The Effects of L1 and L2 Glossing on the Retention of L2 Vocabulary in Intentional and Incidental Settings

Zahra Afsharzadeh Kazerouni[*]

MA in TEFL

Department of English Language

Islamic Azad University, Shiraz Branch

Shiraz, Iran

zahraafsharzadeh333@gmail.com

Ehsan Rassaei

Associate Professor

Department of Foreign Languages

Islamic Azad University, Shiraz Branch

Shiraz, Iran

Abstract. The current study investigated the effects of L1 and L2 glosses on L2 vocabulary retention in incidental and intentional settings. To this end, 100 intermediate Iranian female learners of English as a foreign language at Soroosh High School were given a pre-test to make sure that they do not have any prior knowledge of the target words. Reading passages with three different glossing conditions (Persian, English, and no gloss) in two different settings (incidental and intentional) were given to five groups (L1 gloss group in incidental setting, L1 gloss group in intentional setting, L2 gloss group in incidental setting, L2 gloss group in intentional setting, and no gloss group). In L1 conditions, learners were provided with Persian words while in L2 conditions, learners were provided with English ones. Learners in the intentional setting were asked to read the text and the glossed words carefully because they would be asked to take a test regarding the words. On the other hand, learners in the incidental condition were not informed about the following tests. Receptive and productive vocabulary tests were administered to measure vocabulary recognition. The collected data were analyzed using one-way ANOVA procedure to see which gloss type most

benefited the participants for vocabulary acquisition in incidental and intentional settings. The results indicated that L1 glossing was more effective than L2 glossing for L2 vocabulary learning. The findings of the current study also showed that vocabulary learning in intentional setting was more successful than learning new words in incidental setting.

1. Introduction

Learning words is considered as the most important part of second language learning. According to Knight (1994), vocabulary learning is an essential part of language learning. Although many studies have investigated different techniques for developing L2 vocabulary learning (e.g., Barcroft, 2009; Ellis, 1999; Kim, 2008; Webb, 2007), the findings of vocabulary learning in L2 acquisition needs further attention. Based on Cobb and Horst's study (2001), vocabulary knowledge is considered as the key element in successful L1 and L2 reading. Chall (1987) proposed a direct link between vocabulary and reading. He stated that vocabulary enhances reading comprehension and reading in turn increases vocabulary knowledge. Day and Bamford (1998) reported that sometimes second language learners are not motivated to read and consider vocabulary learning as a painful process because they have lack of vocabulary knowledge which leads to poor reading skills. It is necessary for EFL/ESL learners to read efficiently without using a dictionary to enjoy reading. Lack of 'noticing' is a major factor in unsuccessful reading. According to Schmidt's noticing hypothesis (1990), noticing is the first stage of learning. Some researchers (e.g., Nation, 2002; Yoshii, 2006) have referred to glossing as one of the most effective tools for increasing noticing which promote vocabulary learning.

According to Kost (1999), glossing is the easiest way to understand the meanings of unfamiliar words in contexts. It does not need dictionary using in order to find the meanings of unknown words. There were some studies which compared the effectiveness of L1 and L2 glosses on L2 vocabulary learning. They indicated that there were significant difference between L1 and L2 glosses. They also mentioned that L1 glosses

are more effective than L2 glosses (e.g., Lee, 1995; Ramachandran & Rahim, 2004; Vela, 2015; Yee, 2010). However, some studies showed that L2 glosses are more effective than L1 glosses (e.g., Ko, 2005; Miyasako, 2002). There were some other studies which indicated no difference between L1 and L2 glosses in second language vocabulary learning (e.g., Azari, 2012; Chen, 2002; Huang, 2003).

According to Nation (2001), vocabulary learning activities are categorized into two types: 1) Incidental and 2) Intentional vocabulary learning. According to Paribakht and Wesche (1997), "incidental vocabulary learning is defined as learning vocabulary items and as a by-product of language use while language learners' attention is focused on the meaning to be conveyed. Incidental learning occurs when learners acquire new aspects of their L2 without being focused on doing so" (p. 195). According to Nation and Meara (2002), "intentional vocabulary learning refers to the learning of vocabulary by deliberately committing lexical information to memory" (p. 42).

Meanwhile, since it is believed that glossing is one of the most useful tools in acquiring new vocabulary by learners (e.g., Holly & King, 1971; Nation, 2001; Vela, 2015), it is important to research different kinds of glossing (L1 or L2) in different settings (incidental or intentional) on L2 vocabulary learning. Although a number of previous studies examined the effects of glossing on vocabulary learning, few studies investigated and compared the effects of L1 and L2 glossing on L2 vocabulary acquisition. Furthermore, previous studies did not investigate the effects of L1 and L2 glosses in intentional and incidental contexts. Consequently, the purpose of the current study is to examine the role of L1 and L2 glosses on the retention of L2 vocabulary in intentional and incidental settings.

2. Background

The current study searched the previous theoretical studies on noticing hypothesis, input, output, glossing, incidental and intentional vocabulary learning. Schmidt (1990) proposed 'noticing hypothesis' in L2 acquisition which is the essential starting stage for acquisition, but not enough. Learners does not automatically learn second language by

