The Effect of Gloss Type and Mode on Iranian EFL Learners' Vocabulary Acquisition

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Abstract

Vocabulary is an important component of language proficiency which provides the basis for learners' performance in other skills. But, since vocabulary learning seems to be so demanding, learners tend to forget newly-learnt words quite soon. In order to identify vocabulary learning conditions which can produce a more lasting effect, this study investigated the effect of three kinds of gloss conditions, that is traditional non-CALL marginal gloss, audio gloss, and extended audio gloss, on vocabulary gain of EFL learners. To this end, three experimental and one control groups, each comprising 15 participants, took part in the current study. In order to ensure that the participants were from the right proficiency level, KET (Key English Test) was used as the homogenizing tool. Participants in each group read two unseen passages under one of the three mentioned conditions for experimental groups, with no gloss offered for control group. They all completed one pre-test, one reading session, one post-test, and one delayed post-test of vocabulary. The data were analyzed using *t*-tests and one-way ANOVAs for both immediate and delayed post-tests. Statistical analyses of the results revealed that the audio gloss group, who were provided with the voice of a speaker to read the meaning of the target word, and extended audio gloss group, who had access to audio gloss as well as L2 English example, both significantly outperformed the other groups in terms of vocabulary acquisition in both the immediate retention and in the delayed retention of key words. Further results and implications are discussed in the paper.

Keywords: audio gloss, extended audio gloss, gloss types, multimedia gloss, vocabulary acquisition

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INTRODUCTION

Vocabulary is a basic component of language proficiency which provides the basis for learners' performance in other skills (Alemi & Tayebi, 2011). As Brown (2001) pointed out, without grammar very little can be conveyed, but without vocabulary nothing can be conveyed. But, for many language learners, vocabulary learning seems to be demanding, and learners tend to forget newly-remembered words. Especially, EFL learners face the challenge of lacking enough exposure to English, and the class is the only occasion to access input. In addition, there are only limited hours per week for the English course in most schools and universities. It is also a widely held belief that words are the building blocks of language, and an insufficient vocabulary knowledge will surely become an obstacle to the acquisition of other skills including reading, writing, listening and speaking. Thus, there seems an urgent need to find an effective self-study approach for the students to develop their communication skills and enlarging their vocabulary size (Motallebzadeh & Ganjali, 2011). Nation (2001) notes that learners need to acquire a few important vocabulary learning strategies such as guessing from context, using word cards, using word parts, using mnemonic techniques, expressing the keyword techniques and making use of dictionaries. While, the use of a glossary may be beneficial in this regard, it is not made use of properly in course books.

Many studies have been done on the effects of glosses on vocabulary acquisition. Compared to other research studies on gloss, this study looks at audio-gloss, the literature on which is very scant. There is also a new gloss type defined for this study (extended gloss) which is totally new to gloss research area. The important role that glossary plays in vocabulary learning,

and the problems that Iranian EFL learners have with vocabulary retention highlight the significance of the present study.

LITERATURE REVIEW

Nation (2009) believed that glosses may improve vocabulary acquisition, although the research on this is not conclusive. Some of the studies have examined the effects of textual glossing on vocabulary acquisition (e.g. Hulstijn, Hollander, & Greidanus, 1996; Kost, Foss, & Lenzini, 1999; Yoshii & Flaitz, 2002; Xu, 2010).

Xu (2010) investigated the effect of three different types of glossing, i.e. glossing in both Chinese and English, glossing in Chinese, and glossing in English, on the incidental vocabulary acquisition through reading. To this end, 103 students of Qingdao University of Science and Technology took part in the study. First, subjects were asked to finish a reading comprehension test, which contained ten comprehension questions after a reading passage. The reading passage contained 18 target words, among which six were glossed in Chinese, six in English and the remaining six in both Chinese and English. After all the subjects had finished the test, the test of the knowledge of the target words was administered. A week later, a delayed test of the new words was given. The results indicated that the mean of the scores in glossing in Chinese was the highest among the three types and the means of the scores in other two types were very close to each other in immediate retention of key words. Moreover, the mean of the scores for the words glossed in both Chinese and English was the highest among the three in delayed post-test.

