



Effects of Single Translation Marginal & Multiple-Choice Glosses on L2 Academic Vocabulary Learning*

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ABSTRACT

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The study examined the effects of two gloss types (single translation marginal glosses (STGs) vs. multiple-choice glossing (MCGs), and gloss languages (L1 vs. L2) on L2 vocabulary learning through the within-samples experiment. Eleven college students in Korea participated in the study. The present study showed that glosses positively led to significant gains in L2 vocabulary learning regardless of gloss types or languages. However, there were no significant differences between MCGs and STGs or between L1 and L2 glosses though the effects of the STGs (L1 and L2) nearly approached the significant levels ($p = .067$). As for L2 learners' opinions about gloss types and languages, most participants preferred STGs to MCGs, and more participants showed their preferences for L1 glosses over L2 glosses. However, the advanced group reported an equal preference for gloss languages. Therefore, any instructional interventions through glossing in incidental reading can be helpful for L2 vocabulary learning. The theoretical and pedagogical discussions were made at the conclusion.

KEYWORDS

academic vocabulary, single translation marginal glosses, multiple-choice glosses, L1 glosses, L2 glosses, L2 vocabulary, EFL college contexts

1. Introduction

There has been a growing awareness of the special role of vocabulary in second language learning. The pedagogical intervention on L2 vocabulary acquisition through incidental reading through glossing can be useful for L2 vocabulary learning (Peters, Hulstijn, Sercu and Lutjearms 2009, Yanagisawa, Webb and Uchihara 2020). Significant strands of research have explored the effects of gloss types (Hulstijn, Hollander and Greidanus 1996, Nagata 1999; Rott, Williams and Cameron 2002, Watanabe 1997, Yoshii 2013) and gloss languages (Choi 2016, Ko 2012, 2017, Salehi and Naserieh 2013, Xu 2010) on L2 vocabulary learning. According to the meta-analysis of Yanagisawa et al. (2020), glossed reading yielded significantly greater learning of words than non-glossed reading in general. However, the results of the previous studies about the effects of gloss types and languages (L1 vs. L2) seems to be confounding.

As far as the gloss types were concerned, the previous findings seem to be inconclusive on the effectiveness of gloss types, especially, multiple-choice glosses (MCGs) vs. single translation glosses (STGs). Some studies reported the benefits of MCGs over other conditions (Hulstijn, Hollander and Greidanus 1996, Rott, Williams and Cameron 2002), while others showed some confounding results (Nagata 1999, Yoshii 2013). For example, Nagata (1999) reported the advantage of MCGs over STGs, while Yoshii (2013) found the opposite finding.

In addition, the previous studies comparing the effects of L1 and L2 glosses have also shown inconsistent findings (Choi 2016, Ko 2012, 2017, Miyasako 2002, Salehi and Naserieh 2013, Xu 2010, Yoshii 2006). For example, Choi (2016), Ko (2012, 2017), and Yoshii (2006) found no clear difference between L1 and L2 glosses, while Xu (2010) found an advantage of L1 glosses over L2 glosses. In addition, the research on the academic vocabulary has seldom been studied in the ESL literature.

Therefore, we need to investigate the research concerning both gloss types and languages in the EFL (English as a foreign language) context even though much research on either gloss types or gloss languages has been studied in L2 contexts. The study examines the effects of gloss types (multiple-choice glosses vs. single translation marginal glosses) and languages (L1 vs. L2) on academic vocabulary learning in Korean college contexts.

2. Literature Review

Much research has been conducted on the effects of glossing on L2 vocabulary learning from incidental reading. Yanagisawa et al. (2020) conducted a meta-analysis to investigate the overall effects of glossing on L2 vocabulary learning from incidental reading. They reported that glossed reading yielded significantly greater learning of words than non-glossed reading. Multiple-choice glosses were the most effective, followed by hyperlinked marginal and interlinear glosses, and in-text glosses and glossaries were the least effective gloss types. L1 glosses and L1 plus L2 glosses led to more

significant learning than L2 glosses. They found no interaction between languages (L1 vs. L2) and proficiency levels.

However, their meta-analysis focused on the learning gains of each glossing condition by converting all reported posttest scores into the effect sizes rather than direct comparisons of each condition. The previous research shows that there seems to be inconclusive on the effectiveness of gloss types or gloss languages.

