Glossing, Inferencing, and Incidental Vocabulary Learning

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Having adopted an input-based approach towards vocabulary development, this study was undertaken to examine the effect of a textual enhancement technique. Provision of multiple-choice (MC) glosses, which combines the advantages of glosses and inferring (Rott & Williams, 2003), has very recently gained its share of supporters as a potential technique for enhancing L2 texts and, therefore, increasing word gain for L2 learners. In this technique, the target words are provided with several gloss (or equivalent) options. By so doing, some degree of mental effort and attention should be invested on the part of the learner in order to infer the correct option and thereby a deeper level of processing is likely to occur. In this study attempt has been made to comparatively explore the effectiveness of L1 and L2 MC glosses on vocabulary development for L2 learners of intermediate language proficiency level. To this end, a passage of approximately 500 words was modified in a way that 10 of its target words were each repeated twice and for each of them three glosses in English (L2) and three glosses in Persian (L1) were developed. Upon taking an actual TOEFL test, the participants underwent a vocabulary pretest to ensure that the target words were unfamiliar to all of them. Afterwards half of the participants received the passage which included L2 MC glosses and half of them received the same passage embedding L1 MC glosses. They were then tested through both a production and a recognition posttest (called immediate test). The same test was administered with a one-week delay in order to test the retention effect of the technique (called delayed test). The results indicated that both L1- and L2-gloss groups significantly outperformed in immediate than in delayed testing condition. However, in both conditions, L2 glosses produced significantly higher scores than L1 glosses did, suggesting that L2 glosses far outweigh for fostering learning and retaining target words. The findings of the study, therefore, could hold appeal for materials developers, syllabus designers as well as teachers and instructors who are primarily engaged in vocabulary development courses.

Keywords: Incidental vocabulary learning, Glossing, Multiple-choice glosses, Lexical inferencing, Lexical retention

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Introduction

It is generally accepted that a considerable percentage of L2 vocabulary acquisition on the part of learners occurs incidentally, i.e. as a by-product of reading (Rieder, in Press). Text comprehension, however, would not necessarily require the kind of word processing that results in long-term retention (Rott and Williams, 2003). Therefore, if the goal is to make new words learned and retained, a variety of textual enhancement techniques such as adjunct aids (Robinson, 1994), increased word frequency or provision of glosses could be applied.

Glossing

Glosses, in general, are vocabulary guide during reading; they offer additional information beyond text and thereby assist the learner as a mediator between learner and text. However, within the scope of second language learning, glosses can be defined as information on important words through definitions or synonyms (Hee Ko, 2005).

The two most important functions that glosses may serve are with reading comprehension and vocabulary learning. Hee Ko claims four advantages in using glosses. Firstly, glosses can get across new words so accurately that prevent incorrect guessing. Secondly, they can minimize interruptions while reading is in process. As glosses provide definitions for low frequency words, learners would no more require checking or looking them up. Thirdly, glosses can make a meaningful relation between prior knowledge and new information in text. And finally, glosses would allow for greater autonomy on the part of learner.

Lexical inferencing

Glossing, however, has been roundly criticized for it disallows inferred meaning. Laufer and Hulstijn (2001, as cited in Rott & Williams, 2003), for example, argue that inferred meanings are more likely to be retained than meanings provided by glosses. Likewise, Nassaji (2004) considers lexical inferencing as one of the central cognitive processes involved in reading comprehension and defines it as

...making informed guesses about the meaning of unknown words based on the available linguistic and non-linguistic cues in the text…Lexical inferencing has also been found to be closely associated with incidental vocabulary learning, that is learning vocabulary through reading natural texts. (p. 108)
Much lexical development in both L1 and L2 appears, in effect, to occur while learners attempt to comprehend new words they hear or read in context. Nassaji (2004) further enumerates some factors which have the potential to affect success in lexical inferencing; included are the nature of the word and the text that contains the word, the extent of textual information that the text presents, the learner’s ability to use extra-textual cues, the importance of the word to comprehension of the text, the degree of cognitive and mental effort the task engages, the learner’s attention to the details of the text as well as the preconceptions the learner may have about the possible meaning of the word.

