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# Developing Vocabulary Achievement Through Using Different Gloss Types: Single Glossing in L1 and L2 Versus Multiple-Choice Glossing

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**Abstract.** Vocabulary learning is a key point in language acquisition and teachers' role is to find a proper way to teach lexicon to the learners. Glossing is one of the techniques teachers can use to teach vocabulary to learners. This study aims to find which glossing type, single translation in L1, single translation in L2 or multiple-choice glossing is more beneficial for vocabulary learning through reading. Four intact groups from general English learners at Islamic Azad University-Tabriz Branch were selected for this study. They were chosen by a modified TOEFL Test and a vocabulary test to be sure of their homogeneity. Teacher as the researcher modified the texts with L1, L2, and multiple choice translations. In the control group, teacher explained about the meaning of every vocabulary in English and even Persian or Turkish. Synonyms and antonyms were provided for every vocabulary. In the other groups, besides the method used in the control group other techniques were used. In the first experimental group, the meaning of unknown words was provided in Persian in the margins of the text. In the second experimental group, the meaning of unknown words was provided in English in the margins. In the third experimental group, four items in English were provided for every vocabulary and students should guess the correct meaning. The participants took four vocabulary tests: 1) pretest; 2) immediate posttest; 3) posttest one week later; and 4) delayed posttest one month later. The results showed that single translation gloss type in L1 was more effective than the other

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glossing types. The results state that glossing is helpful for learning vocabulary and enhancing incidental noticing, so language teachers are recommended to use this technique in their classes.

**Keywords:** Multiple-choice glossing, single translation in L1, single translation in L2, vocabulary learning

## 1. Introduction

Each language conversation consists of words that are arranged in accordance with specific rules and arranged in a proper order. So an important part of the conversation of any language is vocabulary. The importance of retrieving vocabulary in English is beyond the scope of any language instruction; hence, learners try to retrieve the vocabulary more and more. Is it just enough to learn vocabulary? Do they achieve the desired result in traditional ways? Can they retrieve words in the long run? Is it only useful to memorize vocabulary? Language professors are always watching language learners who fail to memorize vocabulary. Since English can be forgotten easily, without any practice and review, it's forgotten in a short time, but what is the solution? As mentioned earlier, learners in EFL context have difficulties in memorizing and retention of vocabulary. This study focuses on finding an effective way to help learners in retention of vocabulary in EFL context. To be able to keep words in an effective and lasting manner, and to use the best words in conversations and texts correctly, you need to learn the effective ways to learn a language. As Folse (2004) states vocabulary learning is essential for acquiring a language. According to Krashen (1985), reading is a major source of incidental vocabulary acquisition. Swanborn and De Glopper (1999) believe that L1 speakers learn around 15% of the unknown words they encounter incidentally through reading. Since vocabulary learning and its retention is difficult, teachers should find a technique to help their learners in retention of this skill. Glossing is one of the prominent techniques for improving vocabulary learning; few studies have recently examined the effectiveness of this technique to enhance vocabulary learning through reading (e.g., Barabadi, Aftab, & Panahi, 2018; Getty, Imhof, & Kautz, 2001; Hulstijn, 1992; Moradan & Vafaei, 2016; Rott, 2005; Sahebkheir, 2019; Yoshii, 2006; Watanabe,

1997). This paper will focus on single-translation glosses into L1 and L2 and multiple-choice glosses.

## 2. Review of Literature

Glossing provides definitions or explanations of unknown words in the margins of a text. They direct readers' attention to unfamiliar words and encourage the processing of the meanings of the words (Yoshii, 2014). Studies on textual glosses have dealt with languages, e.g., L1 or L2, and formats of glosses, e.g., basic dictionary format or sentence-level translation. Regarding the languages, researchers have examined in which language, L1 or L2, glosses should be written and the results show that the effectiveness of the glosses in L1 or L2 may be based on learners' proficiency levels. High-proficiency learners can benefit from L2 glosses while low-proficiency learners can gain much from L1 glosses (Al-Jabri, 2009; Ghahari & Heidarolad, 2015; Hu, Vongpumivitch, Chang, & Liou, 2014; Yoshii, 2014).

Studies have also examined the effectiveness of single translation and multiple-choice glosses. Single translation glosses are ordinary, conventional glosses with one definition or one explanation of a word; on the other hand, multiple-choice glosses have multiple definition options-typically one correct definition of the word in question and three definitions of other words-and learners have to think about the meaning of the word and choose the best one that would fit the context where the word appears (Yoshii, 2006). The theoretical foundation of many studies on multiple-choice glosses is based on levels of processing depth theory proposed by Craik and Lockhart (1972). The theory declares that the chances of storing new information in long-term memory depend on how deeply it is processed besides attending to it during its occurrence and rehearsing it after its occurrence. Hulstijn (1992) used the term "mental effort" to explain the depth theory, stating that inferences and hypothesis-testing of word meaning would lead to better word retention. Laufer and Hulstijn (2001) applied the concept of depth of processing to the SLA field and introduced the Involvement Load Hypothesis. The theory states that learners can learn words better when they are highly involved in lexical information processes. The theory con-

sists of three components: a motivational one ('need') and two cognitive ones ('search' and 'evaluation'). 'Need' means that one has to learn a word because someone else tells him or her to do so, or one does so out of curiosity or necessity. 'Search' is to find the meaning of an unknown word. Finally, 'evaluation' is defined as "a comparison of a given word with other words, a comparison of a specific meaning of a word with its other meanings, or combining the word with others in order to assess whether a word (i.e., a form-meaning pair) does or does not fit its context" (p. 14).