noticing alone. Schmidt (1990) reported the importance of the conscious aspect of learning and noticing as a necessary point for L2 learning in response to Krashen's claim (1981) that considered only subconscious processes as a means of successful L2 learning. This characterization of language acquisition highlights the essential role of deliberate learning activities in addition to input for noticing and processing linguistic features including vocabulary items for the retention of L2 vocabulary. According to de la Fuente (2002), for acquiring new words, learners need to "pay attention and notice the new material in the input through output activities that encourage negotiation of new forms" (p. 96). Nation (2001) defined glosses as "brief definitions or synonyms of unknown words either in L1 or L2 which is provided in the text" (p. 174). According to Kost (1999), glossing is the easiest way to understand the meanings of unfamiliar words in contexts. It does not need dictionary using in order to find the meanings of unknown words. He believes that glosses facilitate reading comprehension and short-term vocabulary retention. There are some studies (e.g., Azari, 2012; Chen, 2002; Huang, 2003; Jung, 2015) which compared the effectiveness of L1 and L2 glosses. These studies indicated no difference between the two types of glosses (L1 and L2 glosses). For example, in Azari's study (2012), there were 76 EFL postgraduate students at University Putra Malaysia (UPM) The participants read texts under one of four conditions: a) L1 gloss (Persian), b) L2 gloss (English), c) L1 and L2 gloss (Persian and English), and d) No gloss. Then immediate and delayed post-tests were administered to assess their gain and retention. The results revealed that participants in the experimental L1 gloss, L2 gloss, and L1 and L2 gloss groups outperformed the subjects in the control (no gloss) group in vocabulary gain and vocabulary retention. There are other studies (e.g., Bell & LeBlanc, 2000; Lee, 1995; Ramachandran & Rahim, 2004; Yee, 2010) which indicated L1 glosses are more effective than L2 glosses. For example, according to Ramachandran and Rahim's study (2004), using L1 glossing was more effective than using L2 glossing. They divided 100 elementary ESL students in Malaysia into three groups: 1) L1 gloss (Malay), 2) L2 gloss (English), and 3) No gloss group. There were both immediate and one-month delayed post-tests. The result of the study

revealed superior performance of L1 in both word meaning recall and retention than L2. There are other studies (e.g., Duan & Yan, 2004; Ko, 2005; Miyasako, 2002) which indicated L2 glosses are more effective than L1 glosses. For example, in Miyasako's study (2002), there were six groups: 1) L2 (English) multiple-choice gloss, 2) L1 (Japanese) multiple-choice gloss, 3) L2 (English) single gloss, 4) L1 (Japanese) single gloss, 5) No gloss, and 6) Control group (no reading). There were 187 Japanese high school students who took two vocabulary tests. The results showed that the L2 gloss groups (multiple-choice or single) performed significantly better than the L1 gloss groups (multiple-choice or single) for the immediate test. Krashen (1985) discussed the role of input and output in second language acquisition. He also outlined input hypothesis theory. Input hypothesis claims that "humans acquire language in only one way: By understanding messages or by receiving comprehensible input" (p. 2). Hulstijn (2001) stated that incidental and intentional vocabulary learning are different from each other. Incidental learning refers to the situation in which the learners are not informed of their responsibility for certain information, but are evaluated on that information later. On the other hand, in intentional learning the learners are informed of their responsibility for certain information before doing a task. According to Ahmad (2011), incidental vocabulary learning is more effective than intentional vocabulary learning. Similar studies were also obtained by Carlisle (2007), De Ridder (2002), Laufer and Hulstijn (2001). The results of a number of previous studies support the superiority of intentional over incidental setting (e.g., Ko, 2005; Peters, Hulstijn, Sercu, & Lutjeharms, 2009; Schmitt, 2008). They believed that intentional vocabulary learning, in which student attention is directly engaged and focused on vocabulary, was more effective than incidental vocabulary learning.

Hence, in view of the lack of consistency in the effects of different textual glosses and different settings on L2 vocabulary learning that still remains vague, therefore further analyzed in the light of the results of the present study is needed.

3. The Current Study

The following research questions guide the current study:

1. Does L1 glossing have any statistically significant effect on the retention of L2 vocabulary in intentional setting?

2. Does L2 glossing have any statistically significant effect on the retention of L2 vocabulary in intentional setting?

3. Does L1 glossing have any statistically significant effect on the retention of L2 vocabulary in incidental setting?

4. Does L2 glossing have any statistically significant effect on the retention of L2 vocabulary in incidental setting?

5. Are there any statistically significant differences between L1 and L2 glossing and intentional and incidental settings regarding their effects on L2 vocabulary learning? If the answer is positive, which glossing type and which type of setting is more effective for vocabulary learning?

4. Method

4.1. Participants
The participants who took part in the present study were a total of one hundred (N=100) intermediate female learners of English as a foreign language (EFL) who were studying at Soroosh High School in Shiraz, Iran. All of them had studied English for an average of two years. A total of 100 EFL Iranian learners who took part in the present study were at the same age (15 years old). The method was non-random and the researcher used intact classes.

4.2. Design
This study employs a quasi-experimental design with vocabulary knowledge test, post-test, and delayed post-test in which the collected data were analyzed quantitatively. The participants were assigned into five groups including: L1 gloss group in incidental settings, L2 gloss group in incidental settings, L1 gloss group in intentional settings, L2 gloss group in intentional settings, and a control group. There was just one treatment session. The participants took the post-test after they completed the treatment task. They took the delayed post-test two weeks later.

4.3. Reading materials and target words

A reading text was adapted from Chicken Soup for the Soul by Jack Canfield. In order to make the story more comprehensible and appropriate, some vocabularies and structures were changed and those target vocabulary items which were not included in original text were inserted in to the text. The text was not complicated. Each sentence did not have more than one target word in order not to make learners confused. The text consisted of 11 new target words (unknown words) including: (1. holding, 2. softly, 3. smile, 4. observed, 5. reveal, 6. disappointment, 7. handed, 8. guess, 9. explain, 10. reality, and 11. judge). The target words were printed in boldface to raise the learners' attention. The reading texts were printed for each learner.

4.4. Testing instruments

The following teacher-made tests were used in the current study:

1. A vocabulary knowledge test to ascertain which target words the learners did not know. The learners were asked to write target words' definitions.

2. A multiple choice vocabulary test was administered in order to investigate the vocabulary retention of the learners. This test was also used once as a post-test and once as a delayed post-test. The delayed post-test was the parallel form of the post-test that was prepared to measure the long effects of the treatment sessions and at the same time reduce any practice effects. In the recognition test, multiple choice questions were presented to learners. The learners were asked to answer these questions and selected one choice.

