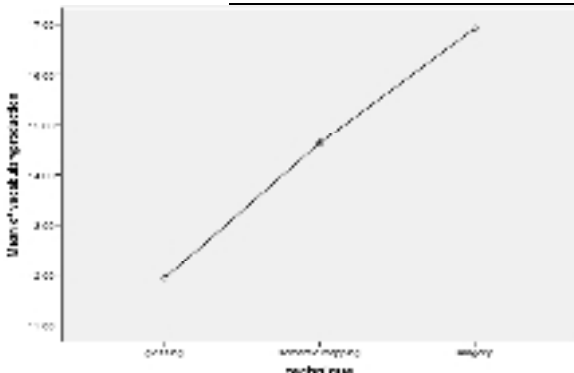


Fig. 2: Performance of the explicit groups on the vocabulary production test

As it can be seen, the participants of the imagery group achieved better results than the other two groups. Furthermore, the semantic mapping group outperformed the glossing group. To see whether the observed differences were statistically significant, the

data were submitted to the one-way ANOVA procedure. The results are given in Table 5.

Based on Table 5, the differences are statistically significant ( $F_{(2, 82)} = 5.13, P < .01$ ). The index of the strength of association ( $\eta^2 = .12$ ) shows a relatively moderate effect size, implying that 12% of the total variance among the groups can be accounted for by the techniques of presentation.

To locate the differences, a post hoc Scheffé test was run (Table 6).

The test showed a significant difference between the means of the glossing and imagery groups. The participants of the imagery group performed better than the participants of the semantic mapping group on the production test.

**The third research question:** The aim of the third research question was to determine the extent to which the implicit use of glossing, semantic mapping, and imagery affects vocabulary comprehension.

Table 5: The ANOVA results on explicit vocabulary production

	Sum of Squares	DF	Mean Square	F	Sig.
Between groups	342.738	2	171.369	5.139	.008
Within groups	2734.673	82	33.350		
Total	3077.412	84			

$\eta^2 = .12$

Table 6: Multiple comparisons of means on explicit vocabulary production

(I) technique	(J) technique	Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Glossing	Semantic mapping	-2.70000	.200	-6.4175	1.0175
Glossing	Imagery	-4.98667*	.008	-8.8856	-1.0877
Imagery	Semantic mapping	2.28667	.348	-1.6123	6.1856

To answer this question, the scores of the participants on the vocabulary comprehension test were compared.

The descriptive results can be seen in Table 7 and Fig. 3.

Table 7: Descriptive statistics for implicit vocabulary comprehension

	N	Mean	Standard Deviation
Glossing	30	9.97	7.21078
Semantic mapping	30	10.67	3.95216
Imagery	25	8.73	1.964
Total	85	9.79	2.354

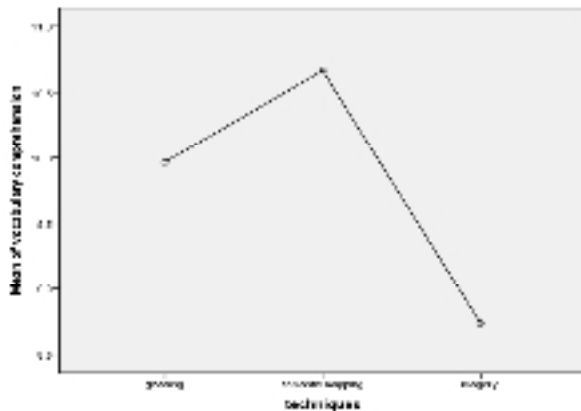


Fig. 3: Performance of the implicit groups on the vocabulary comprehension test

It is clear that the highest mean ( $\bar{x} = 10.67$ ) belongs to the semantic mapping group, followed by the glossing group ( $\bar{x} = 9.97$ ) and the imagery group ( $\bar{x} = 8.73$ ). To see whether the observed differences among the groups are statistically significant or not, the one-way ANOVA procedure was used. The obtained results are presented in Table 8. The F value and the significance level ( $F_{(2, 87)} = 5.74, P < .01$ ) in Table 8 are indicative of significant differences among the groups.

The index of the strength of association ( $\eta^2 = .09$ ) is also indicative of a relatively moderate effect size. This index means that 9% of the total variance among the groups is attributable to the independent variable; it also implies that the remaining 91% of the variance has yet to be accounted for.