Sahebkheir (2019) chose three different vocabulary techniques (visual representation, textual enhancement, and glossing) and compared them with traditional method of teaching vocabulary. 80 advanced EFL Learners were assigned as four intact groups (three experimental and one control group) through using a proficiency test and a vocabulary test as a pre-test. In the visual group, students used flashcards; in the textual enhancement, every synonym and antonym were highlighted and numbered and in the glossing group new vocabularies were numbered and their explanations were provided in the margins or footnotes. Students in the control group learned vocabulary through traditional way by meaning explanation, translation, or providing synonyms and antonyms. All the other three groups had the same procedure as control group but besides these processes they had access to visual, textual, or glossing techniques, too. The results showed that in the posttest, all three experimental groups outperformed the control group. However, the highest improvement in both post-test and the delayed post-test was for glossing group. As a whole, we can say improvement in vocabulary learning was respectively for glossing, then visual, and finally textual enhancement. Therefore, it can be concluded that using pictorial, textual cues and glossing enhance their interlanguage system.

Barabadi, Aftab, and Panahi (2018) discussed a within-subject quasi-experiment which investigated the relative effectiveness of four vocabulary gloss types: L1 gloss, L1 gloss with phonological guidance, L2 gloss, and L2 gloss with phonological guidance. The participants were 63 Iranian undergraduate EFL students. The results of the post-test showed that L1 and L2 glosses (conditions 2 & 4) accompanied with phono-

logical guidance resulted in better performance in learning the target words irrespective of the language used in the glosses. According to the findings, it can be concluded that phonological awareness can enhance the participants' understanding of the target words because of their representation in the phonological working memory. Therefore, language teachers are recommended to draw learners' attention to all aspects of learning vocabulary including meaning, orthography, and pronunciation.

Moreover, Moazzeni et al. (2014) conducted a research with 155 female Iranian learners who were placed into four different (textual gloss, multiple-choice gloss, the computerized multi-media, and multi-modal) experimental groups and one control group. The control (no gloss) group performed the worst in the recognition and the production tests, while the multi-modal groups performed the best. Moradan and Vafaei (2016) randomly assigned 45 Iranian EFL learners into three groups. The first group was given 10 texts with pictorial glosses, the second group was provided the same texts with textual glosses, and the last group received the texts with combined pictorial and textual glosses. The findings elicited from a vocabulary post-test showed that the third group significantly performed better than the other two groups. Furthermore, Al-Jabri (2009) found out the usefulness of L1 glosses over L2 glosses and no gloss condition for 90 male intermediate level learners of English as a foreign language in Umm Al-Qura University, Makkah, Saudi Arabia.

Xu (2010) used a within-subject design with 103 students and highlighted that the use of combined L1 (Chinese) and L2 (English) was the most effective in vocabulary development, while L2 glosses were relatively the least valuable.

Hu, Vongpumivitch, Chang, and Liou (2014) investigated the level of vocabulary acquisition of 78 weak and proficient English learners belonging to a Taiwanese school using two types of glosses: Chinese glosses and English glosses. The findings indicated that the L2 glosses were more useful for participants who were proficient in English, while the L1 glosses were more helpful for those students who were weak in English. However, irrespective of the gloss type, there was no significant gain in vocabulary.

Ghahari and Heidarolad (2015) divided 30 intermediate level EFL

students belonging to a language school in Iran into two groups: one L2 multiple choice gloss group and the other L1 multiple choice gloss group. The results suggested that the L2 gloss group showed better performance than the L1 gloss group. Besides, Choi (2016) used 180 male EFL students belonging to a Korean high school in a project. The participants were assigned to three groups: control no-gloss group, L1 (Korean) gloss group, and the L2 (English) gloss group. Both the L1 and L2 gloss groups received similar scores in the immediate test, while the L1 gloss group performed better in the delayed test.

Laufer and Hulstijn (2001) hypothesized that students would use single translation glosses better because multiple-choice glosses would bring about more involvement of learners than single translation glosses would. The single translation gloss group read a text using glosses with single translations and did not have to search for the meaning of the words or engage in the evaluation process (+Need, -Search, -Evaluation). On the other hand, the multiple-choice gloss group read a text with multiple-choice glosses and had to search for the meaning of the words and evaluate which meaning would best fit among different options (+Need, +Search, +Evaluation). The presence of all three components in multiple-choice glosses in comparison to single translation glosses with one component led to the hypothesis that multiple-choice glosses would be better than single translation glosses for word retention, although this hypothesis has not been supported fully by single translation gloss and multiple-choice gloss studies (Yoshii, 2006).

The studies reported the effectiveness of multiple-choice glosses over no gloss conditions (Rott & Williams, 2003; Rott, Williams, & Cameron, 2002; Yoshii & Flaitz, 2002). However, comparisons between single translation glosses and multiple-choice glosses have brought mixed results. Some studies did not find any significant differences between the two types for incidental vocabulary learning (Craik & Lockart, 1972; Miyasako, 2002; Watanabe, 1997), while others indicated that multiple-choice glosses were more effective than single translation glosses (Rott, 2005).

In Vela's (2015) study, one group had L1 glosses to consult the meaning of the words, one group had L2 glosses and the control group had no glosses. Learners divided to low proficiency and high proficiency

groups. After reading their text under each research condition, participants were given a vocabulary test to identify how many target words they remembered. The results of the study showed that in both levels the experimental groups outperformed the control groups. The low proficiency students especially benefited from the L1 glosses and high proficiency students were successful with both Gloss conditions.