3. A production test in which the learners were asked to write down the English synonyms for the target words. This test was also used once as a post-test and once as a delayed post-test. The delayed post-test was the parallel form of the post-test. In production test, Persian definitions of target words were presented to learners. There were some blanks and the learners were asked to write target words in the blanks.

It is worth noting that at the beginning of each test, clear instructions were given both orally and in written form to clarify what they were

being asked to do. After collecting the papers, the researcher corrected
the papers and rated all the papers twice for reliability purposes.

For estimating the reliability, the correlation between the control
groups' pre and delayed post-tests was estimated which indicated 0.70
reliability. Table 3.1 indicates the reliability values for the two tests.

Table 1. Reliability

Correlation

		Control 1	Control 2
Control 1	Pearson Correlation	1	.704**
	Sig. (2-tailed)		.001
	N	20	20
Control 2	Pearson Correlation	.704**	1
	Sig. (2-tailed)	.001	
	N	20	20

** . Correlation is significant at the 0.01 level (2-tailed)

4.5. Data collection procedures

A vocabulary knowledge test (see Appendix A) was administered to en-
sure that the participants are not familiar with the target words. This
test consisted of 24 items including 19 target words that had been cho-
sen from the text and 5 distractors. Each item consisted of a new target
word and two choices of 'familiar' and 'unfamiliar' were provided. Learn-
ers were asked to read the unknown words and mark 'familiar' if they
knew the meaning of the word and try to provide an English definition
or Persian translation and mark 'unfamiliar' if they did not know the
meaning of the target words. The participants were given 20 minutes to
complete the vocabulary knowledge test. After 20 minutes, the papers
were collected and the researcher corrected them. The result showed that
participants were not familiar with target words.

A suitable reading text from EFL book selected that consisted of 11
new target words. The target words were printed in boldface to raise the
learners' attention. The reading texts were printed for each learner.
The participants were divided into five groups. Each group received the
text as a reading input in which the new target words were accompanied
by their Persian definition (L1 glossing) (see Appendix B), English defi-
nition (L2 glossing) (see Appendix C), or no definition (no glossing) (see
Appendix D). The participants were asked to read the text and answer

the reading comprehension questions. Correct answers to reading comprehension questions were taken as an indication that they had paid attention to the input. After finishing the text and answering the reading comprehension questions, the texts were collected. Then the participants of each group took post-tests that included two forms: 1) Production test (see Appendix E), and 2) Recognition test (see Appendix F). After two weeks, the participants took delayed post-tests that included two forms: 1) Production test (see Appendix G), 2) Recognition test (see Appendix H). Each of the two glossing conditions was operationalized in incidental and intentional settings. As a result, there were five groups participating in the current study including: 1) L1/incidental, 2) L1/intentional, 3) L2/incidental, 4) L2/intentional, and 5) control group.

The following steps were taken during data collection sessions:

1. In the incidental L1 gloss group, the participants were provided with a text that included the target words along with their Persian glosses. The participants were asked to read the text and answer the reading comprehension questions. They were not informed that they would take a test regarding target words.

2. In the intentional L1 gloss group, the same procedure was followed. However, the participants were informed that they would take a test regarding target words.

3. In the incidental L2 gloss group, the participants were provided with a text that included the target words along with their English glosses. The participants were asked to read the text and answer the reading comprehension questions. They had not been informed that they would take a test regarding target words.

4. In the intentional L2 gloss group, the same procedure was followed. However, the participants were not informed that they would take a test regarding target words.

5. In no gloss group, the participants were provided with a text that included the target words without their definitions and glosses. The partic-

ipants were asked to read the text and answer the reading comprehension questions.

After the reading activity finished, the participants took the post-test in the same session. It is worth noting that all the tests and treatments took place in the classroom setting.

5. Results

In order to investigate the effects of treatment conditions on learners post-test and delayed post-test recognition scores, one-way ANOVA was performed. Table 5.1 indicates the results.

Table 5.1. Descriptive statistics for recognition test scores of post-test and delayed post-test

		Post-test		Delayed Post-test	
	N	Mean	Std. Deviation	Mean	Std. Deviation
L1 Incidental	20	59.5	20.89447	51.5	22.54236
L1 Intentional	20	68	23.30575	54.5	31.86732
L2 Incidental	20	47	23.41839	43	25.36056
L2 Intentional	20	51.5	23.23224	39.5	25.23052
Control	20	37.5	19.96708	36.5	20.07224

With regard to the recognition post and delayed post-test, as Table 5.1. shows, the L1 intentional and incidental groups obtained higher scores than the other groups in the post-and delayed post-tests.

Table 5.2 also indicates the results of descriptive statistics for learners' production scores.

Table 5.2. Descriptive statistics for production test scores of post-test and delayed post-test

		Post-test		Delayed Post-test	
	N	Mean	Std. Deviation	Mean	Std. Deviation
L1 Incidental	20	52	23.97367	47.5	20.22895
L1 Intentional	20	66	20.10499	58.5	19.54078
L2 Incidental	20	45.5	19.04980	39	17.44163
L2 Intentional	20	47.5	22.21308	40	19.19430
Control	20	46	13.13893	38	12.39694

With regard to the recognition post and delayed post-test, as Table 5.2 indicates, the L1 intentional and incidental groups obtained higher scores than the other groups in the post-and delayed post-tests.

As Table 5.1 and Table 5.2 show for both recognition and production tests, the L1 intentional and incidental groups obtained higher scores than the other groups in the post-tests and delayed post-tests.

In order to investigate the difference among learners' performance in the production and recognition tests, one-way ANOVA was used.

Table 5.3. ANOVA table for recognition post-test and delayed post-test analysis

Recognition Post-test	Between Groups	10906.000	4	2726.500	5.527	.000
	Within Groups	46865.000	95	493.316		
	Total	57771.000	99			
Recognition Delayed post-test	Between Groups	4780.000	4	1195.000	1.864	.123
	Within Groups	60920.000	95	641.263		
	Total	65700.000	99			

With regard to recognition post- and delayed post-test, as Table 5.3 illustrates, there is a statistically significant difference among the groups in the post-test, $F(4, 95) = 5.5, p < 0.05$. However no statistically significant difference was found among the groups in the delayed post-test, $F(4, 95) = 1.8, p = 0.12$.