Currently, the use of technology is becoming more and more prevalent around the world. It has also found its way into classrooms. Multimedia facilitates the applications of computers in foreign language education by providing audio-visual presentations and interactions tailored to the needs and interests of different individuals or groups of learners (Rezaee & Sharbafshoar, 2011). Some studies have also been carried out on the effects of different types of multimedia glosses on vocabulary acquisition as well as other components of language including reading comprehension (e.g. Chun & Plass, 1996; Lyman-Hager & Davis, 1996; Al-Seghayer, 2001; Shahrokni, 2009; Gorjian, 2011; Rezaee & Sharbafshoar, 2011; Sadeghi & Ahmadi, 2012).

Chun and Plass (1996) carried out a series of studies on multimedia glosses and vocabulary acquisition. They figured out that the combination of text and picture glosses was more effective than text-only or text-plus-video glosses. Lyman-Hager and Davis (1996) carried out an experiment, employing two conditions: computerized reading, and non-computerized reading. The first group had access to multimedia annotations while the other group consulted printed text with the same glosses. After the experiment, a written recall protocol together with a vocabulary quiz of the target words was used. The findings of the study showed that students who worked with the multimedia program were better able to retain vocabulary words than students who worked with non-computerized text.

Al-Seghayer (2001) examined the effect of dynamic video or still pictures on vocabulary learning. Thirty participants studying at an American university participated in the study. The students were exposed to one of three conditions: textual gloss alone, textual gloss and still pictures, and

textual gloss and dynamic video. The participants were subsequently evaluated on their vocabulary gains through recognition and production tests. The results indicated that when learners looked up a combination of video clips and text definitions, they learned unknown vocabulary items better than when they looked up definitions alone or in combination with still images.

Gorjian (2011) examined the effect of Web-Based Language Learning (WBLL) and the paper-based (conventional) approaches on vocabulary retention of Iranian foreign language learners. To this end, 300 participants, within the age range of 18-27, were randomly assigned into two homogeneous groups. Both groups were required to complete an identical pre-test. They were measured under two different conditions: Paper-based and WBLL group. The subjects read 12 passages over six sessions. The subjects in the WBLL group (n = 150) were introduced to a WBLL approach, designed by the researcher for the vocabulary retention. The program provides users reading an expository English text with a variety of glosses or annotations for words in the form of text, graphics, video, and sound, all of which are intended to aid the understanding and learning of unknown words synchronously. The paper-based presentation group (n = 150) were put into the control group with the same material except for the medium of presentation (i.e., paper). Findings of the study indicated that there was a significant effect of the Web-Based Language Learning (WBLL) approach on the retention of vocabularies in the short term. But, the post-test results revealed that the effect of the treatment in the long term had faded away.

A more recent study in the field was carried out by Rezaee and Sharbafshoar (2011) who tried to investigate if the use of multimedia, images and movies, helped learners in learning vocabulary items included in a reading comprehension text. For this purpose, 70 pre-intermediate students studying English were selected. They were then divided into three groups, each of which received a different kind of instruction. The first group was required to read some texts in which certain vocabulary items were included as the target of teaching. Those in the second group received the same texts with some pictures added so that the grasp of the unknown words would become facilitated. The students in the third group were exposed to the same material along with some movie strips.   At the end of the course, all the students in the three aforementioned groups took a vocabulary test. The results of the ANOVA indicated that annotating reading comprehension passages with movie clips contributed to better learning and recall of vocabulary through reading texts.

Overall, the studies reported here assigned a positive role to gloss in improving the quality of vocabulary acquisition. However, there is no consensus among researchers on which kind of gloss can be more beneficial. Furthermore, among the relatively few studies about effects of gloss on vocabulary acquisition reviewed above, studies reporting on the effect of audio gloss are scarce. In those studies about audio gloss, the pronunciation of target words, instead of definition of them, is provided to the readers. Lastly, there is a new gloss type defined for this study (extended gloss) which is totally new to gloss research area. In this kind of gloss, the reader has access to audio gloss coupled with L2 English example. Accordingly, this study attempts to shed light on the effectiveness of marginal gloss,

audio gloss (in which the participants were provided with the voice of a speaker to read the meaning of the target word), and extended audio gloss (where both meaning and an example sentence was provided) in vocabulary gain of Iranian EFL learners at the upper-intermediate level.