Erturk (2016) found that L1 gloss group significantly outperformed L2 gloss group and no-gloss group was significantly better than L2 gloss group. The survey results indicated that participants preferred L1 glosses. In addition, Mirasol (2014) found out that students who have higher scores in the reading comprehension and summary output made used of all the categories of glossing. It could be inferred from the analysis that glossing instruction taught students to monitor and self-regulate their learning with the text.

Watanabe (1997) compared four formats for presenting an English reading text to Japanese students: (1) appositives (inserting an L2 definition immediately after each word in the text), (2) single marginal glosses (providing such an L2 definition in the margin of the text), (3) multiple-choice marginal glosses (providing two L2 definitions in the margin of the text and having to choose one definition), and (4) control (text only). The study found that both single gloss and multiple-choice gloss groups significantly outperformed the appositive and the text-only groups on the vocabulary posttests. Besides, the single gloss group performed better than the multiple-choice gloss group; however, the difference was not statistically significant.

Miyasako (2002) examined four types of glosses and a control (no reading) group. The four types consisted of (1) multiple-choice glosses in L2, (2) multiple-choice glosses in L1, (3) single gloss in L2, and (4) single gloss in L1. This was a paper-based study and the glosses appeared in the margin of the text. The multiple-choice glosses contained two definitions either in L1 or L2 and the students were told to select one definition. Immediate and delayed (18 days later) vocabulary tests were conducted. The study found that the L2 multiple-choice gloss group scored higher than other gloss groups, but significant group differences did not emerge at the immediate or at the delayed tests. L2 gloss groups

performed better than L1 groups at the immediate test, but no difference appeared in the delayed tests. The effect of gloss types had a relationship with English ability: L2 glossing was more effective for higher-ability learners, while L1 glossing was effective for lower-ability learners. Besides, Nagata (1999) also compared two types of glosses (1) single glosses (providing an L1 translation for each word) and (2) multiple-choice glosses (providing two L1 translations). The gloss content appeared on the side of the screen as the learners clicked on the words in the text. The multiple-choice gloss group selected an L1 translation and was able to check the correct answer through feedback given immediately. The study showed that the multiple-choice group performed significantly better than the single-gloss group on the immediate posttest. The researcher suggested the effectiveness of the multiple-choice gloss in this study came from the fact that it provided students with immediate feedback on their selections as well as encouraging deeper lexical processing. However, the advantage of the multiple-choice group did not last more than one month, and a significant difference did not emerge on the delayed posttest.

Rott (2005) compared the effectiveness of multiple-choice glosses and single translation glosses through think-aloud procedures. The results of four target words measured by VKS (vocabulary knowledge scale) revealed that multiple-choice glosses were more effective than single translation glosses for strengthening form-meaning connections.

As seen above, the number of studies is still limited and the results are still not conclusive. The effectiveness of single translation glosses and multiple-choice glosses seems to be related to how deeply one can process the lexical information presented by glosses and whether one can have immediate feedback on multiple-choice glosses. In studies conducted by Watanabe (1997) and Miyasako (2002), no difference was found between single translation glosses and multiple-choice glosses. On the other hand, Nagata (1999) found that the multiple-choice gloss group outperformed the single translation gloss group.

The purpose of the current study is to compare the effectiveness of single translation gloss texts in L1, L2, and multiple-choice glosses for incidental vocabulary learning. The study aims to examine the short-

term and long-term effects of each gloss type where immediate feedback is given upon the request of a learner. According to the purpose of this text these questions are asked:

1. Which type of glosses "single translation gloss type or multiple-choice gloss type" has more effect on short- vocabulary retention in the immediate post-test?

2. Which type of glosses "single translation gloss type or multiple-choice gloss type" has more effect on short- vocabulary retention in the post-test?

3. Which gloss type"single translation gloss type or multiple-choice gloss type" is more effective on vocabulary retention in the delayed post-test?

## 3. Methodology

### 3.1 Participants

The participants for this study were 80 university students in Tabriz, Iran who were passing General English at the Islamic Azad University-Tabriz Branch. All learners were bilingual (knowing Azerbaijani Turkish and Persian). They were freshmen and had had at least six years of learning the language at their guidance school and high schools. They consisted of 45 male and 66 female students and their average age was 20 years. Their English proficiency was considered as low-intermediate as measured by a standardized modified TOEFL test. The scores were out of 100 points. This test consisted of 25 grammar questions, 25 reading questions, 25 vocabulary questions and 25 Listening questions. All the questions were selected from Cambridge Preparation Book for TOEFL. Those students who got 1above the mean score were selected for the test. After this proficiency test 30 male and 50 female students were chosen for the study. In this study we had four intact groups which were chosen after using a modified TOEFL test and for being sure of their homogeneity another vocabulary test as a pre-test was used. The questions of the vocabulary test were from Rezaiee?s (2008) book.