First of all, there remains a lack of consensus on the values of gloss types. Hulstijn, Hollander and Greidanus (1996) compared the retention of new words by Dutch advanced L2 learners in three conditions: Marginal glosses, electronic dictionary, and control. They found that the marginal glosses resulted in much better word retention scores than the dictionaries.

Watanabe (1997) studied the effects of three types of word explanation such as appositives, single marginal glosses, and multiple choice marginal glosses, on the acquisition of L2 vocabulary. He found that both glosses significantly improved word acquisition and retention on the delayed test better than the no explanation and the appositive conditions. However, no statistically significant difference appeared between the two gloss conditions.

Nagata (1999) investigated the effectiveness of two types of glosses (single translation vs. multiple-choice glosses) in computer programs. The former provides a single English translation for each target vocabulary or target grammatical structure occurring in the reading text, while the latter provides multiple-choice glosses, followed by immediate feedback regarding the participants' selections. The result showed that the multiple-choice glosses (MCGs) were significantly more effective than the single-translation glosses.

Rott, Williams and Cameron (2002) examined the effects of three conditions on the lexical acquisition: L1 MCGs, L2 text reconstruction with chances to recheck input, and combined treatments. They found that MCGs resulted in significantly more productive and receptive gains immediately than L2 text reconstruction after the treatment. A significant receptive word gain remained for the combined treatment condition for five weeks. However, it is unclear whether the effectiveness could be due to gloss types or gloss languages.

Yoshii (2013) studied which type between single translation and MCGs can be more effective for vocabulary learning through computer reading. The researcher provided glosses next to the target words in the blank boxes with pull-down menus. The findings showed a consistent pattern of single translation glosses being more effective than MCGs in both immediate and delayed posttests.

On the other hand, the previous studies comparing the effects of gloss languages (L1 vs. L2) have also shown inconsistent findings. Ko, 2012 studied the effects of L1 and L2 glosses with the same marginal glosses on L2 vocabulary learning in a Korean college context. The results revealed a significant difference between no-gloss and glossed (L1 or L2) readings. However, there appeared to be no significant differences between L1 and L2 glosses. The participants preferred glosses in L2 reading texts and favored L2 glosses over L1.

Yoshii (2006) studied the effectiveness of L1 and L2 glosses with additional pictorial cues on

incidental vocabulary learning in a multimedia environment. Significant differences were not found between L1 and L2 glosses but between text-plus-picture and text-only glosses. Therefore, this study indicates that both L1 and L2 glosses could be effective for incidental vocabulary acquisition, but additional visual cues on vocabulary learning could increase L2 vocabulary learning.

Choi (2016) further investigated the effects of gloss languages (L1 vs. L2 marginal glosses) and frequency (F2 occurring twice vs. F4 occurring four times) on the recall of the target words. He found that the L1 group more significantly performed the L2 group in the long-term retention of F4 words, but not F2 words though there was no difference in their short-term retention of both F2 and F4 words.

Xu (2010) studied how the three types of glossing (i.e., glossing in both L1 and L2, glossing in L1, and glossing in L2) could affect the incidental vocabulary acquisition through reading. The result showed the better effects of either L1 or L1 plus L2 glosses over L2 glosses on vocabulary learning.

Salehi and Naserieh (2013) investigated the effectiveness of four types of verbal glosses from incidental reading: L1, L2, bilingual, and mixed glosses. The results revealed the effectiveness of glossed readings over non-glossed ones. The mixed glosses seemed to be the most advantageous type, where the participants referred to both L1 and L2 definitions of the target words followed by the sentence in which the target word appeared. No difference existed between L1 and L2 glosses though they preferred the former to the latter.

Ko (2017) examined the relationship between L2 proficiency and types of glosses with four gloss conditions, no-gloss, L1 glosses, L2 glosses, and L1+L2 glosses. The findings showed that the L1 glosses and the L1+L2 glosses were more effective for low-level learners, while the L2 glosses and the L1+L2 glosses were more effective for high-level learners. The participants reported their preference for the L1+L2 gloss type over the others. However, this study has some limitations in that it exclusively focused on proficiency rather than the differences between L1 and L2 glosses.

Recently, Kang (2022) studied the effects of multiple-choice glosses (MCGs) and types of language (L1 vs. L2) and frequency on L2 vocabulary learning in Korean academic college contexts. The study showed significant learning gains in academic vocabulary after providing MCGs while reading the academic text. However, there was some interaction between the effects of types of gloss languages and the participants' proficiency levels. The lower level students significantly improved from pre-test to posttest with L1 MCGs, while the advanced level benefited from L2 MCG. In addition, the study revealed that learning academic words was required at least six times regardless of the type of gloss language.