PURPOSE OF THE STUDY

This study aimed to find out whether different glossing conditions play a role in EFL learners vocabulary gain. In other words, the project was meant to answer the following research questions:

1. Does exposure to non-CALL marginal L2 gloss affect Iranian upper-intermediate EFL learners' vocabulary acquisition?
2. Does exposure to audio gloss affect Iranian upper-intermediate EFL learners' vocabulary acquisition?
3. Does exposure to extended audio gloss affect Iranian upper-intermediate EFL learners' vocabulary acquisition?
4. Are there any differences among exposures to non-CALL marginal gloss, audio gloss, and extended audio gloss on Iranian upper-intermediate EFL learners' vocabulary acquisition?

METHOD

Design of the Study

The independent variable in this study was the treatment conditions (i.e., non-CALL marginal gloss, audio gloss, extended audio gloss, and no gloss), and vocabulary acquisition was the dependent variable, while gender was regarded as the control variable. This study used an intact pre-test/post-test

quasi-experimental design. Since randomization of individuals was not feasible in the current study, the engaged four intact classes were arbitrarily assigned into three experimental and one control groups. Two of the treatment groups received software for reading section; one of them had access to paper-based marginal gloss; and the control group received traditional reading instruction with no gloss. The outcomes of the vocabulary test of four groups were compared to determine whether there were significant differences between the performances of the already mentioned groups.

Participants

To accomplish the objectives of the study, 60 male EFL learners at upper-intermediate proficiency level, within the age range of 17-21, took part in the study. They were learning English as a foreign language at Jahad-e-Daneshgahi Language Institute in Urmia, Iran. To guarantee participants' homogeneity in terms of their language proficiency, KET (Key English Test) was used . The analysis of the obtained data from the proficiency test revealed the mean score of 62.32, 62.10, 61.82, and 62 (out of 100) for the first, second, third, and fourth groups, respectively. After the analysis of the obtained data from the proficiency test, four of the participants got low scores in comparison to others and consequently, they were excluded from the study. The rest of the participants enjoyed similar proficiency level and were therefore eligible to serve as the participants of the study. The participants were also assessed based on their knowledge of the target words in the study. Unfamiliarity with the final pool of 10 target words in each text constituted the second criterion for participant selection.

The participants were semi-randomly assigned into 4 groups: non-CALL marginal gloss group (i.e., Group1), audio gloss group (i.e., Group 2), extended audio gloss group (i.e., Group 3), and control group (i.e., Group 4). Thus, the performances of 60 participants in three experimental and one control group, each comprising15 learners, were compared.

Instrumentation

Six instruments were used in this study as explained below.

Proficiency Test

To guarantee participants' homogeneity in terms of their language proficiency, the Key English Test (KET) was employed. This instrument was used as a reliable and valid test for the selection of 60 participants out of 64 learners. The KR-21 reliability of the test was found to be 0.81.

Background Information Questionnaire

The second data elicitation tool was a questionnaire to elicit some demographic information about the participants' age, educational background, and computer literacy. The information coming from the last part was needed for Groups 2 and 3, because the participants of these two groups needed to work with computer in class.

Multiple-choice Vocabulary Test

The third instrument was a teacher-made test of vocabulary used as a post-test and delayed post-test. It comprised 10 multiple-choice questions about each text. The test was piloted with 17 upper-intermediate EFL learners

from the same language institute. For each item, the participants had to select the correct word from among 4 choices. The KR-21reliability of the vocabulary test was found to be 0.72. Two specialists in language teaching and testing were asked to review the test. There was a general consensus among them concerning the content validity of the test. Hence, the test enjoyed a good degree of reliability and validity.

Target Words Test

In selecting the target words, these steps were taken to ensure that words were unfamiliar to participants. First, the teacher selected 14 marked words which were believed by her as unknown to the participants. Then, a pilot study was conducted to identify the unknown words. Ten words among the 14 marked ones were identified as unfamiliar by the participants. A list of words of target words was also given to the participants and the teacher asked them to mark those that they knew. Those words that were unknown to the majority of participants were regarded as unknown target words. The glossed words appeared in bold during treatment; thus, the participants' attentions were drawn to the target words. Reading Texts

The selection of English reading texts as well as the selection of target words was crucial to ensure validity of the experiment. Two reading texts, of about 250 words each, from *Summit 1B* by Saslow and Ascherwere (2006) were selected for the experiment. They were titled "Protecting our natural inheritance" and "Compulsive shopping: the real cost". The participants would study these reading texts the next term. Each text contained 10 unknown words.