Overall, based on Mental Effort Hypothesis, inferring requires effort, and the greater the mental effort the more likely information will be recalled and retained. In this sense, single glosses could be of little use especially for long-term retention of new words.

**Multiple-choice glossing**

In his attempts to remove the foregoing disadvantage associated with using single glosses, Hulstijn (1992, as cited in Rott & Williams, 2003) suggested the use of multiple-choice glosses, that is, provision of several gloss (or equivalent) options for a target word. Multiple-choice (or MC) glossing, as he argues, combines the advantages of inferring and single glosses. It “reduces the difficulties presented by insufficient context as well as the possibility of incorrect inferences” (Rott & Williams, 2003). It also requires some degree of mental effort and attention and, therefore, triggers a deeper level of processing which, in turn, may enhance word recall and retention.

Likewise, MC glossing is in line with Involvement Load Principle, proposed by Laufer and Hulstijn (2001, as cited in Rott & Williams, 2003). The principle, which is claimed to be at the core of lexical acquisition and retention, entails two central components: search and evaluation. When processing multiple-choice glosses, learners first have to search for meaning by consulting the gloss options. Next, they will evaluate the different meanings and make a decision as to, considering the context, which one fits the target word best. Therefore, the use of MC glosses has the potential to establish form-meaning connections much stronger than single glosses or normal unenhanced reading may do (Rott & Williams, 2003).

**Gloss types and conditions**

To date, it is well revealed that glosses in general are effective for enhancing incidental vocabulary learning. Therefore, the question has shifted from whether glosses are useful for
vocabulary learning to which gloss type or gloss condition is most effective” (Yoshi, 2006). To this end, a number of studies have been conducted comparing different formats of text glosses. Watanabe (1997, as cited in Yoshi, 2006), for example, has compared single L2 glosses with MC L2 glosses. Later in 1999, Nagata (as cited in Yoshi, 2006) replicated his study comparing single L1 glosses with MC L1 glosses. Single glosses in L1 and L2 also have been comparatively studied by, among the many, Bell and Le Blanc 2000 and Chen (2002, as cited in Hee Ko, 2005).

Other researchers also exist who have investigated the effect of other variables along with the use of glosses on vocabulary development. Jacobs (1994, as cited in Yoshi, 2006), for instance, has examined the recall advantage of glossing by practicing different test conditions (immediate vs. delayed). Holley and King (1971, as cited in Hee Ko, 2005) also compared different gloss positions in text, i.e., side-of-page, bottom-of-page, vs. glosses on an attached sheet. Using printed versus computerized materials, Watanabe 1997 and Nagata (1999, as cited in Yoshi, 2006) tested the impact of different material formats. Miyasako (2002, as cited in Yoshi, 2006) too conducted a comprehensive study on the use of glosses and included level of language proficiency as a variable under study.

However, all the above studies have brought up mixed and inconclusive results and, therefore, leave some room for further analysis of glossing under different conditions.

**Research Questions**

Pursuant to the above studies and observations, two research questions were posed:

1. Is there any difference between the effect of L1 and L2 MC glosses on incidental vocabulary learning by EFL learners of intermediate proficiency level?
2. Are MC glosses more effective for short-term or long-term retention of target words?

**Method**

**Participants**

The participants were 25 (both male and female) students of ages between 21 and 26, learning English as their foreign language in a language institute in Kerman. The study was managed to be replacing for them one of the quizzes normally administered to them during the term. In order to control for their language proficiency level and picking up only those of intermediate level, the participants took an actual TOEFL test from ETS (2004) prior to the main test.
Materials
The materials consisted of an actual TOEFL test, a vocabulary pre-test, an English text followed by multiple-choice L1 (Persian) and L2 (English) glosses, and finally a production as well as a recognition post-test.