In order to locate the differences among the groups in the recognition post-test and delayed post-test, Tukey Post-hoc comparisons were performed. Table 5.4 displays the results of post-hoc comparisons:

As Table 5.4 shows, in recognition post-test, the difference between L1 incidental and control group is statistically significant, p value=0.002. Furthermore, statistical difference were found between L1 intentional and control group and also between L1 incidental and L1 intentional groups. These findings suggest that L1 intentional condition was more effective than the other conditions.

Table 5.4. Group comparisons for recognition post-test and delayed post-test

Recognition Post-test		Recognition Delayed Post-test	
L1 incidental = L1 intentional	(p = 0.74)	L1 incidental = L1 intentional	(p = 0.99)
L1 incidental = L2 incidental	(p = 0.39)	L1 incidental = L2 incidental	(p = 0.82)
L1 incidental = L2 intentional	(p = 0.78)	L1 incidental = L2 intentional	(p = 0.56)
L1 incidental > control	(p < 0.05)	L1 incidental = control	(p = 0.33)
L2 incidental = L2 intentional	(p = 0.96)	L2 incidental = L2 intentional	(p = 0.99)
L2 incidental = control	(p = 0.65)	L2 incidental = control	(p = 0.92)
L2 intentional = control	(p = 0.27)	L2 intentional = control	(p = 0.99)
L1 intentional > control	(p < 0.05)	L1 intentional = control	(p = 0.17)
L2 incidental < L1 intentional	(p < 0.05)	L1 intentional = L2 incidental	(p = 0.60)
L1 intentional = L2 intentional	(p = 0.13)	L1 intentional = L2 intentional	(p = 0.33)

As Table 5.4 also displays, in recognition delayed post-test, no statistically significant difference was found between the experimental groups on the one hand and the control groups, p value=0.002.

In order to investigate the effects of treatment conditions on learners post-test and delayed post-test production scores, one-way ANOVA was performed. Table 5.5 indicates the results.
With regard to production post- and delayed post-test, as Table 5.5 shows, there was a statistically significant difference among the groups in the post-test, $F(4, 95) = 3.6, p < 0.05$. Moreover, there was a statistically significant difference among the groups in the delayed post-test, $F(4, 95) = 4.6, p < 0.05$.

In order to locate the differences among the groups in the production post-and delayed post-test, Tukey Post-hoc comparisons were performed. Table 5.6 displays the results of post-hoc comparisons:

Table 5.5. ANOVA results for production post-test and delayed
post-test analysis

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Production Post-test	Between Groups	5854.000	4	1463.500	3.644	.008
	Within Groups	38150.000	95	401.579		
	Total	44004.000	99			
Production Delayed post-test	Between Groups	5954.000	4	1488.500	4.602	.002
	Within Groups	30730.000	95	323.474		
	Total	36684.000	99			

Table 5.6. Group comparisons for production post-test and delayed
post-test

Production Post-test	Production Delayed Post-test
L1 incidental = L1 intentional (p = 0.18)	L1 incidental = L1 intentional (p = 0.30)
L1 incidental = L2 incidental (p = 0.84)	L1 incidental = L2 incidental (p = 0.56)
L1 incidental = L2 intentional (p = 0.95)	L1 incidental = L2 intentional (p = 0.68)
L1 incidental = control (p = 0.87)	L1 incidental = control (p = 0.45)
L2 incidental = L2 intentional (p = 0.99)	L2 incidental = L2 intentional (p = 1.00)
L2 incidental = control (p = 1.00)	L2 incidental = control (p = 1.00)
L2 intentional = control (p = 0.99)	L2 intentional = control (p = 0.99)
L1 intentional > control (p < 0.05)	L1 intentional > control (p < 0.05)
L2 incidental < L1 intentional (p < 0.05)	L2 incidental < L1 intentional (p < 0.05)
L1 intentional > L2 intentional (p < 0.05)	L1 intentional > L2 intentional (p < 0.05)

As Table 5.6 shows, in production post-test, the difference between L1 in-
tentional and the control group is statistically significant, p value=0.003.
Furthermore, statistical differences were found between L2 incidental
and L1 intentional groups, and also between L1 intentional and L2 inten-
tional groups, p value=.002. These findings suggest that L1 intentional
condition was more effective than the other conditions.

As the Table 5.6 also shows, in production delayed post-test, the difference between L1 intentional and the control group is statistically

6. Discussion

The main purpose of this research was to investigate the impact of using L1 and L2 glosses on L2 vocabulary retention in incidental and intentional settings.

The first research question of the current study asks whether L1 glosses have any statistically significant effect on the retention of L2 vocabulary in intentional setting. Regarding the recognition and production post-tests and delayed post-tests scores, the treatment group outperformed the control group. Furthermore, the L1 intentional group outperformed the control group. Moreover, the results in the current study indicated that L1 glosses have statistically significant effects on the retention of L2 vocabulary in intentional setting. The results of a number of previous studies also supported the results of the current study. Several studies found that learners who received L1 glosses outperformed learners who received L2 glosses (e.g., Bell& LeBlanc, 2000; Etemadi, 2011; Fang, 2009; Laufer & Shmueli, 1997; Lee, 1995; Lu, 2005; Paribakht, 2005; Ramachandran & Rahim, 2004; Vela, 2015; Yee, 2010). Some studies reported the beneficial effects of intentional vocabulary over incidental vocabulary learning (e.g., Ko, 2005; Laufer & Hulstijn, 2001; Nation & Meara, 2002; Peters, Hulstijn, Sercu, & Lutjeharms, 2009; Schmitt, 2008; Yun, 2011). Therefore, the first null hypothesis of the current study that stated L1 glosses have no statistically significant effect on the retention of L2 vocabulary in intentional setting is rejected.