Different Gloss Types

The main instrument of the study was presenting two unseen passages with three different types of glosses. In the first experimental group, the participants had access to paper-based L2 marginal glosses. The left section of the paper was used for reading the text and the right section was used for glossing. In the second one, the participants were provided with audio gloss, using CALL technology. In the third experimental group, they had access to audio gloss as well as L2 English examples. The control group received the same texts in traditional way, that is, in paper-based format, with no glosses. In this study, the focus of gloss was on L2 definition of the words.

Data Collection

The first step in the process of conducting the research was that the teacher explained what the learners in each group were supposed to do during the tasks. She made sure that they understood the instruction by making use of modeling.

The next step was the administration of KET as the homogenizing tool. It was administered to 64 upper-intermediate EFL learners who constituted four intact classes. Due to the lack of the time, the proficiency test was administered in three sessions: reading and writing in a single session, listening and speaking in two different sessions. In order to ensure the reliability of the test scores for the speaking part, another teacher was asked to provide his own scores for each participant and hence the inter-rater reliability was checked. Since four of the learners got very low scores on the proficiency test, they were regarded as outliers and their performance was not taken into account in the analysis of the final data. Then, a semi-

randomization procedure was used and four intact classes were randomly assigned to three experimental groups and one control group, each consisting of 15 participants.

After taking the proficiency test, the participants were asked about age, years of using the computer, and years of studying English. Afterwards, the pre-test was administered to the participants to measure their prior knowledge about the target words. Test administration required 15 minutes. Two weeks later, the participants read two short, unseen passages. They read the same texts but with different gloss condition for each group: paper-based L2 marginal gloss, audio gloss, and extended audio gloss. The control group received the same passages in the traditional way, that is, paper-based, with no gloss. Then, they were required to answer a multiple-choice vocabulary test. During reading in the post-test, the participants, in audio and extended audio gloss groups, clicked the words to access available glosses.

At last, in order to find out about the long-term effect of the treatment and to get a wider snapshot of gloss effect, a delayed post-test was administered two weeks after the immediate post-test which required 20 minutes for administration.

Data Analysis

The data in this study were analyzed using SPSS version 17 (Statistical Package for Social Sciences) software. On the basis of the aforementioned research questions, the data were analyzed using one-way ANOVA for test of vocabulary in immediate and delayed post-test for research questions 4. In order to understand whether three aforementioned gloss conditions were

more effective than reading condition with no gloss, that is to answer research questions 1, 2, and 3, three separate independent samples *t*-tests were used.

RESULTS

In this section, the relevant data analysis is presented based on which the above questions of the study are given answers.

The Results of the Proficiency Test

To ensure the homogeneity of the participants in all groups, the Key English Test (KET) was employed. To compare the performance of the participants in the intact classes, a one-way ANOVA was run. The first table presents the descriptive statistics for these intact classes.

Table 1: Descriptive statistics for the pre-test proficiency test

	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
first class	15	62.32	7.78	1.91	42	73
second class	15	62.10	7.00	1.28	43	76
third class	18	60.82	5.00	1.32	31	65
fourth class	16	61.74	6.05	1.50	64	80
Total	64	61.74	6.45	.88	31	76

To check the homogeneity of variances, the significance value is checked and since it is 0.47 which is greater than 0.05, the assumption is not violated (Table 2).

Table 2: Test of homogeneity of variances for pre-test

Levene Statistic	df1	df2	Sig.
.99	2	44	.47

Since the assumption of the homogeneity of variances is not violated, in the next step, it is checked whether there is any significant difference among the present groups or not. As it is demonstrated in Table 3, there is no significant difference at the $p < .05$ level in pre-test scores for the four intact classes: $F(2, 44) = .27$, $p = .72$. This result demonstrates that groups were of equal language proficiency at the beginning of the study.

Table 3: ANOVA for pre-test scores

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	25.16	2	10.50	.27	.72
Within Groups	1910.39	44	33.33		
Total	1935.55	46			

However, the box plot shows that four of the participants got low scores in comparison to others. These participants were excluded from the study as outliers (Figure 1).
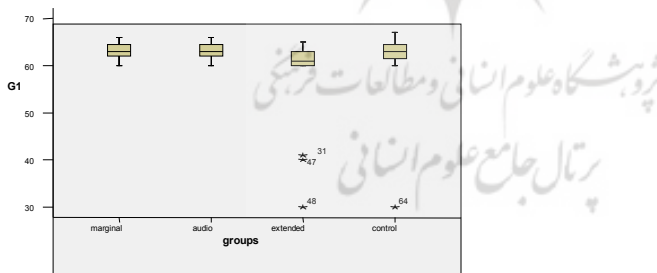

Figure 1: Box plot for pre-test

Pre-test of Vocabulary Acquisition

One vocabulary test was used as the pre-test, immediate post-test, and delayed post-test. In the scoring stage, each item in the test received one score, and the overall score was 10 for each test.