Table 8: The ANOVA results on implicit vocabulary comprehension

	Sum of Squares	DF	Mean Square	F	Sig.
Between groups	57.489	2	28.744	5.742	.005
Within groups	435.500	87	5.006		
Total	492.989	89			

$\eta^2 = .09$

A post hoc Scheffé test was utilized to locate the differences, the results of which are given in Table 9. The only significant difference was between the means of semantic mapping and imagery groups. The

participants of the semantic mapping group performed better than the participants of the imagery group on the comprehension test.

Table 9: Multiple comparisons of means on implicit vocabulary comprehension

(I) techniques	(J) techniques	Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Glossing	Semantic mapping	-.700	.483	-2.14	.74
Glossing	Imagery	1.233	.108	-.21	2.67
Imagery	Semantic mapping	-1.933*	.005	-3.37	-.49

**The fourth research question:** The fourth research question was aimed at determining which technique of presenting L2 words has the strongest effect on L2 vocabulary production. To this end, comparisons were made between the scores of the participants on the

vocabulary production test. The resulting descriptive statistics are given in Table 10. A graphical representation in Fig. 4 shows the results more clearly.

Table 10: Descriptive statistics for implicit vocabulary production

	N	Mean	Standard Deviation
Glossing	30	5.87	2.013
Semantic mapping	30	6.60	1.940
Imagery	30	6.73	1.856
Total	90	6.40	1.953

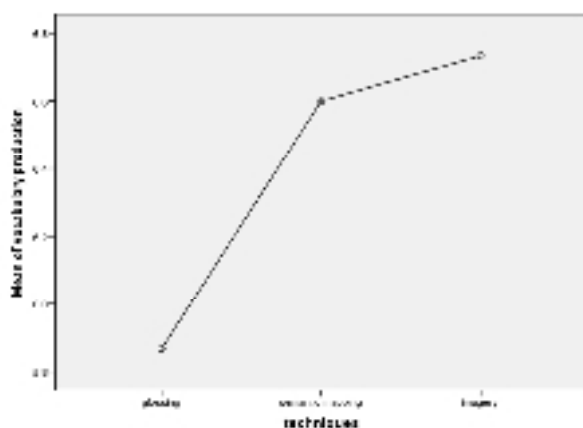


Fig. 4: Performance of the implicit groups on the vocabulary production test

It can be observed that the group instructed through imagery achieved the highest mean, followed by the group receiving instruction through semantic mapping and then glossing. In order to determine the statistical significance of the differences among the groups, the data were subjected to the one-way ANOVA procedure (Table 11).

Based on Table 11, there are no significant differences among the groups ( $F_{(2, 87)} = 1.74, P > .05$ ).

**Discussion:** The findings of the study showed that there are significant differences among the effects of explicit techniques of vocabulary teaching (glossing, semantic mapping, and imagery) on L2 vocabulary comprehension and production. It was also found that implicit use of these techniques only affects vocabulary comprehension.

Table 11: The ANOVA results on implicit vocabulary production

	Sum of Squares	DF	Mean Square	F	Sig.
Between groups	13.067	2	6.533	1.741	.181
Within groups	326.533	87	3.753		
Total	339.600	89			

As for the first two questions, semantic mapping and imagery were found to be the most effective techniques for teaching vocabulary comprehension and production, respectively. This finding of the present study supports those of Johnson et al. (1982), who noted that the utilization of the conceptual technique of semantic mapping would help the learning words and concepts. They hold that if learners map the related words and information in memory, teaching and learning of new vocabulary will be facilitated. They also confirmed the positive effect of semantic mapping on learners' vocabulary recognition and production. Similarly, Margosein, Pascarella, and Pflaum (1982) found evidence suggesting that using semantic mapping affects learners' vocabulary knowledge and text comprehension. The results obtained in the present study also agree with the findings of Johnson, Levin, and Pittelman (1985), suggesting that semantic mapping is not only a powerful technique for general vocabulary development, but it is also a good

alternative to traditional instruction. They also found that semantic mapping is an effective pre-reading instructional activity. In addition, Morin and Goebel (2001) suggest that semantic mapping is generally effective as it helps inexperienced learners recall and organize L2 vocabulary. Furthermore, in a study on the impact of semantic mapping on EFL vocabulary learning, Sanchez (2004) found that teaching vocabulary through semantic mapping brings about changes in learners' cognitive structure.