### 3.2 Instruments

The used texts were from the book "oral representation for stories" written by Rezaiee (2008). The researcher prepared the same story according

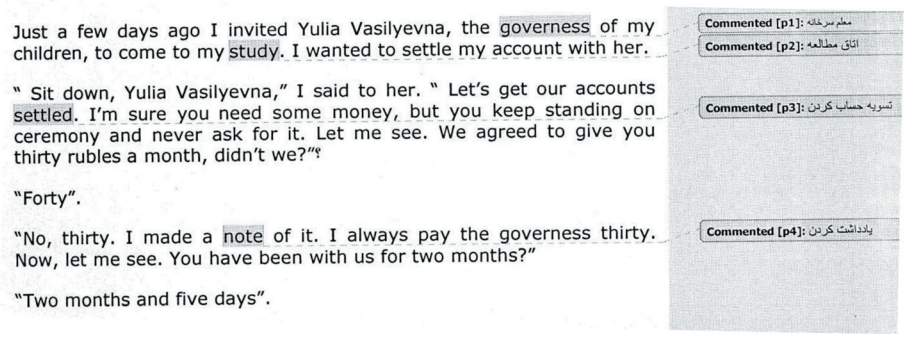
to the type of glosses which should be used for the special groups. In this case, the meaning for the vocabulary of every story in L1 and L2 and multiple meaning were prepared by the researcher as the teacher of all classes. A vocabulary test from the questions in the same book of "oral representation of stories" was used as the pre-test, immediate post-test, post-test and the delayed post-test.

### 3.3 Procedures

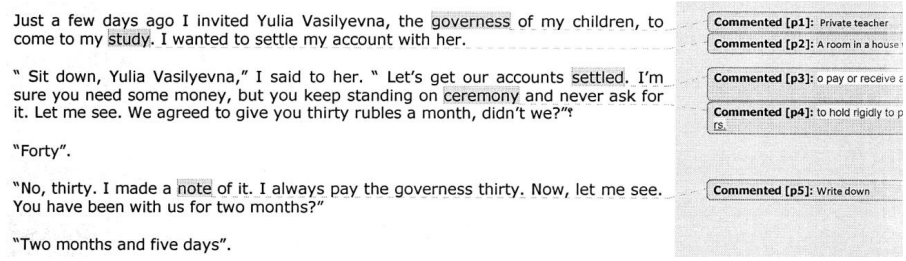
There were 80 participants in the study. They were all university students passing general English with the researcher as their teacher at Islamic Azad University- Tabriz Branch, Iran. They were homogenized by an English proficiency test. Then, they were randomly assigned to four groups. Two single-translation glossing (SG) groups (one experimental group with L1 translation and another experimental group with L2 translation), one multiple-choice glossing (MG) group and one control group were used. Before the reading activity, they took a pretest of target words. It was a definition-supply test and learners had to write the meaning of a word either in L1 or L2. Then in every group, they read a text with L1 or L2 translations in the margins or multiple words with one correct answer for explaining the meaning of unknown words. In the control group, teacher explained the meaning of words in Farsi, Turkish, and English; the teacher also used some synonyms or antonyms in English. They did not have access to the meaning of words in the margins. The students read a text in SG, MG, or control groups for comprehension purposes. They translated the text into Farsi and answered the comprehension questions.

The students were instructed to guess the meanings of the words. If they were not sure of the meaning or if they did not know the meaning, they could refer to the margins which provided the meaning of unknown words in the experimental groups. The first SG group could see a definition of the word in L1. The second SG group could see a definition of the words in L2. The MG group saw four definitions in L2. The choices included one correct meaning, three incorrect meanings. The MG group had to choose one definition out of four as the most appropriate meaning for the word. An example of all types of Glosses is represented below:

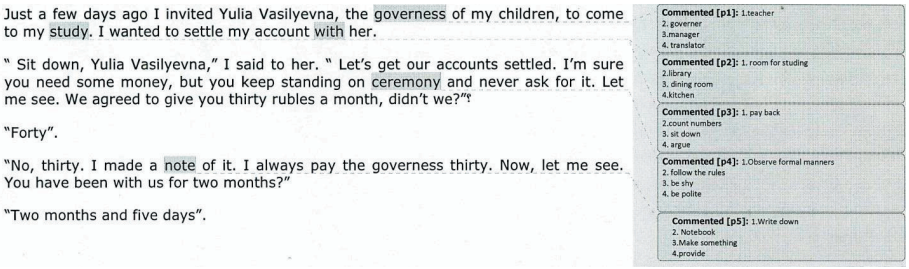
## a. Sample for Single Translation Glossing in L1




## b. Sample for Single Translation Glossing in L2




## c. Sample for Multiple Glossing



## 4. Results

In this chapter gathered information has been analyzed. The analyses are presented in two sections: descriptive statistics and inferential statistics. In the descriptive statistics section, a general descriptive analysis of the research variables was performed and in the inferential statistics, the distribution of the variables' scores was first examined and then the assumptions of the research were evaluated. For Descriptive Findings of variables, the mean, standard deviation, skewness, Kurtosis, minimum and maximum were calculated.