The results of statistical analysis of pre-test are presented in Table 4. The table indicated that the mean score for marginal gloss group (*M*=0.33, *SD*=0.48), audio gloss group (*M* =0.33, *SD*=0.48), extended audio group (*M*=0.27, *SD*=0.45), and control group (*M*=5.27, *SD*=1.43) were more or less the same.

Table 4: Descriptive statistics for the pre-test scores of vocabulary acquisition

	Mean	**Std. Deviation**	**Std. Error**
marginal gloss	.33	.48	.12
audio gloss	.33	.48	.12
extended audio gloss	.27	.45	.11
no gloss	.27	.45	.11
Total	.30	.46	.06

Note: [a]n=15 for each group.

Table 5 also shows that, according to the statistics for one-way ANOVA, there were no statistically significant differences in the pre-test scores of the four groups: $F (3, 59)=0.09$. Thus, the difference between the vocabulary knowledge of the four groups at the beginning of the study was not statistically significant at $p=0.05$. Since there was no statistically significant difference between the control and experimental groups on the pre-test, the groups were assumed to be equivalent at the start of the study.

Table 5: ANOVA for pre-test of vocabulary Acquisition

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.06	3	.02	.09	.960
Within Groups	12.53	56	.22		
Total	12.60	59			

The Effect of Different Kinds of Gloss on Vocabulary Acquisition

Marginal Gloss Group's Performance on Immediate Post-test of Vocabulary
The first question of the current study concerned investigating whether
exposure to non-CALL marginal L2 gloss affects Iranian upper-intermediate
EFL learners' vocabulary acquisition. To clarify the effect of non-CALL
marginal L2 gloss on the participants' vocabulary acquisition, an
independent *t*-test was conducted on vocabulary acquisition immediate post-
test scores. Table 6 indicates the means and standard deviations for marginal
gloss group and control group in immediate post-test. As the comparison of
the means across groups shows, Group 1 (*M*=7.00) performed better than
Group 4 (*M*=4.73).

Table 6: Descriptive statistics for marginal gloss and control groups scores in
immediate post-test of vocabulary acquisition

	Gloss type	Mean	Std. Deviation	Std. Error Mean
posttest of vocabulary retention	marginal gloss	7.00	1.13	.29
	no gloss	4.73	1.43	.37

Note: [a]n=15 for each group

The results of independent samples *t*-test, as illustrated in Table 7,
shows that there was a significant difference between the scores of the
participants who had access to marginal gloss and those who did not; *t*
(28)=4.79, *p*=.000.

Table 7: Independent samples t-test on marginal gloss and control groups scores in immediate post-test of vocabulary acquisition

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Post-test Equal variances assumed	.48	.491	4.79	28	.000	2.26	.47
Equal variances not assumed			4.79	26.55	.000	2.26	.47

Therefore, in response to the first research question on the effect of using marginal gloss on EFL learners' vocabulary acquisition, we can conclude that using marginal gloss has a significant effect on vocabulary acquisition scores.

Audio Gloss Group's Performance on Immediate Post-test of Vocabulary

The second question of the study concerned investigating whether exposure to audio gloss affects Iranian upper-intermediate EFL learners' vocabulary acquisition. To clarify the effect of the aforementioned gloss on the participants' vocabulary acquisition, an independent *t*-test was run on immediate post-test scores. Table 8 indicates the means and standard deviations for audio gloss group and control group in post-test. As the comparisons of the means across groups shows, Group 2 (*M*=8.60) performed better than Group 4 (*M*=4.73).

Table 8: Descriptive statistics for audio gloss group and control group scores in immediate post-test of vocabulary

	Gloss type	Mean	Std. Deviation	Std. Error Mean
posttest of vocabulary retention	audio gloss	8.60	1.29	.33
	no gloss	4.73	1.43	.37

Note: [a]n=15 for each group

The results of independent samples *t*-test, as illustrated in Table 9 , shows that there was a significant difference between the scores of the participants who had access to audio gloss and those who did not; *t* (28)=7.73, *p*=.000.