The second research question of the current study asks whether L2 glosses have any statistically significant effect on the retention of L2 vocabulary in intentional setting. The results in the current study indicated that L2 glosses have no statistically significant effect on the retention of L2 vocabulary in intentional setting. Therefore, the second null hypothesis of the current study that stated L2 glosses have no statistically significant effect on the retention of L2 vocabulary in intentional setting is accepted.

The third research question of the current study asks whether L1 glosses have any statistically significant effect on the retention of L2 vocabulary in incidental setting. With regard to this research question, the only difference which was found was the difference between L1 incidental and control group in the recognition post-test scores. The results showed that L1 glosses were not effective in post-test and delayed post-test production test and also delayed recognition test. Therefore, the third null hypothesis of the current study that stated L1 glosses have no statistically significant effect on the retention of L2 vocabulary in incidental setting is rejected.

The fourth research question of the current study asks whether L2 glosses have any statistically significant effect on the retention of L2 vocabulary in incidental setting. The results of the current study indicated that L2 glosses have no statistically significant effect on the retention of L2 vocabulary in incidental setting. Therefore, the fourth null hypothesis of the current study that stated L2 glosses have no statistically significant effect on the retention of L2 vocabulary in incidental setting is accepted.

Finally, the fifth research question asked if there is a statistically significant difference between L1 and L2 glossing and also between incidental and intentional settings regarding their effects on L2 vocabulary learning. The results indicated that in general L1 glossing was more effective than L2 glossing for vocabulary learning. Furthermore, the findings revealed that intentional setting was more beneficial than incidental setting for L2 vocabulary learning. Therefore, the fifth null hypothesis of the current study that stated there is no statistically significant difference between L1 and L2 glossing and intentional and incidental settings regarding their effects on L2 vocabulary learning is rejected.

The results of a number of previous studies supported the results of the current study. The research results confirmed the schema theory (Anderson, 1984) based on which the provision of L1 glossed texts facilitates second language learning by activating the learner's prior knowledge. Furthermore, the better performance of participants in L1 gloss (experimental group) compared to the subjects in no gloss (control group) confirmed the noticing hypothesis (Schmidt, 1990) in which it is

necessary to pay attention to the L2 input in order to learn a second language more efficiently. According to Ramachandran and Rahim's study (2004), using L1 glossing was more effective than using L2 glossing. The participants had to provide meanings, in either written Malay (L1 gloss) or English (L2 gloss), for the lexical items learnt. The result of the study revealed superior performance of L1 in both word meaning recall and retention than L2.

Lee (1995) and Yee (2010) also indicated that participants who used L1 glosses were significantly better than those who used L2 glosses (English) in terms of learning new L2 vocabularies.

In another similar study, Vela (2015) found that using L2 glosses were not as effective as L1 glossing. He stated that low proficiency students especially benefited from the L1 glosses, while high proficiency students were successful with both glossing conditions. Therefore, Vela's (2015) study confirmed the usefulness of using L1 glosses in L2 reading comprehension and vocabulary acquisition.

In another related study, Bell and LeBlanc (2000) found that participants who were provided with L1 glosses (English) were more successful at learning new L2 Spanish vocabularies. Similar results were also obtained by Laufer and Shmueli (1997) who found that L1 glosses were more effective than L2 glosses for the short-and long-term retention of L2 vocabulary.

The findings of the current study also showed that vocabulary learning in intentional setting was more successful than learning new words in incidental settings. Laufer and Hulstijn (2001) defined intentional vocabulary learning as learning of vocabulary by deliberately committing lexical information to memory.

The results of a number of previous studies support the superiority of intentional over incidental setting (e.g., Ko, 2005; Peters, Hulstijn, Sercu, & Lutjeharms, 2009; Schmitt, 2008). The results of the current study support Schmitt's noticing hypothesis (2008). According to Schmitt (2008), deliberate or intentional vocabulary learning is an important part of a vocabulary learning program. He stated that in intentional vocabulary learning learners learn second language vocabularies faster and recall them better than in incidental vocabulary

learning. Schmitt (2008) recommended the importance of the conscious mode of learning. He determined 'noticing' as a necessary condition for L2 learning. Noticing also can facilitate L2 vocabulary learning. He determined intentional vocabulary learning as something that can promote learners' greater efficiency.

Other researchers (e.g., Ko, 2005; Peters, Hulstijn, Sercu, & Lutjeharms, 2009) believed that intentional vocabulary learning, in which student attention is directly engaged and focused on vocabulary, was more effective than incidental vocabulary learning.

Yun (2011) had also pointed out that an intentional component was necessary in order to promote greater efficiency. According to Nation and Meara (2002), deliberate or intentional vocabulary learning have three goals: 1) It helps learners learn vocabularies well, 2) Raise learner's consciousness of particular words, and 3) Help learners gain knowledge of strategies that can be useful while learning a large number of words.

7. Conclusions, Implications, Limitations and Future Directions

The main goal of this study was to highlight the importance of L1 and L2 glossing in L2 vocabulary learning and teaching. The results indicated that, in general, L1 glossing could be more effective than L2 glossing for vocabulary learning. The findings of the current study also showed that vocabulary learning in intentional setting could be more successful than learning new words in incidental settings. In other words, the results indicated that L1 glosses could have statistically significant effect on the retention of L2 vocabulary in intentional setting. The findings of the current study have some implications for ELT teachers, material developers, and syllabus designers.

First of all, this study may be helpful to ELT teachers who have difficulty in teaching vocabulary to EFL/ESL students. The study encourages teachers to work on vocabulary via glossing. Holly and King (1971) stated that glossing is a helpful tool in facilitating vocabulary learning and reading comprehension. They believed that glossing helps learners to practice vocabulary learning in the text. Furthermore, the

results of the present study have some implications for syllabus designers in the sense that they can design syllabuses that include glosses. Glossing in a text helps learners to make the reading process flow freely and smoothly without interruption. According to Nagata (1999), glosses have some benefits. Glosses are easier to use than dictionaries; learners can find meaning immediately by glossing; L2 learners pay attention to targeted lexical items. Finally, glosses encourage L2 learners to move back and forth between unknown words and glosses.