**Table 4.1.** Descriptive Findings of Variables

| | Group | N | Mean | Std. Deviation | Skewness | Kurtosis | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| Proficiency test | SG L1 | 20 | 64.85 | 2.601 | .063 | -.353 | 61 | 70 |
| | SG L2 | 20 | 64.20 | 2.608 | -.045 | -1.005 | 60 | 69 |
| | MG | 20 | 65.25 | 2.099 | -.102 | -.113 | 61 | 69 |
| | Control | 20 | 65.95 | 1.986 | -.103 | -.535 | 62 | 69 |
| | Total | 80 | 65.06 | 2.383 | -.185 | -.498 | 60 | 70 |
| Pre-test | SG L1 | 20 | 3.30 | .923 | .214 | -.595 | 2 | 5 |
| | SG L2 | 20 | 3.25 | .967 | .607 | -.320 | 2 | 5 |
| | MG | 20 | 2.95 | .826 | .722 | .534 | 2 | 5 |
| | Control | 20 | 2.90 | .718 | .152 | -.880 | 2 | 4 |
| | Total | 80 | 3.10 | .866 | .524 | -.248 | 2 | 5 |
| Immediate post-test | SG L1 | 20 | 9.10 | 1.518 | -.186 | -.306 | 6 | 12 |
| | SG L2 | 20 | 8.05 | 1.146 | -.107 | -.474 | 6 | 10 |
| | MG | 20 | 7.20 | 1.281 | .420 | -.314 | 5 | 10 |
| | Control | 20 | 6.35 | .813 | -.113 | -.406 | 5 | 8 |
| | Total | 80 | 7.68 | 1.573 | .438 | -.367 | 5 | 12 |
| Post-test | SG L1 | 20 | 12.15 | .933 | .538 | -.277 | 11 | 14 |
| | SG L2 | 20 | 10.00 | 1.414 | 1.737 | 2.782 | 9 | 14 |
| | MG | 20 | 9.35 | .988 | .283 | -.770 | 8 | 11 |
| | Control | 20 | 8.60 | .503 | -.442 | -2.018 | 8 | 9 |
| | Total | 80 | 10.02 | 1.661 | .758 | -.386 | 8 | 14 |
| Delayed post-test | SG L1 | 20 | 11.40 | .995 | -.585 | .533 | 9 | 13 |
| | SG L2 | 20 | 9.85 | .813 | .949 | 1.184 | 9 | 12 |
| | MG | 20 | 9.20 | .768 | .403 | .366 | 8 | 11 |
| | Control | 20 | 8.55 | .510 | -.218 | -2.183 | 8 | 9 |
| | Total | 80 | 9.75 | 1.317 | .648 | -.391 | 8 | 13 |

For Inferential Findings, Investigating the Normality of the Distribution of Variables' Scores was conducted. The Kolmogorov-Smirnov test was used to examine the normal distribution of variables. The zero assumption in this test proves the normal distribution of the variables. If the significance level of the test is greater than 0.05, it is concluded that the distribution of the desired variable is normal. Considering the significant levels obtained, it is concluded that all variables have a normal distribution (a significant level greater than 0.05).

**Table 4.2.** The result of One-Sample Kolmogorov-Smirnov Test

| | Group | N | Kolmogorov-Smirnov Z | p-value |
|---|---|---|---|---|
| Proficiency test | SG L1 | 20 | .584 | .885 |
| | SG L2 | 20 | .762 | .606 |
| | MG | 20 | .624 | .831 |
| | Control | 20 | .492 | .969 |
| Pre-test | SG L1 | 20 | 1.017 | .252 |
| | SG L2 | 20 | 1.351 | .052 |
| | MG | 20 | 1.234 | .095 |
| | Control | 20 | 1.142 | .147 |
| Immediate post-test | SG L1 | 20 | .775 | .585 |
| | SG L2 | 20 | .817 | .517 |
| | MG | 20 | .785 | .569 |
| | Control | 20 | 1.065 | .207 |
| Post-test | SG L1 | 20 | 1.180 | .123 |
| | SG L2 | 20 | 1.164 | .133 |
| | MG | 20 | 1.066 | .206 |
| | Control | 20 | 1.323 | .065 |
| Delayed post-test | SG L1 | 20 | 1.014 | .255 |
| | SG L2 | 20 | 1.238 | .093 |
| | MG | 20 | 1.354 | .051 |
| | Control | 20 | 1.336 | .061 |

**Comparison of the proficiency test scores in the groups:** One-way analysis of variance was used. The zero assumption in the analysis of variance is the equality of the mean of the dependent variable at all levels of the independent variable (groups). If the significance level of the test is less than 0.05, the zero assumption will be rejected. The mean score of the proficiency test in the SG L1 group was 64.85, in the SG L2 group was 64.20, in the MG group was 65.25 and in the control group 65.95, and the significance level of the variance analysis was 0.127. Due to the larger significance level of the analysis of variance from 0.05, the zero assumption is not rejected. As a result, the difference in score of the proficiency test in the groups is not significant. In that case, all groups are homogeneous.

**Table 4.3.** The result of One-way ANOVA to compare Proficiency test scores among groups

| Dependent variable | groups | N | Mean | Std. Deviation | F | p-value |
|---|---|---|---|---|---|---|
| Proficiency test | SG L1 | 20 | 64.85 | 2.601 | 1.961 | .127 |
| | SG L2 | 20 | 64.20 | 2.608 | | |
| | MG | 20 | 65.25 | 2.099 | | |
| | Control | 20 | 65.95 | 1.986 | | |

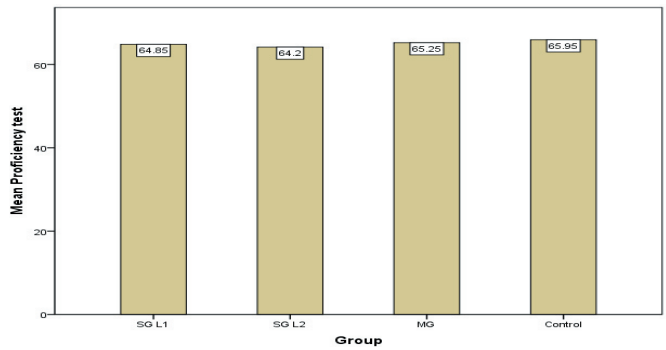



**Figure 1.** The result of One-way ANOVA to compare Proficiency test scores among groups

**Comparison of pre-test scores in the groups:**
One-way analysis of variance was used. The zero assumption in the analysis of variance is the equality of the mean of the dependent variable at

all levels of the independent variable (groups). If the significance level of the test is less than 0.05, the zero assumption will be rejected. The mean pre-test scores in the SG L1 group was 3.30, in the SG L2 group was 3.25, in the MG group was 2.95 and in the control group was 2.90, and the significance level of the variance analysis was 0.348. Due to the larger significance level of the analysis of variance from 0.05, the zero assumption is not rejected. As a result, the pre-test scores were not significantly different in the groups. Pre-test scores with proficiency scores were used to be sure of the homogeneity of the groups in the beginning of the study.