Table 9: Independent samples t-test on audio gloss and control groups scores in immediate post-test of vocabulary

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Post-test of vocabulary Equal variances assumed	.009	.923	7.73	28	.000	3.86	.50
Equal variances not assumed			7.73	24.71	.000	3.86	.50

Therefore, in response to the second research question on the effect of using audio gloss on the learners' vocabulary acquisition, we can conclude that using audio gloss has a significant effect on groups' vocabulary acquisition scores.

Extended Audio Gloss Group's Performance on Immediate Post-test of Vocabulary

The third question of the study concerned investigating whether exposure to extended audio gloss affects Iranian upper-intermediate EFL learners' vocabulary acquisition. To clarify the effect of this condition of gloss on reading comprehension of the participants, an independent *t*-test was conducted on immediate post-test scores. Table 10 indicates the means and standard deviations for extended audio gloss group and control group in post-test. As the comparisons of the means across groups shows, Group 3 (*M*=8.00) performed better than Group 4 (*M*=4.73).

Table 10: Descriptive statistics for extended audio gloss group and control group scores in immediate post-test of vocabulary

	Gloss type	Mean	Std. Deviation	Std. Error Mean
Posttest of vocabulary retention	extended audio gloss	8.00	1.41	.36
	no gloss	4.73	1.43	.37

Note: ᵃn=15 for each group.

The results of independent samples *t*-test, as illustrated in Table 11, shows that there was a significant difference between the scores of the participants who had access to extended audio gloss and those who did not; *t* (28)=6.27, *p*=.000 .

Table 11: Independent samples t-test on extended audio gloss and control groups scores in immediate post-test of vocabulary

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Post-test of vocabulary Equal variances assumed	.02	.867	6.27	28	.000	3.26	.52
Equal variances not assumed			6.27	27.99	.000	3.26	.52

In response to the third research question on the effect of using extended audio gloss on Iranian upper-intermediate EFL learners' vocabulary acquisition, we can conclude that using this kind of gloss has a significant effect on vocabulary acquisition scores.

Immediate Post-test of Vocabulary Acquisition

Research question number four asked whether reading texts with different conditions of gloss or texts with no gloss affect learners' performance on vocabulary acquisition post-tests and delayed post-tests.

In order to find out whether the mean differences were statistically significant or not, test takers' scores in vocabulary test with various gloss conditions were analyzed through one-way between groups ANOVA. Table 12 summarizes descriptive statistics in vocabulary acquisition immediate post-test for the experimental groups and the control group. Immediate post-test mean scores for all four groups showed significant differences for the treatment condition. That is, audio gloss group (*M*=8.60, *SD*=1.29) outperformed the rest of the groups in the treatment condition in the

vocabulary acquisition post-test. It was followed by extended audio gloss group (*M*=8.00, *SD*=1.41) and then marginal gloss group (*M*=7.00, *SD*=1.13). Control group (*M*=4.73, *SD*=1.43) obtained the lowest mean score in vocabulary acquisition post-test.

Table 12: Descriptive statistics for the immediate post-test scores of vocabulary acquisition

Gloss type	Mean	Std. Deviation	Std. Error
marginal gloss	7.00	1.13	.29
audio gloss	8.60	1.29	.33
extended audio gloss	8.00	1.41	.36
no gloss	4.73	1.43	.37
Total	7.08	1.96	.25

Note: [a]n=15 for each group.

The result of ANOVA, as illustrated in Table 13, shows that there was a significant difference between the scores of the participants in four groups.

Table 13: Analysis of variance for gloss types

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	130.05	3	43.35	24.63	.000
Within Groups	98.53	56	1.76		
Total	228.58	59			

In order to find where the location of the difference was, post hoc comparisons (Tukey HSD test) were run. According to Table 14, there was a significant difference between the performances of the groups, in favor of the 'audio gloss' treatment in vocabulary acquisition post-test. Post-hoc comparisons indicated that the mean score for marginal gloss group was

significantly different from all groups. All experimental groups were also significantly different from the control group.