3. Method

3.1 Participants and Research Questions

Eleven students studying at English Language & Literature Dept. at a university in Seoul participated

in this study in the spring semester of 2021. Their TOEIC scores ranged from 750 to 970, except for two students who had not taken the test before). The present study took the within-sample experiment and addressed the effects of multiple-choice and single-translation marginal glosses in L1 (Korean) and L2 (English) on academic vocabulary learning. The study is designed to answer the following questions:

- (1) Are there any significant learning gains of academic vocabulary on the four conditions (L1 MCGs, L2 MCGs, L1 STGs, and L2 STGs)?
- (2) Are there any significant learning gains in academic vocabulary on the four conditions (L1 MCGs, L2 MCGs, L1 STGs, and L2 STGs) in terms of two proficiency levels?
- (3) What are the participants' preferences about gloss types and languages?

3.2 Research Design

For the study, the researcher conducted the zoom conference online. First of all, the researcher chose a reading excerpt from the academic reading text (Jacobs, Dufon and Hong 1994) a week before studying the text in the regular course, Pragmatics, where the medium of instruction was done in L2 (English). Then, seventeen target words were selected from the reading text, and they were assigned to one of the four glossing conditions by the researcher. In the case of MCGs, when they find the target words reading the text, they can see either L1 or L2 multiple-choice items with the first click on them and then find the answer with the second click, as shown in Figure 1. Under the STGs conditions, they can see the single translation (L1 or L2) at the page's bottom, as shown in Figure 2.

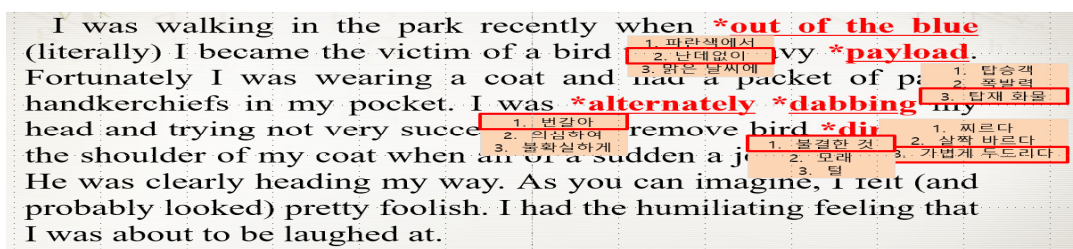


Figure 1. L1 MCGs

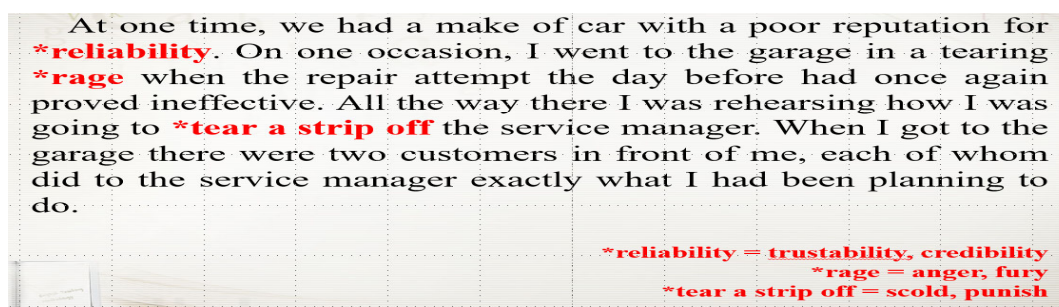


Figure 2. L2 STGs

Then, the participants were pre-tested before treatment and post-tested right after treatment and a week later. The multiple-choice test format was taken, following Ko (2012), where the opposite language of gloss languages in the test items was used to control the effects of gloss languages. For example, the test items were written in L2 in the case of L1 glosses, and vice versa.

4. Results

4.1. Learning Gains after Glossing

The following descriptive statistics in Table 1 showed the vocabulary scores of the pretest, the posttest, and the delayed posttest of the within-sample experimental group. For example, the pretest mean score of the participants was 12.46 out of the total score (17), and then their posttest and delayed posttest mean scores were 14.82 and 15.00, respectively after the provision of glossing. For each of the four types of glossing, their scores have increased from the pretests through the immediate posttests to the a week delayed posttests except the delayed test of L1 STGs.