Vocabulary pre-test
In order to ensure that the target words (TWs) were new and unfamiliar to all the participants, a vocabulary pre-test was administered to them. It included 20 lexical items, including the 10 TWs and 10 distracters. The distracters were selected from the same source as the TWs were elicited in order to ensure that both distracters and the TWs were of approximately the same difficulty level.

Text and glosses
A passage of 516 words from Panorama textbook 2 (intermediate student’s book) was selected and modified in a way that 10 of its TWs were each repeated twice. This increase in word exposure frequency is consistent with the current belief, e.g. Yongqi Gu (2003) and Ellis (2006), that a single exposure is quite unlikely to lead to word knowledge gain. According to Rott and Williams (2003), while sizable word gain may require four to eight exposures, two encounters could suffice to lead to significant word gain.

The TWs were of three lexical categories: four of them were nouns, three of them verbs and three were adjectives. Each TW was bolded only in its first occurrence in the text. Below, an extract of the passage, in which the word ‘renowned’ is used twice, is provided:

... An old Irish proverb says, “Laughter is brightest where food is best.” Good food makes people happier and brings them closer together. This simple truth has inspired many of the world’s greatest chefs. One such renowned chef was Julia Child... Julia’s pots and pans hang in this renowned museum exactly as they did in her kitchen. This great chef was herself an institution...

The text was then enhanced and followed by multiple-choice (MC) glosses, in the sense that for each TW there appeared, in a separate sheet of paper, three glosses in English (L2) and three glosses in Persian (L1). The three L1 glosses for each TW were the exact equivalents (or
translations) of the three ones in L2. Two examples (one for a noun and one for a verb) of MC
glosses in L2 used in this study are provided below:

Legacy (n.):
a) gift  b) good situation  c) idea

Contend (v.):
a) disagree  b) prove  c) believe

Tests

Production post-test
In this test, all the 10 TWs were listed, and the participants were required firstly to check
those words they knew their meanings and then to supply synonyms or explanations to them.

Recognition post-test
Here, each of the 10 TWs was followed by its gloss options and the participants were required
to match the word with its correct meaning.

Procedure
The current study was conducted in three separate class sessions.
In the first session, the participants received the TOEFL test and were given 90 minutes to do
it. The vocabulary pre-test was also administered in the same session; the participants were
asked to check any of the 20 words they knew and then provide synonyms or explanations for
them either in L2 or in their L1. Quite surprisingly, all the TWs turned out to be new (or
unknown) to all the 25 participants.

In the second session, the participants were given the text and were briefed that they were
required not only to comprehend the text but also to infer (or guess) the meanings of the
bolded (i.e. target) words from among the given options and learn them. They were then
divided into two groups (called gloss groups): 13 of them received the L2 (English) glosses
and 12 received the L1 (Persian) glosses. After they got through with reading the text, they
returned it and received the production post-test. The reason why the production test preceded
the recognition one was that, given the other way around, the recognition test would be very
likely to give hints for the production test. These two tests which were administered shortly after the participants studied the materials were called immediate tests.

In order to examine the potential retrieval and saving effect of glossing, the same production and recognition tests were administered after a span of one week and, this time, were called delayed tests. Note that those who had received texts followed by L1 glosses at the first place received, in both testing conditions, the recognition tests which included L1 options. The same was also true about L2 gloss group.

Results

Gloss groups
The total performance of L1- and L2-gloss groups in either testing condition is described in Table 1 below. As can be seen, the mean value for L2-gloss group is much higher than that of L1 group. The results of the t-test also backed up this claim and showed a significantly better performance in the post-tests for L2-gloss group (p = .00)

Table 1. Descriptive Statistics and T-test Results for the Total Performance of L1- and L2-Gloss Groups

<table>
<thead>
<tr>
<th>Gloss groups</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>24</td>
<td>9.54</td>
<td>3.189</td>
<td>48</td>
<td>.000</td>
</tr>
<tr>
<td>L2</td>
<td>26</td>
<td>13.12</td>
<td>3.386</td>
<td>47.977</td>
<td></td>
</tr>
</tbody>
</table>

L1-gloss group and testing conditions
Within L1-gloss group, a t-test was run over the scores in immediate and delayed testing conditions. It revealed a significant difference between the performances in the two conditions (p < .05). This suggests that L1-gloss group had a significantly higher performance on immediate test. Table 2 below summarizes the results.