Table 14: Post-hoc tests on experimental and control groups' scores in immediate post-test of vocabulary acquisition

(I) gloss type	(J) gloss type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
marginal gloss	audio gloss	-1.60(*)	.48	.009	-2.88	-.32
	extended audio gloss	-1.00	.48	.177	-2.28	.28
	no gloss	2.26(*)	.48	.000	.98	3.55
audio gloss	marginal gloss	1.60(*)	.48	.009	.32	2.88
	extended audio gloss	.60	.48	.605	-.68	1.88
	no gloss	3.86(*)	.48	.000	2.58	5.15
extended audio gloss	marginal gloss	1.00	.48	.177	-.28	2.28
	audio gloss	-.60	.48	.605	-1.88	.68
	no gloss	3.26(*)	.48	.000	1.98	4.55
no gloss	marginal gloss	-2.26(*)	.48	.000	-3.55	-.98
	audio gloss	-3.86(*)	.48	.000	-5.15	-2.58
	extended audio gloss	-3.26(*)	.48	.000	-4.55	-1.98

* The mean difference is significant at the .05 level.

Delayed Post-test of Vocabulary Acquisition

In order to find which gloss type had a long-lasting effect on vocabulary acquisition, another one-way between-groups analysis of variance was run. Results of the descriptive statistics in vocabulary delayed post-test for the treatment groups and the control group is presented in Table 15. The mean scores for Groups 2 and 3 were 7.87 (*SD*=1.40) and 7.40 (1.45), respectively, while that of Groups 1 and 4 were 5.20 (*SD*=1.52) and 2.73 (*S*=1.38).

Table 15: Descriptive statistics for the delayed post-test scores of vocabulary acquisition

	Mean	Std. Deviation	Std. Error
marginal gloss	5.20	1.52	.39
audio gloss	7.87	1.40	.36
extended audio gloss	7.40	1.45	.37
no gloss	2.73	1.38	.35
Total	5.80	2.48	.32

The result of ANOVA application, as illustrated in Table 16, shows that there was a significant difference between the scores of the participants in four groups.

Table 16: Analysis of variance for gloss types

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	248.93	3	82.97	39.82	.000
Within Groups	116.66	56	2.08		
Total	365.60	59			

Analysis of variance procedure was followed by Post hoc comparisons (Tukey HSD test). This test was run to identify the place of significance among groups. The details of this post hoc test are presented in Table 17. The level of significance for Group 1 and Group 2 is -2.66 < .05; this shows that there is a significant difference between these two glossing conditions in delayed post-test. The level of significance for Group 1 and Group 3 is 2.20<.05, meaning that a meaningful difference exists in the performance of the groups in vocabulary gains. Based on the Table, the levels of significance for Group 1, 2, 3 are also less than .05 (-2.46, -5.13, -4.66 respectively), which means that there exists a significant difference

between these three experimental groups and control one. Group 2 (*M*=7.87, *SD*=1.40) did not differ significantly from Group 3 (*M*=7.40, *SD*=1.45).

Table 17: Post-hoc tests on experimental and control groups' scores in delayed post-test of vocabulary acquisition

(I) gloss type	(J) gloss type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
Marginal gloss	audio gloss	-2.66(*)	.52	.000	-4.06	-1.27
	extended audio gloss	-2.20(*)	.52	.001	-3.60	-.80
	no gloss	2.46(*)	.52	.000	1.07	3.86
audio gloss	marginal gloss	2.66(*)	.52	.000	1.27	4.06
	extended audio gloss	.46	.52	.812	-.93	1.86
	no gloss	5.13(*)	.52	.000	3.74	6.53
Extended audio gloss	marginal gloss	2.20(*)	.52	.001	.80	3.60
	audio gloss	-.46	.52	.812	-1.86	.93
	no gloss	4.66(*)	.52	.000	3.27	6.06
no gloss	marginal gloss	-2.46(*)	.52	.000	-3.86	-1.07
	audio gloss	-5.13(*)	.52	.000	-6.53	-3.74
	extended audio gloss	-4.66(*)	.52	.000	-6.06	-3.27

* The mean difference is significant at the .05 level.

Thus, in response to the fourth research question on the effects of traditional non-CALL marginal gloss (i.e., Group 1), audio gloss (i.e., Group 2), and extended audio gloss (i.e., Group 3) on the participants' performance on vocabulary test, we can conclude that audio gloss group significantly outperformed the other groups in delayed post-test as well as in the immediate post-test. Moreover, glossing in both audio gloss and extended audio gloss group are the most effective in enhancing word knowledge in the delayed retention of key words.