Moreover, the findings of this study corroborate those of Abdollahzadeh and Amiri (2009), who compared the effectiveness of vocabulary instruction via semantic mapping and the conventional techniques of teaching vocabulary in Iran. They found that the participants who received instruction through semantic mapping performed significantly better. Moreover, Nilforoushan (2012) reported that teaching vocabulary through semantic mapping significantly improves awareness of

two affective dimensions of deep vocabulary knowledge: evaluation and potency.

It should also be noted that the results of the present study are different from those of a number of other studies. For instance, Barcroft (2002) found that increased semantic elaboration, the process used in semantic mapping and semantic feature analysis, had inhibitory effect on L2 learners' productive knowledge of words. Moreover, Riazi et al. (2005) found that using learning techniques which need shallower cognitive processes such as taking notes in class, keeping vocabulary notebook, and using new words in sentences were more effective than deeper cognitive techniques such as semantic mapping and semantic feature analysis. Further evidence against this finding of the present study comes from Sagarra and Alba (2006), who reported that semantic mapping, was less effective on L2 vocabulary learning than other techniques such as the keyword method.

The fact that the latter group of studies cited above did not find a significant effect for semantic mapping may be attributable to the proficiency level of their participants. Unlike in the present study, where the participants were intermediate learners of English, these studies experimented with low-proficiency students. Semantic mapping is a conceptual technique which is based on learners' prior word knowledge. In other words, the vocabulary reservoir of low-proficiency learners may not be rich enough to allow them to relate new words to their prior word knowledge and to visualize the relationships between the new and the learned words in their minds.

Semantic mapping is a direct vocabulary instruction technique which builds upon the prior knowledge of learners and the interrelationships between words. This technique is based on the hierarchical nature of memory structure and makes changes in learners' cognitive structure. It can be specially used before reading as an effective way of motivating the students and actively involving them in the thinking-reading process. Semantic mapping can also help learners develop sophisticated lexicon. An attractive feature of semantic mapping is that it is not dependent on high technology or expensive resources, and it is thus accessible to all language teachers and learners.

Another finding of this study was that the students instructed through imagery had the best performance in vocabulary production. This is in agreement with Kellogg and Howe (1971), who found that foreign words associated with images or actual objects are learned more easily than those without such additional information. The results are also in line with studies about vocabulary knowledge that drew a comparison between imagery on the one hand and explanation and translation (Lewis & Hill, 1985) and word-mediated

learning or translation (Tonzar, Lotto, & Job, 2009), on the other.

Further supporting the findings of this study, Terrell (1986) found that combining an unknown L2 word with a visual representation facilitates vocabulary learning. Also, Chang, Chien-Yu, and Yi-Kuan (2005) noted that children take special heed of texts containing visual items. The positive effect of imagery could be ascribed to the fact that an image provides a direct association between form and meaning (Richards & Rodgers, 2001).

In contrast to the Questions 3 and 4 of the present study, in which no significant effect was observed for imagery in implicit instruction, Çetin and Flamand (2012), in an experiment on a number of elementary school students, concluded that hanging posters containing pictures and L2 vocabulary on classroom walls can facilitate incidental L2 vocabulary learning. This contradiction may be explained by the fact that the participants in Çetin and Flamand (2012) were many years younger than those who participated in the present study. Mature learners may benefit less from images in comparison with younger students.

The present study also found that glossing is one of the least effective techniques on both vocabulary comprehension and production. This finding is indeed against most previous studies (e.g., Alessi & Dwyer, 2008; Ko, 2005; Xu, 2010; Yanguas, 2009). To give a few extended examples, Chang (2002) reported that glossing was more effective than electronic dictionaries on vocabulary learning. Likewise, Cheng and Good (2009) explored the effect of glosses on vocabulary learning and found that the participants who received glosses were more successful than the no-gloss group on all tests. Meanwhile, Zarei and Mahmoodzade (2014) showed that multimedia glosses had a positive effect on L2 vocabulary production.

In addition, evidence from previous research suggests that glossing significantly influences implicit vocabulary learning. A study by Hulstijn, et al. (1996) showed that L1 glossing was more effective than either use of a bilingual dictionary or reoccurrence of unfamiliar words on a test of incidental vocabulary learning. Additionally, the results of an experiment by Kost, Foss, & Lenzini (1999) indicated that the participants who were allowed to use textual and pictorial glosses performed better than those who did not have access to any gloss on both production and recognition tests of vocabulary. More recently, Yoshii (2006) found both L1 and L2 glosses to be effective on improving implicit vocabulary learning.