Table 1. Descriptive Statistics

Glossing	Paired Samples	Mean	N	SD
Glosses in Total	Pretest	12.46	11	3.50
	Posttest	14.82	11	2.32
	Delayed Test	15.00	7	2.08
L1 MCGs	Pretest	4.00	11	1.00
	Posttest	4.46	11	.93
	Delayed Test	4.86	7	.38
L2 MCGs	Pretest	2.46	11	.82
	Posttest	2.64	11	.67
	Delayed Test	3.00	7	.00
L1 STGs	Pretest	3.00	11	1.79
	Posttest	4.09	11	1.30
	Delayed Test	3.43	7	1.51
L2 STGs	Pretest	3.00	11	1.00
	Posttest	3.64	11	.50
	Delayed Test	3.71	7	.49

The paired-sample t-statistics in Table 2 showed that glosses themselves positively influenced L2 vocabulary learning regardless of the types of glosses. In other words, the vocabulary score of the experimental group significantly improved from the pretest to the posttest after the provision of glossing in total ($p = .049 < .05^*$).

However, no learning gains of each of the glosses, such as MCGs and STGs (L1 or L2), were significant between pretests and either posttests or delayed posttests, even though the effects of the STGs (L1 and L2) nearly approached the significant levels ($p = .067$). Therefore, STGs could be more

beneficial for L2 vocabulary learning than MCGs in Korean contexts.

Table 2. Paired-samples T-Statistics

Paired Samples	Mean Difference	<i>SD</i>	<i>t</i>	<i>p</i>
Pretest — Posttest	-2.36	3.5	-2.24	.049
Pretest — Delayed	-2.14	4.63	-1.22	.267
Pretest—Posttest (L1 MCGs)	-.45	1.04	-1.46	.176
Pretest—Delayed (L1 MCGs)	-.86	1.21	-1.87	.111
Pretest—Posttest (L2 MCGs)	-.18	.40	-1.49	.167
Pretest—Delayed (L2 MCGs)	-.57	.79	-1.92	.103
Pretest—Posttest (L1 STGs)	-1.09	1.76	-2.06	.067
Pretest—Delayed (L1 STGs)	.14	2.67	.14	.892
Pretest—Posttest (L2 STGs)	-.64	1.03	-2.06	.067
Pretest—Delayed (L2 STGs)	-.86	1.21	-1.87	.111

4.2. The Effects of Glossing and Proficiency

Tables 3 and 4 showed the descriptive and paired-samples t-statistics of the advanced group, who was identified above TOEIC score of 880, between the pretest and either posttest or delayed posttest. The pretest mean score of the participants was relatively high, which was 12.67 out of the total score (17), and then their posttest and delayed posttest mean scores were 15.67 and 15.50, respectively, as shown in Table 3.

Table 3. Descriptive Statistics of Advanced Level

Glossing	Paired Samples	<i>M</i>	<i>N</i>	<i>SD</i>
Glosses in Total	Pretest	12.67	6	3.08
	Posttest	15.67	6	1.03
	Delayed Test	15.50	4	1.29
L1 MCGs	Pretest	4.33	6	.82
	Posttest	4.83	6	.41
	Delayed Test	5.00	4	.00
L2 MCGs	Pretest	2.33	6	.82
	Posttest	2.67	6	.52
	Delayed Test	3.00	4	.00
L1 STGs	Pretest	3.33	6	1.63
	Posttest	4.50	6	.84
	Delayed Test	3.75	4	1.26
L2 STGs	Pretest	2.67	6	1.21
	Posttest	3.67	6	.52
	Delayed Test	3.75	4	.50

The paired-sample t-statistics in Table 4 showed no significant effects of glossing on learning gains. It could be due to the ceiling effect since their pretest score was too high for the advanced learners.