**Table 4.4.** The result of One-way ANOVA to compare Pre-test scores among groups

| Dependent variable | groups | N | Mean | Std. Deviation | F | p-value |
|---|---|---|---|---|---|---|
| Pre-test | SG L1 | 20 | 3.30 | .923 | 1.117 | .348 |
| | SG L2 | 20 | 3.25 | .967 | | |
| | MG | 20 | 2.95 | .826 | | |
| | Control | 20 | 2.90 | .718 | | |

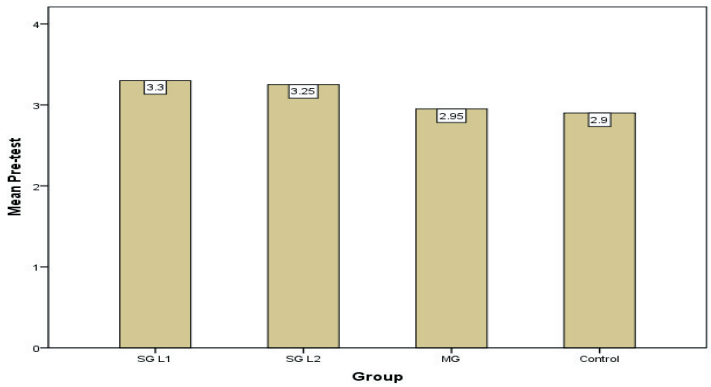



**Figure 2.** The result of One-way ANOVA to compare pre-test scores among groups

**Question 1:** Which of the variables in the Immediate Post-Test has had a better impact on vocabulary learning? One-way analysis of variance was used. The zero assumption in the analysis of variance is the equality of the mean of the dependent variable at all levels of the independent

variable (groups). If the significance level of the test is less than 0.05, the zero assumption will be rejected. The mean of immediate post-test scores in the SG L1 group was 9.10, in the SG L2 group was 8.05, in the MG group was 7.20 and in the control group was 6.35 and the significance level was 0.001. Due to the smaller level of significance in the analysis of variance from 0.05, the zero assumption is rejected. As a result, the rate of Immediate Post-test scores is significantly different in the groups. The results of the LSD post hoc test showed that the rate of immediate post-test in the SG L1 group was greater than the SG L2, MG and the control group; the SG L2 group was more than the MG and control group; and the MG group was more than the control group.

**Table 4.5.** The result of One-way ANOVA to compare immediate post-test scores in groups

| Dependent variable | groups | N | Mean | Std. Deviation | F | p-value |
|---|---|---|---|---|---|---|
| Immediate post-test | SG L1 | 20 | 9.10 | 1.518 | 18.702 | .000 |
| | SG L2 | 20 | 8.05 | 1.146 | | |
| | MG | 20 | 7.20 | 1.281 | | |
| | Control | 20 | 6.35 | .813 | | |

**Table 4.6.** The result of LSD Post Hoc test for immediate post-test scores

| (I) Group | (J) Group | Mean Difference (I-J) | Std. Error | p-value |
|---|---|---|---|---|
| SG L1 | SG L2 | 1.050* | .385 | .008 |
| | MG | 1.900* | .385 | .000 |
| | Control | 2.750* | .385 | .000 |
| SG L2 | SG L1 | -1.050* | .385 | .008 |
| | MG | .850* | .385 | .030 |
| | Control | 1.700* | .385 | .000 |
| MG | SG L1 | -1.900* | .385 | .000 |
| | SG L2 | -.850* | .385 | .030 |
| | Control | .850* | .385 | .030 |
| Control | SG L1 | -2.750* | .385 | .000 |
| | SG L2 | -1.700* | .385 | .000 |
| | MG | -.850* | .385 | .030 |