Moreover, there are also some implications for ELT material developers who design vocabulary text books for EFL/ESL learners. It is suggested that providing students with authentic materials and involving them in everyday tangible topics would be helpful for vocabulary acquisition. Material developers can use L1 glosses in reading texts for vocabulary learning tasks.

As a final implication of this study, it could be stated that the findings of this research may also encourage teachers who still believe in teacher-centeredness in language teaching to change their viewpoints in favor of more learner-centered techniques. As indicated by Stewart and Cross (1991) "with glossed text, three voices become involved in the reading: The inner voice of the reader, the voice of the author, and the voice of the teacher manifested in the gloss" (p. 5). Therefore, it can be concluded that glossing can promote independent learning which is considered as the ultimate goal of teaching.

Like any kind of research, the present study suffered from a number of limitations. They are as follows:

1. The researcher had to narrow down the scope of the study to only one high school (Soroosh High School, Shiraz, Iran).

2. The participants in current study were only females. Therefore, the results of this study should be generalized to other situations with caution.

3. The participants of the current study received only one treatment session, because of lack of time. If there were more treatment sessions, more valid results would have been obtained.

4. An investigation of the learning strategies used in the present study by the learners in these conditions could have provided more important information about depth of processing and its relationship with longer-term retention.

Additional investigation is needed to further examine the relationship between the incidental and intentional modalities over a longer period of time with more target items and a greater number of participants for more reliable data. It would also be interesting to administer a third test to investigate the effects of the treatment beyond the two tests. Future studies can employ more communicative tests to examine the effects of glossing on vocabulary learning in a more communicative and natural contexts. Furthermore, future studies can investigate the effects of other types of glossing such as writing glosses as footnotes on L2 vocabulary in incidental and intentional contexts. Finally, future studies can investigate the effects of different modes of glossing (e.g., pictorial glosses, computerized glosses) in incidental and intentional contexts on L2 vocabulary acquisition.

Declaration of conflicting interest
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Ahmad, J. (2011). Intentional vs. incidental vocabulary learning. *Interdisciplinary Journal of Contemporary Research in Business, 3*(5), 67-88.

Anderson, R. C. (1984). Role of the reader's schema in comprehension, learning, and memory. *Language Learning, 3*(2), 65-98.

Azari, F. (2012). Review of effects of textual glosses on incidental vocabulary learning. *International Journal of Innovative Ideas, 12*(2), 13-24.

Barcroft, J. (2009). Effects of synonym generation on incidental and intentional L2 vocabulary learning during reading. *TESOL Quarterly, 43*(1), 79-103.

Bell, F. L., & LeBlanc, L. B. (2000). The language of glosses in L2 reading on computer: Learners' preferences. *Hispania, 52,* 274-285.

Carlisle, J. F. (2007). Fostering morphological processing, vocabulary development, and reading comprehension. *Vocabulary Acquisition: Implications for Reading Comprehension, 3,* 78-103.

Chall, J. S. (1987). Two vocabularies for reading: Recognition and meaning. *Reading in a Foreign Language, 4,* 117-153.

Chen, H. (2002). Investigating the effects of L1 and L2 glosses on foreign language reading comprehension and vocabulary retention. *Language Learning, 21*(3), 118-173.

Day, R. R., & Bamford, J. (1998). Teaching reading. *Annual Review of Applied Linguistics, 18,* 124-141.

De Ridder, I. (2002). Visible or invisible links: Does the highlighting of hyperlinks affect incidental vocabulary learning, text comprehension, and the reading process. *Language Learning & Technology, 6*(1), 123-146.

Duan, S., & Yan, C. (2004). Multiple choice glossing on incidental English vocabulary acquisition. *Foreign Language Teaching and Research, 3,* 213-218.

Ellis, R. (1999). Input-based approaches to teaching grammar: A review of classroom-oriented research. *Annual Review of Applied Linguistics, 19,* 64-80.

Etemadi, N. (2011). The effects of lexical glossing on receptive skills of Iranian EFL learners. *International Journal of Language Learning and Applied Linguistics World, 5*(2), 396-415.

Fang, S. (2009). Chinese gloss or English gloss: Which is more effective for incidental vocabulary acquisition through reading? *Reading in a Foreign Language, 5,* 217-268.

Holly, F., & King, J. (1971). Vocabulary glosses in foreign language learning materials. *Language Learning, 21,* 213-219.

Huang, Y. C. (2003). The effects of vocabulary glosses and example sentences on junior high school EFL students' reading comprehension and vocabulary learning. *Journal of Research in Reading, 17,* 51-87.

Hulstijn, J. H. (2001). Intentional and incidental second language vocabulary learning: A reappraisal of elaboration, rehearsal and automaticity. *Vocabulary and Applied Linguistics, 2,* 107-152.

Jung, Y. J. (2015). Surface gloss, reflectance, property and ability. *Language Teaching Research, 9,* 18-296.

Kim, Y. (2008). Effects of input elaboration on vocabulary acquisition through reading by Korean learners of English as a foreign language. *TESOL Quarterly, 40*(2), 341-373.

Knight, S. (1994). Dictionary use while reading: The effects on comprehension and vocabulary acquisition for students of different verbal abilities. *Modern Language Journal, 21,* 285-299.

Ko, M. H. (2005). Glosses, comprehension, and strategy use. *Reading in a Foreign Language, 17*(2), 125-143.

Kost, C. R. (1999). Textual and pictorial glosses: Effectiveness on incidental vocabulary growth when reading in a foreign language. *Foreign Language Annals, 32*(1), 89-97.