DISCUSSION

Concerning the first, second, third, and fourth research questions, results of the present study indicated that the participants exposed to multimedia glosses (i.e., audio and extended audio gloss groups) outperformed those who received no such instruction, and there was a significant difference in the performance of multimedia gloss groups and that of marginal and control groups on the vocabulary acquisition. Clearly, the findings indicated that glossing in both audio gloss and extended gloss group are the most effective in enhancing word knowledge in both the immediate retention and in the delayed retention of key words.

The reason for this finding can be that the gloss provides the learner with extra information that he may need. Thus, language learning principles can work well when glosses are combined with reading texts in hypermedia reading environments. Furthermore, it also signifies that learners will indeed learn significantly better when they are provided with input using more input presentation modes. Another reason may be that students in marginal gloss group tend to forget more of the words that they have stored in their short-memory than those in audio gloss and extended audio gloss groups. This difference in effects of different kinds of gloss on vocabulary acquisition is likely due to using the computer in English language instruction. It adds variety to the classrooms; thus, learners become encouraged to deal with the computer, which may be reflected in their better achievement. It was also a novel idea for the participants to hear the meaning of words, not necessarily seeing the meaning. Hence, this novel activity becomes highly motivating for the learners.

Some studies seem to be in line with the findings of this study. For instance, previous research has found that combination of the two glossing techniques is more influential in helping the participants with learning vocabulary (e.g., Chun & Plass, 1996; Kost, Foss, & Lenzini, 1999; Al-Seghayer, 2001; and Yoshii & Flaitz, 2002). For example, Chun and Plass (1996) carried out a series of studies on multimedia glosses and vocabulary acquisition and found that the combination of text and picture glosses was more effective than text-only or text-plus-video glosses. Al-Seghayer (2001), also, examined the effect of dynamic video or still pictures on vocabulary learning. The results of his study indicated that when learners looked up a combination of video clips and text definitions, they learned unknown vocabulary items better than when they looked up definitions alone or in combination with still images.

The findings of the current study are also in line with the findings reported by Lyman-Hager and Davis, (1996) and Rezaee and Sharbafshoar (2011), in that multimedia gloss group outperformed other groups in vocabulary acquisition. Lyman-Hager and Davis (1996) carried out an experiment, employing two conditions: computerized reading, and non-computerized reading. The findings of the study showed that students who worked with the multimedia program were better able to retain vocabulary words than students who worked with non-computerized text. Rezaee and Sharbafshoar (2011) investigated the effect of using multimedia, images and movies, on vocabulary recall of the learners. The results indicated that annotating reading comprehension passages with movie clips contributed to better learning and recall of vocabulary through reading texts.

On the other hand, the study by Gorjian (2011) appears to contradict this study. He concluded that the effect of Web-Based Language Learning (WBLL) on the retention of vocabularies in the long run faded away. The findings of the present study suggest that reading passages with audio and extended audio gloss conditions had a significant effect on EFL learners' performance on vocabulary delayed post-test.

CONCLUSIONS AND IMPLICATIONS

The findings of the present study demonstrated the audio gloss and extended audio gloss groups significantly outperformed the other two groups. The present study offers clear evidence that utilizing computers and multimedia glosses can be influential in language teaching in general and online computerized vocabulary acquisition in particular.

The findings of the present study suggest some pedagogical implications for teachers as well as for material designers. The findings provide insights for how teachers can assist students in improving their EFL vocabulary retention. Since vocabulary acquisition is an overarching goal of EFL classes, teachers, who try to make their classes as varied as possible, may rely on CALL to enhance the learning experience for language learners. As such new technologies are added to the classes, learners will have higher levels of motivation.

This study has also some implications for material designers. They can prepare appropriate CALL programs which may promote learning. They can provide texts with different kinds of glossing. They can also provide new educational tools, incorporating different kinds of technologies into the teaching environments.

There are some limitations in the current study, which should be taken into consideration in any attempt to generalize these results. The first one concerns the limited duration of the study. The goals of this study were to investigate the use of a new medium for vocabulary. Therefore, the optimal classroom setting would be to allow as much time as students desired. Another limitation of the study is related to the limited number of passages used. This study also controlled for gender. Moreover, participants of the multimedia groups did not have access to one computer individually due to the limited resources of the institution. The proficiency test was administered in three different sessions, which might have influenced learners' performance. It was better to conduct the test in one session. Finally, in order to create a suitable environment for a reading lesson, environmental variables should also be minimized. Among the environmental variables that might be contributed to the different performance of the participants are noise, temperature, adequacy of light, time of day, and seating arrangements (Brown, 1988).

Bio-data

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