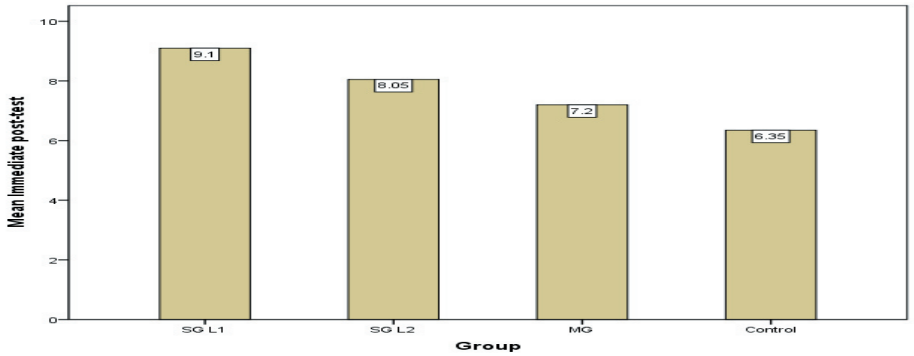



**Figure 3.** The result of One-way ANOVA to compare immediate post-test scores among groups

**Question 2:** Which of the variables in the post-test had a better impact on vocabulary learning? One-way analysis of variance was used. The zero assumption in the analysis of variance is the equality of the mean of the dependent variable at all levels of the independent variable (groups). If the significance level of the test is less than 0.05, the zero assumption will be rejected. The mean scores of the post-test in the SG L1 group was 12.15, in the SG L2 group was 10.0, in the MG group was 9.35 and in the control group was 8.60, and the significance level was 0.001. Due to the smaller level of significance of the analysis of variance from 0.05, the zero assumption is rejected. As a result, post-test scores were significantly different in the groups. The results of LSD post hoc test showed that post-test scores in the SG L1 group were more than SG L2, MG and control groups; SG L2 group was more than the MG and control groups and the MG group more than the control group.

**Table 4.7.** The result of One-way ANOVA to compare Post-test scores among groups

| Dependent variable | groups | N | Mean | Std. Deviation | F | p-value |
|---|---|---|---|---|---|---|
| Post-test | SG L1 | 20 | 12.15 | .933 | 45.545 | .000 |
| | SG L2 | 20 | 10.00 | 1.414 | | |
| | MG | 20 | 9.35 | .988 | | |
| | Control | 20 | 8.60 | .503 | | |

**Table 4.8.** The result of LSD Post Hoc test for Post-test

| (I) Group | (J) Group | Mean Difference (I-J) | Std. Error | p-value |
|---|---|---|---|---|
| SG L1 | SG L2 | 2.150* | .320 | .000 |
| | MG | 2.800* | .320 | .000 |
| | Control | 3.550* | .320 | .000 |
| SG L2 | SG L1 | -2.150* | .320 | .000 |
| | MG | .650* | .320 | .046 |
| | Control | 1.400* | .320 | .000 |
| MG | SG L1 | -2.800* | .320 | .000 |
| | SG L2 | -.650* | .320 | .046 |
| | Control | .750* | .320 | .022 |
| Control | SG L1 | -3.550* | .320 | .000 |
| | SG L2 | -1.400* | .320 | .000 |
| | MG | -.750* | .320 | .022 |

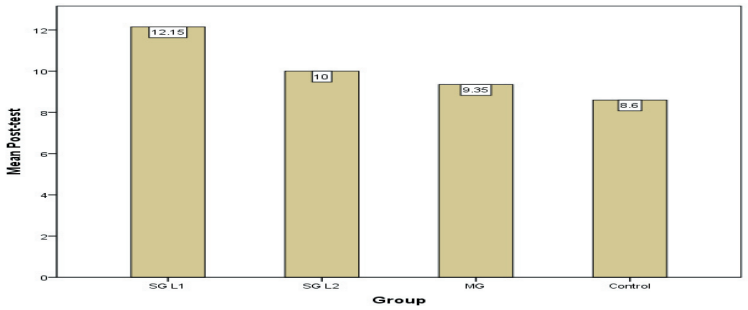



**Figure 4.** The result of One-way ANOVA to compare Post-test scores among groups

**Question 3:** Which of the variables in the delayed post-test had a better impact on vocabulary learning? One-way analysis of variance was used. The zero assumption in the analysis of variance is the equality of the mean of the dependent variable at all levels of the independent variable (groups). If the significance level of the test is less than 0.05, the zero assumption will be rejected. The mean score for Delayed post-test in the SG L1 group was 11.40, in the SG L2 group was 9.85, in the MG group was 9.20 and in the control group 8.55, and the significance level was 0.001. Due to the smaller level of significance of the analysis of variance from 0.05, the zero assumption was rejected. As a result, delayed post-test scores were significantly different in the groups. The results of the LSD post hoc test showed that the Delayed post-test score

in the SG L1 group was greater than the SG L2, MG and control group; the SG L2 group was more than the MG and control groups; and the MG group was more than the control group.

**Table 4.9.** The result of One-way ANOVA to compare delayed post-test scores among groups

| Dependent variable | groups | N | Mean | Std. Deviation | F | p-value |
|---|---|---|---|---|---|---|
| Delayed post-test | SG L1 | 20 | 11.40 | .995 | 47.733 | .000 |
| | SG L2 | 20 | 9.85 | .813 | | |
| | MG | 20 | 9.20 | .768 | | |
| | Control | 20 | 8.55 | .510 | | |

**Table 4.10.** The result of LSD Post Hoc test for Delayed post-test scores

| (I) Group | (J) Group | Mean Difference (I-J) | Std. Error | p-value |
|---|---|---|---|---|
| SG L1 | SG L2 | 1.550* | .250 | .000 |
| | MG | 2.200* | .250 | .000 |
| | Control | 2.850* | .250 | .000 |
| SG L2 | SG L1 | -1.550* | .250 | .000 |
| | MG | .650* | .250 | .011 |
| | Control | 1.300* | .250 | .000 |
| MG | SG L1 | -2.200* | .250 | .000 |
| | SG L2 | -.650* | .250 | .011 |
| | Control | .650* | .250 | .011 |
| Control | SG L1 | -2.850* | .250 | .000 |
| | SG L2 | -1.300* | .250 | .000 |
| | MG | -.650* | .250 | .011 |