Krashen, S. (1981). *Second language acquisition and second language learning.* Oxford University Press.

Krashen, S. (1985). *The input hypothesis: Issues and implications.* New York: Academic Press.

Krashen, S. (1989). We acquire vocabulary and spelling by reading: Additional evidence for the input hypothesis. *The Modern Language Journal, 73*(4), 440-464.

Laufer, B., & Hulstijn, J. (2001). Incidental vocabulary acquisition in a second language: The construct of task-induced involvement. *Applied Linguistics, 22,* 1-26.

Laufer, B., & Shmueli, K. (1997). Memorizing new words: Does teaching have anything to do with it? *RELC Journal, 28*(1), 89-108.

Lee, J. F. (1995). The relationship of verb morphology to second language reading comprehension and input processing. *Modern Language Journal, 82,* 33-48.

Lu, H. (2005). Changes in gloss after simulated generalized wear of composite resins. *The Journal of Prosthetic Dentistry, 94*(4), 370-376.

Miyasako, N. (2002). Does text-glossing have any effects on incidental vocabulary learning through reading for Japanese senior high school students? *Language Education & Technology, 39,* 1-20.

Nagata, N. (1999). The effectiveness of computer?assisted interactive glosses. *Foreign Language Annals, 32*(4), 469-479.

Nation, I. S. P. (2001). *Learning vocabulary in another language.* New York: Cambridge University Press.

Nation, I. S. P. (2002). The rediscovery of vocabulary. *Second Language Research, 18*(4), 393-407.

Nation, P., & Meara, P. (2002). Vocabulary. *An Introduction to Applied Linguistics, 5,* 35-54.

Paribakht, T. S. (2005). The influence of first language lexicalization on second language lexical inferencing: A study of Farsi-speaking learners of English as a foreign language. *Language Learning, 55*(4), 701-748.

Paribakht, T. S., & Wesche, M. (1997). Vocabulary enhancement activities and reading for meaning in second language vocabulary acquisition. *Second Language Vocabulary Acquisition: A Rationale for Pedagogy, 23,* 174-200.

Peters, E., Hulstijn, J. H., Sercu, L., & Lutjeharms, M. (2009). Learning L2 German vocabulary through reading: The effect of three enhancement techniques compared. *Language Learning, 59*(1), 113-151.

Ramachandran, S. D., & Rahim, H. A. (2004). Meaning recall and retention: The impact of the translation method on elementary level learners' vocabulary learning. *RELC Journal, 35*(2), 161-178.

Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics, 11*(2), 129-158.

Schmitt, N. (2008). Review article: Instructed second language vocabulary learning. *Language Teaching Research, 12*(3), 329-363.

Vela, V. (2015). Using glosses for incidental vocabulary acquisition. *Procedia-Social and Behavioral Sciences, 199*(3), 305-310.

Webb, S. (2007). The effects of context on incidental vocabulary learning. *Reading in a Foreign Language, 20*(2), 232-245.

Yee, S. W. (2010). Short-term and long-term retention of new words: Investigating the role of L1 glossing in vocabulary learning among Hong Kong ESL learners. *The Modern Language Journal, 22,* 78-119.

Yoshii, M. (2006). L1 and L2 glosses: Their effects on incidental vocabulary retention: The effect of picture and annotation types. *CALICO Journal, 20*(1), 33-58.

Yun, J. (2011). The effects of hypertext glosses on L2 vocabulary acquisition: A meta-analysis. *Computer Assisted Language Learning, 24*(1), 39-58.

Appendix A (Vocabulary Knowledge Test)

Hi, please help me to do my research better. Thanks.

Vocabularies	familiar	unfamiliar	write the meaning if familiar
كلمات	آشنا هستيد	آشنا نيستيد	اگر معنی را ميدانيد بنويسيد :
Laugh	…	…	....
Smile	…	…	....
Daughter	…	…	………………………
Observe	…	…	………………………
Angry	…	…	………………………
Disappointment	…	…	………………………
Record	…	…	………………………
Let	…	…	………………………
Guess	…	…	………………………
Explain	…	…	………………………
Early	…	…	………………………
Softly	…	…	………………………
Hold	…	…	………………………
Different	…	…	………………………
Try	…	…	………………………
Reality	…	…	………………………
No matter	…	…	………………………
Judge	…	…	…………………....
Reveal	…	…	………………………
Quickly	…	…	………………..........
Sweet	…	…	………………………
Tell	…	…	………………………
Quietly	…	…	………………………
Gave	…	…	………………………

Appendix B
L1 Glossing

لطفا متن را بخوانید و سعی کنید کلمات پر رنگ و معنی هر کدام را به حافظه بسپارید. سپس به سوالات پاسخ دهید. پاسخ به سوالات جهت کار پژوهشی و تحقیقاتی در مقطع کارشناسی ارشد میباشد و هیچ نمره ای ندارد. لطفا همکاری بفرمایید.

A beautiful little girl was **holding** (در دست داشتن) two apples with both hands. Her mother came and **softly** (با مهربانی) asked her little daughter with a **smile** (لبخند): my dear, could you give your mother one of your two apples?

The girl **observed** (نگاه کردن) her mother, then she quickly ate one apple and then ate the other apple.

The mother got angry. She tried hard not to **reveal** (نشان دادن) her **disappointment** (دلشکستگی, ناراحتی).

Then the little girl **handed** (داد) one of her apples to her mother, and said: mother, here you are. This apple is for you. This is the sweeter .

No matter who you are. We should not **guess** (حدس زدن) bad things about people. We should let people **explain** (توضیح دادن). What you see may not be the **reality** (واقعیت). Never **judge** (قضاوت کردن) too early.

The little girl loved her mother.	True	False
The girl gave two apples to her mother.	True	False
The girl ate one of the apple.	True	False

Appendix C
L2 Glossing

لطفا متن را بخوانید و سعی کنید کلمات پر رنگ و معنی هر کدام را به حافظه بسپارید. سپس به سوالات پاسخ دهید.پاسخ به سوالات جهت کار پژوهشی و تحقیقاتی در مقطع کارشناسی ارشد میباشد و هیچ نمره ای ندارد.لطفا همکاری بفرمایید.