A possible explanation for the inefficiency of glossing in the present study could be that the type of gloss we used (L2 gloss) was not helpful enough in our context. The use of L1 and pictorial glosses might have



produced different results. Another possible reason may be that vocabulary was taught in isolation and not in the context of reading passages. This finding might also be because the participants in this study were not proficient enough to grasp the new words presented through L2.

It is worth noting only one study reporting a finding similar to ours could be found in the relevant literature. Al-Jabri (2009) studied the effects of L1 and L2 glosses on reading comprehension and idea recall. Although the group receiving L1 gloss performed better than the L2-gloss group on a multiple-choice reading comprehension test, he observed no significant difference between the gloss group and the no-gloss group.

### CONCLUSION

Based on the findings of the present study, it can be concluded that teaching words implicitly is leaving too much to chance, and that words should be taught explicitly through explicit presentation techniques. It can also be concluded that even when we opt for explicit presentation techniques, there are some techniques that are more effective than others. This means that learners and teachers should be encouraged to resort to those techniques that are most effective. At the same time, given that different presentation techniques have different effects on L2 vocabulary comprehension and production, it may be concluded that a combination of techniques should be used to make sure that both comprehension and production of vocabulary are adequately addressed. In other words, a technique which is suitable for vocabulary comprehension may not be equally suitable for vocabulary production.

The findings of the present study may have implications for learners, teachers, and syllabus designers. Learning vocabulary through the semantic mapping technique would be more enjoyable and meaningful for learners because it moves away from the boring and tedious process of looking up words in a dictionary. Furthermore, it is an effective technique for improving students' knowledge of vocabulary in the shortest possible time. If learners are made aware of the positive effects of this technique (as well as those of imagery), they may be more willing to use them in their self-study. Teachers can also make use of these findings to encourage their students to make use of the more productive techniques and discourage the over-use of the less effective ones. Syllabus designers and textbook writers can also draw upon the findings of this study in developing materials for vocabulary learning. In this way, they can present new words in more effective

ways and improve both comprehension and production of these words.

### REFERENCES

1. Abdollahzadeh, E., & Amiri, N. (2009). The effect of semantic mapping as a vocabulary instruction technique on EFL learners with different perceptual learning styles. *The Journal of Applied Linguistics*, 2(1), 1-28.
2. Adelson-Goldstein, J., & Shapiro, N. (2008). *Oxford picture dictionary* (2nd ed.). Oxford, UK: Oxford University Press.
3. Al-Jabri, S. (2009). The effects of L1 and L2 glosses on reading comprehension and recalling ideas by Saudi students. *Umm Al-Qura University Journal of Social Sciences*, 1, 11-27.
4. Barcroft, J. (2009). Strategies and performance in intentional L2 vocabulary learning. *Language Awareness*, 18(1), 74-89.
5. Brown, T. S., & Perry, F. L. (1991). A comparison of three learning strategies for ESL vocabulary acquisition. *TESOL Quarterly*, 25(4), 650-670.
6. Çetin, Y., & Flamand, L. (2013). Posters, self-directed learning, and L2 vocabulary acquisition. *ELT Journal*, 67(1), 52-61.
7. Chang, J. (2002). A study of vocabulary learning strategies of college students in Taiwan Fortune College as an example. *Journal of Fortune Institute of Technology*, 9, 53-63.
8. Chang, Y. M., Chien-Yu, L., & Yi-Kuan L. (2005). The preferences of young children for images used in dynamic graphical interfaces in computer-assisted English vocabulary learning. *Displays*, 26(4), 147-152.
9. Cheng, Y. H., & Good, R. L. (2009). L1 glosses: Effects on EFL learners' reading comprehension and vocabulary retention. *Reading in a Foreign Language*, 21, 119-142.
10. Coady, J. (1993). Research on ESL/EFL vocabulary acquisition: Putting it in context. In T. Huckin, M. Hynes, & J. Coady (Eds.), *Second language reading and vocabulary learning* (pp. 3-23). New York, NY, USA: Ablex Publishing.
11. Cook, V. (2001). *Second language learning and language teaching*. (3rd ed.). London, UK: Edward Arnold Publishers.
12. David, P., & Kang, J. (1998). Pictures, high-imagery news language and news recall. *Newspaper Research Journal*, 19(3), 21-30.
13. Doff, A. (1988). *Teach English trainer's handbook: A training course for teachers*. Cambridge, UK: Cambridge University Press.
14. Ellery, V. (2009). *Creating strategic readers: Techniques for developing competency in phonemic*