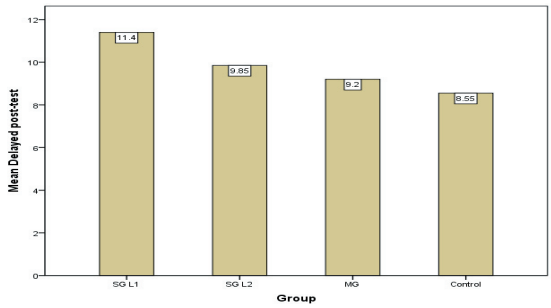



**Figure 5.** The result of One-way ANOVA to compare delayed post-test scores among groups

## 5. Discussion

Students in Iran always complain about their difficulties in learning vocabulary. This study aimed to find a proper technique for teaching vocabulary in EFL context. The researcher used three experimental groups (single textual glossing in L1, single textual glossing in L2 and one multiple glossing groups) and one control group. Students in these four groups (three experimental and one control group) were at low intermediate level.

The first research question compared L1, L2, and MG glosses and the control groups immediate post-test results. Immediate posttest revealed significant differences among three gloss groups and the control group. The results showed that in immediate posttest, the group which received L1 glossing performed better in the vocabulary test. This result corresponded with those of previous studies (Erturk, 2016; Mirasol, 2014; Sahebkheir, 2019; Vela, 2015; Yoshii, 2014) showing significant differences among glosses.

The second research question compared post-tests results of L1, L2, and MG glosses and the control group. The results revealed significant differences among the groups. The same group which received L1 textual glossing performed better on the posttest which might imply that the students were more successful with using L1 glossing. Also the scores were higher than the immediate posttest section. Since in question one, students were not aware of the test but in the posttest, students were aware of the exam at the end of the term. However, it was not the focus of this study. Even in the posttest exam, learners who received L1 glossing could learn vocabulary better than the other groups.

For the third research question, delayed post-tests results of L1, L2, and MG glosses and the control group were compared. In the delayed posttest which was held in the beginning of the second semester and learners were not aware of the exam; all scores were less than posttest level scores like immediate posttest level since students were not aware of the test in advance. However, like other levels, L1 glossing group outperformed the other groups.

As a whole, the current study confirmed the usefulness of glosses. How-

ever, the researcher found out that L1 textual translation glossing was more useful than the other types. It must be said that the results are applicable for low intermediate learners. It can be mentioned that the scores are respectively as follows, L1 glossing then L2 glossing, MC glossing and control group. The gained results rejected previous studies (Craik & Lockart, 1972; Miyasako, 2002; Watanabe, 1997), which did not find any positive effect of glossing on vocabulary learning.

As mentioned earlier the results can be explained by Laufer & Hulstijn (2001) who found out that students would use single translation glosses perform better than multiple-choice glosses. Because when the single translation gloss group read a text using L1 or L2 translations and did not have to search for the meaning of the words or engage in the evaluation process (+Need, -Search, -Evaluation), they just focus on one activity and this complete concentration on one point will increase the retention and learning of that vocabulary. On the other hand, the multiple-choice gloss group read a text with multiple-choice glosses and different translations and had to search for the meaning of the words and evaluate which meaning would best fit among different choices (+Need, +Search, +Evaluation). The presence of all three components in multiple-choice glosses in comparison to single translation glosses causes involvement in more than one activity in a time and can decrease concentration and learning of a word.

## 6. Conclusion

This study tried to find an efficient way for teaching vocabulary to EFL learners and help them in retention of new vocabulary. This research examined the effectiveness of different types of glosses on incidental vocabulary learning through reading skill with particular focus on comparison of L1 textual glossing, L2 textual glossing, and multiple choice glossing types. I found out that using L1 textual glossing had better results on vocabulary learning than the other types of glossing and the control group. These findings are in line with previous findings by (Erturk, 2016; Laufer & Hulstijn, 2001; Mirasol, 2014; Sahebkheir, 2019; Vela, 2015; Yoshii, 2014). The L1 textual glossing group remembered the words better than L2 textual glossing group, MG group and the

control group. Although I cannot say for sure that whether L1, L2, or MG glosses are better, I obtained further confirmation that glosses as a whole are useful. The results of this study have implications for vocabulary learning and teaching. First, glosses are useful whether in L1, L2, or MG glossing forms for enhancing learners' incidental vocabulary learning, and we should continue using glosses in reading materials. According to the results of immediate post-test, post-test, and delayed post-test, the effectiveness of L1, L2, and MG glosses may not differ over time. However, in the immediate posttest and the delayed posttest students score were less than posttest scores due to not being aware of the test. Nonetheless, in all levels, immediate posttest, posttest and delayed posttest, the group that received L1 glossing outperformed the other groups. It may confirm that using L1 glossing in EFL contexts is better than other glossing types. This can be explained through incidental vocabulary learning and noticing. Facing with L1 textual glossing increase noticing and students do not need to discover the meaning. But in other groups student need to first process the meaning in their first language and it can postpone learning. The gained results can be due to language proficiency of learners. Since the chosen learners were at low intermediate level. These results are only applicable and relevant for intermediate EFL learners. It must be mentioned that future studies ought to be done to examine the effect of L1, L2, and MG glosses, taking the learners' proficiency level into consideration. It must be investigated whether higher level learners learn words better with L2 glosses than lower level learners and, conversely, whether lower level learners pick up words better with L1 glosses than higher level learners. The long-term effect of glosses needs to be investigated; I administered delayed tests later than one month. This study should be repeated with longer time process to assess the long term effect of this study.

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