Table 2. T-test Results for the Immediate and Delayed Testing Conditions within L1-Gloss Group

<table>
<thead>
<tr>
<th>Testing condition</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate</td>
<td>12</td>
<td>11.08</td>
<td>2.968</td>
<td>22</td>
<td>.014</td>
</tr>
<tr>
<td>Delayed</td>
<td>12</td>
<td>8.00</td>
<td>2.697</td>
<td>21.801</td>
<td></td>
</tr>
</tbody>
</table>
L2-gloss group and testing conditions

Within L2-gloss group, a t-test was run. It showed a highly significant main effect for the testing condition factor within this group too (p = .00). That is, L2-gloss group also significantly outperformed on immediate than on delayed test. See Table 3 for the results.

Table 3. T-test Results for the Immediate and Delayed Testing Conditions within L2-Gloss Group

<table>
<thead>
<tr>
<th>Testing condition</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate</td>
<td>13</td>
<td>15.6923</td>
<td>2.25036</td>
<td>24</td>
<td>.000</td>
</tr>
<tr>
<td>Delayed</td>
<td>13</td>
<td>10.5385</td>
<td>2.10616</td>
<td>23.896</td>
<td></td>
</tr>
</tbody>
</table>

In summation,

1. Measured in either testing condition, L2 MC glosses proved more useful than L1 glosses for vocabulary development.

2. Both types of MC glosses had better short-term than long-term effects.

Conclusion and suggestions for future studies

This study aimed at investigating the usefulness of a textual enhancement technique for improving what Nassaji (2004) refers to as breadth of vocabulary knowledge, that is, the quantity or number of vocabulary items learners at a particular language proficiency level know. Multiple-choice glosses were incorporated into a text both to draw the learners’ attention and raise their consciousness of the to-be-learned words and to encourage them to make informed (given the context and the gloss options) guesses about which option matches each TW best. This mental effort invested on learning contextualized vocabulary items is claimed to result, simultaneously, in a better retention of them as well.

Comparisons were made in this study between L1 and L2 MC glosses to detect which would serve these purposes best. The results displayed that for both purposes of vocabulary learning and retention L2 glosses were more advantageous. One justifiable argument could be that this finding is relative and seems to be influenced by the educational system and policy of the institute in which a learner acquires a second language; namely when L1 is not allowed in a L2 class, any application of or shift to L1 during performing a task could be retracted by the students and taken as a sort of interruption or interference. It follows, then, that there may be language learners elsewhere who come to react positively to the use of L1 lexical items. Further research is needed to test this proposition.
Also the study concluded that the effect of MC glossing drops from immediate to delayed vocabulary testing conditions. In this study, as put before, an input-based approach was adopted towards lexical development, which could at best lead to an increase in breadth of word knowledge. Further studies could be carried out to add an output-based dimension, through, e.g. incorporating reconstruction tasks, and thereby to test if MC glossing could enhance depth of vocabulary knowledge (i.e., the quality of lexical knowledge or how well learners know a word) too. It is predicted that in this way the long-term effect of glossing could also be enhanced to a considerable degree.

Another area which strongly seems to merit further investigation is to explore if the effect of this technique varies among learners of different language proficiency levels. In conclusion, the results of the study support the use of L2 multiple-choice glosses and imply that teachers, materials developers and text designers can take advantage of them particularly when the goal is for them to trigger and promote incidental vocabulary learning.