- awareness, phonics, fluency, vocabulary, and comprehension (2nd ed.). Newark, DE, USA: International Reading Association.
15. Ellis, R. (1995). Modified oral input and the acquisition of word meanings. *Applied Psycholinguistics*, 16(4), 409-441.
  16. Fowler, W. S., & Coe, N. (1976). *Nelson English language tests*. Walton-on-Thames, UK: Nelson ELT.
  17. Gu, P. Y. (2003). Vocabulary learning in a second language: Person, task, context, and strategies. *TESOL-EJ*, 7(2), 1-26.
  18. Horst, M. (2005). Learning L2 vocabulary through extensive reading: A measurement study. *Canadian Modern Language Review*, 61(3), 355-382.
  19. Hulstijn, J. H. (1993). When do foreign-language readers look up the meaning of unfamiliar words?: The influence of task and learner variables. *Modern Language Journal*, 77(2), 139-147.
  20. Hulstijn, J. H. (2001). *Intentional and incidental second-language vocabulary learning: A reappraisal of elaboration, rehearsal and automaticity*. Cambridge, UK, Cambridge University Press.
  21. Hulstijn, J. H. (2005). Theoretical and empirical issues in the study of implicit and explicit second language learning. *Studies in Second Language Acquisition*, 27, 129-140.
  22. Hulstijn, J. H., Hollander, M., & Greidanus, T. (1996). Incidental vocabulary learning by advanced foreign language students: The influence of marginal glosses, dictionary use, and reoccurrence of unknown words. *Modern Language Journal*, 80(3), 327-394.
  23. Hunt, A., & Beglar, D. (2005). A framework for developing EFL reading vocabulary. *Reading in Foreign Language*, 17(1), 23-59.
  24. Johnson, D. D., Pittelman, S. D., Toms-Bronowski, S., Chu-Chang, M., Tsui, G., Yin, M. C., Chien, C. Y., & Chin, P. (1982). *Studies of vocabulary development techniques in the United States of America and the Republic of China (Program Report 83-4)*. Madison, WI, USA: Wisconsin Center for Education Research, University of Wisconsin.
  25. Kellogg, G. S., & Howe, M. J. (1971). Using words and pictures in foreign language learning. *Alberta Journal of Educational Research*, 17(2), 89-94.
  26. Ko, M. H. (2005). Glosses, comprehension, and strategy use. *Reading in a Foreign Language*, 17, 125-143.
  27. Kost, C. R., Foss, P., & Lenzini, J. J. (1999). Textual and pictorial glosses: Effectiveness on incidental vocabulary growth when reading in a foreign language. *Foreign Language Annals*, 32(1), 89-97.
  28. Laufer, B. (2010). Form-focused instruction in second language vocabulary learning. In R. Chacón-Beltrán, C. Abello-Contesse, & M. M. Torreblanca-Lopez (Eds.), *Insights into non-native vocabulary teaching and learning*. Bristol, UK: Multilingual Matters.
  29. Lewis, M. (1997). *Implementing the lexical approach: Putting theory into practice*. Hove, East Sussex, UK: Language Teaching Publications.
  30. Lewis, M., & Hill, J. (1985). *Practical techniques for language teaching*. Hove, East Sussex, UK: Language Teaching Publications.
  31. Lin, C., & Huang, H. (2008). Meaning-inferred gloss and meaning-given gloss on incidental vocabulary learning. *Journal of National Taiwan Normal University*, 53, 87-116.
  32. Lomicka, L. L. (1998). To gloss or not to gloss: An investigation of reading comprehension online. *Language Learning and Technology*, 1, 41-50.
  33. Macaro, E. (2006). Strategies for language learning and for language use: Revising the theoretical framework. *Modern Language Journal*, 90(3), 320-337.
  34. Margosein, C. M., Pascarella, E. T., & Pflaum, S. W. (1982). The effects of instruction using semantic mapping on vocabulary and comprehension. *The Journal of Early Adolescence*, 2(2), 185-194.
  35. Morin, R., & Goebel, J. (2001). Basic vocabulary instruction: Teaching strategies or teaching words? *Foreign Language Annals*, 34(1), 8-17.
  36. Nagata, N. (1999). The effectiveness of computer-assisted interactive glosses. *Foreign Language Annals*, 32(4), 469-479.
  37. Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge, UK: Cambridge University Press.
  38. Nation, I. S. P., & Newton, J. (1997). Teaching vocabulary. In J. Coady & T. Huckin (Eds.), *Second language vocabulary acquisition* (pp. 238-254). Cambridge, UK: Cambridge University Press.
  39. Nilforoushan, S. (2012). The effect of teaching vocabulary through semantic mapping on EFL learners' awareness of the affective dimensions of deep vocabulary knowledge. *English Language Teaching*, 5(10), 164-172.
  40. Norris, J. M., & Ortega, L. (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning*, 50(3), 417-527.
  41. Nunan, D. (1999). *Second language teaching and learning*. New York, NY, USA: Newbury House Publishers.
  42. Otto, W., & Hayes, B. (1982). Glossing for improved comprehension: Progress and prospect. *Journal of Reading*, 26 (2), 176 – 179.