A beautiful little girl was **holding (**have something in hand**)** two apples with both hands. Her mother came and **softly** (quietly, not loudly) asked her little daughter with a **smile** (laugh)**:** my dear, could you give your mother one of your two apples?

The girl **observed** (watched, saw) her mother, then she quickly ate one apple and then ate the other one.

Her mother got angry. She tried hard not to **reveal** (show) her **disappointment** (sadness, unhappiness)**.**

Then the little girl **handed** (gave) one of her apples to her mother, and said: mother, here you are. This apple is for you. This is sweeter.

No matter who you are. We should not **guess** (think) bad things about people. We should let people **explain** (tell, make clear)**.** What you see may not be the **reality** (truth)**.** Never **judge** (say something is good or bad) too early.

The Little girl loved her mother.	True	False
The girl gave two apples to her mother.	True	False
The girl ate one of the apples.	True	False

Appendix D
No Glossing

لطفا متن را بخوانید و سعی کنید کلمات پر رنگ را به حافظه بسپارید. سپس به سوالات پاسخ دهید. پاسخ به سوالات جهت کار پژوهشی و تحقیقاتی در مقطع کارشناسی ارشد میباشد و هیچ نمره ای ندارد. لطفا همکاری بفرمایید.

A beautiful little girl was **holding** two apples with both hands. Her mother came and **softly** asked her little daughter with a **smile:** my dear, could you give your mother one of your two apples?

The girl **observed** her mother, then she quickly ate one apple and then ate the other apple.

The mother got angry. She tried hard not to **reveal** her **disappointment.**

Then the little girl **handed** one of her apples to her mother, and said: mother, here you are. This apple is for you. This is the sweeter**.**

No matter who you are. We should not **guess** bad things about people. We should let people **explain.** What you see may not be the **reality.**

Never **judge** too early.

The little girl loved her mother.	True	False
The girl gave two apples to her mother.	True	False
The girl ate one of the apple.	True	False

Appendix E
Production Test as a Post-test

نام و نام خانوادگی: لطفا کلمات را به انگلیسی بنویسید:

حدس زدن: g - - - -

رانندگی کردن: d - - - -

در دست داشتن: h - - -

نشان دادن: r - v - - l

با مهربانی: s - - - - -

لبخند: s - - - -

نگاه کردن: o - - - - - -

توضیح دادن: e - - - - - -

قضاوت کردن: j - - - -

واقعیت: r - - - - - -

Appendix F
Recognition Test as a Post-test

نام و نام خانوادگی:

لطفا سوالات زیر را پاسخ دهید.

1. He was ……………. a baby in his arms.

   a) walking   b) holding   c) running   d) leaving

2. Ali got angry, so he did not …………… .

   a) remember   b) cry   c) smile   d) climb

3. Mina, please open the window and ……………. birds.

   a) bake   b) observe   c) repair   d) read

4. Peter is laughing. It ………….. his happiness.

   a) wears   b) decides   c) spends   d) reveals

5. A father …………….. money to his son.

   a) happened   b) hanged   c) handed   d) heard

6. I don't know what your name is, but I can ………….. .

   a) keep   b) guess   c) forget   d) burn

7. John is sad. He can't hide his ……………… .

   a) happiness   b) fun   c) disappointment   d) smile

8. Marry, please …………….. ,and say why you came late.

   a) explain   b) decide   c) make   d) get

9. An elephant is ……………… than a horse.

   a) biggest   b) smaller   c) bigger   d) smallest

10. You should never ………………….. a person by their clothes .

   a) pay   b) boil   c) judge   d) raise

Appendix G
Production Test as a Delayed Post-test

نام و نام خانوادگی: لطفا کلمات را به انگلیسی بنویسید:

نشان دادن: r - - - - -

نگاه کردن: o - - - - - -

توضیح دادن: e - - - - - -

قضاوت کردن: j - - - -

واقعیت: r - - - - - -

غذا خوردن: e - -

در دست داشتن: h - - -

لبخند: s - - - -

Appendix H
Recognition Test as a Delayed Post-test

لطفا به سوالات زیر با دقت پاسخ دهید. این سوالات صرفا برای کار پژوهشی در مقطع کارشناسی ارشد میباشد. لطفا همکاری بفرمایید. با تشکر

نام و نام خانوادگی:

1. The ………… Of trees change from green to yellow in the fall.
a)   farm   b) root   c) color   d) garden

2. Her mother …………….. money to Mina.
b) happened   b) hanged   c) hanged   d) handed

3. Jack was …………….. a ball in his hands.

b) walking   b) holding   c) running   d) leaving

4. John is sad. He can`t hide his ……………… .

b) happiness   b) fun   c) disappointment   d) smile

5. Peter is laughing. It ………….. his happiness.

b) wears   b) decides   c) spends   d) reveals

6. People should never ………………….. a person by their clothes .

 a) pay   b) boil   c) judge   d) raise

7. Reza, please open the window and ……………. sky.

b) bite   b) observe   c) repair   d) read

8. Marry, please …………….. ,and say why you came late.

a) explain   b) decide   c) make   d) get

9. I don't know what your name is, but I can ………….. .

b) keep   b) guess   c) forget   d) burn

10. Elena got angry, so she did not …………… .
a) remember   b) cry   c) smile   d) climb

I enjoyed reading the article; however, there were some problems which need the authors' attention:

1. Some referenced used in the test were not mentioned in the reference list.

2. Method section needs some revisions regarding the order of materials presented or more elaboration on some issues such as the designer of the tests, the name of the EFL book employed etc.

3. Some tables in result sections are not maneuvered on. Besides, in some explanations the numbers were not mentioned.

4. Discussion section needs to be reordered regarding the paragraphs comparing and contrasting the results.