43. Oxford, R. L. (1990). Strategy inventory for language learning. In R. L. Oxford (Ed.), *Language learning strategies: What every teacher should know* (pp. 283-300). Concord, MA, USA: Heinle & Heinle Enterprises.
44. Oxford, R. L., & Crookall, D. (1990). Vocabulary learning: A critical analysis of techniques. *TESL Canada Journal*, 7(2), 9-30.
45. Riazi, A., Sadighi, F., & Zare, S. (2005). The effect of EFL students' L2 proficiency and age on their overall patterns of vocabulary. *Iranian Journal of Applied Linguistics*, 8(2), 87-106.
46. Richards, J. C., & Rodgers, T. S. (2001). *Approaches and methods in language teaching* (2nd ed.). Cambridge, UK: Cambridge University Press.
47. Sagarra, N., & Alba, M. (2006). The key is in the keyword: L2 vocabulary learning methods with beginning learners of Spanish. *Modern Language Journal*, 90(2), 228-243.
48. Sanchez, M. J. (2004). Effect of instruction with expert patterns on the lexical learning of English as a foreign language. *System*, 32, 89-102.
49. Schmidt, R. W. (1990). The role of consciousness in second language learning. *Applied Linguistics*, 11(2), 129-158.
50. Schmitt, N. (2008). Review article: Instructed second language vocabulary learning. *Language Teaching Research*, 12(3), 329-363.
51. Shapiro, A. M., & Waters, D. L. (2005). An investigation of the cognitive process underlying the key word method of foreign vocabulary learning. *Language Teaching Research*, 9(2), 129-46.
52. Smallwood, I. M. (1995). *Approaches to the teaching of vocabulary: The effects of monolingual and bilingual presentation of lexical items on vocabulary acquisition* (Unpublished master's thesis). The University of Hong Kong, Hong Kong.
53. Smith, C. B. (1997). *Vocabulary instruction and reading comprehension*. Bloomington, IN, USA: ERIC Clearinghouse on Reading English and Communication Skills.
54. Sokmen, A. J. (1997). Current trends in teaching second language vocabulary. In N. Schmitt & M. McCarthy (Ed.), *Vocabulary: description, acquisition and pedagogy* (pp. 237-257), Cambridge, UK: Cambridge University Press.
55. Terrell, T. (1986). Acquisition in the natural approach: The binding/access framework. *Modern Language Journal*, 70(3), 213-227.
56. Tonzar, C., Lotto, L., & Job, R. (2009). L2 vocabulary acquisition in children: Effects of learning method and cognate status. *Language Learning*, 59(3), 623-646.
57. Watanabe, Y. (1997). Input, intake, and retention: Effects of increased processing on incidental learning of foreign language vocabulary. *Studies in Second Language Acquisition*, 19, 287-307.
58. Xu, X. (2010). The effects of glosses on incidental vocabulary acquisition in reading. *Journal of Language Teaching and Research*, 1, 117-120.
59. Yanguas, I. (2009). Multimedia glosses and their effect on L2 text comprehension and vocabulary learning. *Language Learning and Technology*, 13, 48-67.
60. Yoshii, M. (2006). L1 and L2 glosses: Their effects on incidental vocabulary learning. *Language Learning and teaching*, 10, 85-101.
61. Zarei, A. A., & Mahmoodzadeh, P. (2014). The Effect of multimedia glosses on L2 reading comprehension and vocabulary production. *Journal of English Language and Literature*, 1(1), 1-7.
62. Zimmerman, C. B. (1994). *Self-selected reading and interactive vocabulary instruction: Knowledge and perceptions of word learning among L2 learners* (Doctoral dissertation). University of Southern California.