On the other hand, the pretest score of the low group learners, who were identified below the TOEIC score of 880, was calculated with the posttest and delayed posttest scores, as shown in Table

5. Their scores continued to increase from the pretest through the posttest until the delayed posttest.

Table 4. T-Statistics of Advanced Level

Paired Samples	Mean Difference	SD	<i>t</i>	<i>p</i>
Pretest — Posttest	-3.00	3.58	-2.05	.095
Pretest — Delayed	-2.00	2.31	-1.73	.182
Pretest—Posttest (L1 MCGs)	-.500	1.05	-1.17	.296
Pretest—Delayed (L1 MCGs)	-.75	.96	-1.57	.215
Pretest—Posttest (L2 MCGs)	-.33	.52	-1.58	.175
Pretest—Delayed (L2 MCGs)	-.50	.58	-1.73	.182
Pretest—Posttest (L1 STGs)	-1.17	1.47	-1.94	.110
Pretest—Delayed (L1 STGs)	.50	1.73	.58	.604
Pretest—Posttest (L2 STGs)	-1.00	1.26	-1.94	.111
Pretest—Delayed (L2 STGs)	-1.25	1.50	-1.67	.194

Table 5. Descriptive Statistics of Low Level

Glossing	Paired Samples	<i>M</i>	<i>N</i>	<i>SD</i>
Glosses in Total	Pretest	9.67	3	3.51
	Posttest	12.00	3	2.65
	Delayed Test	14.00	2	4.24
L1 MCGs	Pretest	3.00	3	1.00
	Posttest	3.33	3	1.15
	Delayed Test	4.50	2	.71
L2 MCGs	Pretest	2.33	3	1.15
	Posttest	2.33	3	1.15
	Delayed Test	3.00	2	.00
L1 STGs	Pretest	1.33	3	1.53
	Posttest	3.00	3	2.00
	Delayed Test	3.00	2	2.83
L2 STGs	Pretest	3.00	3	.00
	Posttest	3.33	3	.58
	Delayed Test	3.50	2	.71

The paired-samples *t*-statistics in Table 6 showed that the differences between the pretests and either posttests or delayed posttests in any of the glossing conditions were not statistically significant ($p > .05$), like the cases of the advanced level in Table 4. Therefore, glossing could benefit L2 vocabulary learning regardless of proficiency levels.

Table 6. T-Statistics of Low Level

Paired Samples	Mean Difference	SD	t	p
Pretest — Posttest	-2.33	4.93	-.82	.499
Pretest — Delayed	-4.50	9.19	-.69	.614
Pretest—Posttest (L1 MCGs)	-.33	1.53	-.38	.742
Pretest—Delayed (L1 MCGs)	-1.50	2.12	-1.00	.500
Pretest—Posttest (L2 MCGs) ¹				
Pretest—Delayed (L2 MCGs)	-1.00	1.41	-1.00	.500
Pretest—Posttest (L1 STGs)	-1.67	2.89	-1.00	.423
Pretest—Delayed (L1 STGs)	-1.50	4.95	-.429	.742
Pretest—Posttest (L2 STGs)	-.33	.58	-1.00	.423
Pretest—Delayed (L2 STGs)	-.50	.71	-1.00	.500

4.3. L2 Learners' Opinions about Glosses

The following statistics in Tables 7-9 showed the frequency and percentage of L2 learners' opinions about gloss languages and types. First of all, more participants reported a preference for L1 glosses rather than L2 glosses though the advanced group showed an equal preference, as shown in Table 7.

Table 7. Opinions about Gloss Languages

Group	L1 (%)	L2 (%)
Total	5 (71.4%)	2 (28.6%)
Advanced Level	2 (50%)	2 (50%)
Low Level	2 (66.7%)	1 (33.3%)

Table 8. Opinions about Gloss Types

Group	STGs (%)	MCGs (%)
Total	4 (57.1%)	3 (42.9%)
Advanced Level	3 (75%)	1 (25%)
Low Level	2 (66.7%)	1 (33.3%)

Table 9. Opinions about Gloss Languages & Types

Group	L1 STGs (%)	L2 STGs (%)	L1 MCGs(%)	L2 MCGs(%)
Total	2 (28.6%)	2 (28.6%)	2 (28.6%)	1 (14.3%)
Advanced	1 (25%)	2 (50%)	1 (25%)	0
Low	0	0	1 (50%)	1 (50%)

Secondly, the participants preferred STGs to MCGs concerning gloss types regardless of proficiency levels, as shown in Table 8. Finally, Table 9 showed that the L2 MCGs were the least preferred among the four conditions of glossing: L1 STGs, L2 STGs, L1 MCGs, and L2 MCGs.

¹ The t-statistics could not be performed because there was no mean difference between pretest and posttest.

5. Conclusion

The present study showed that glosses positively led to significant gains in L2 vocabulary learning regardless of gloss types or languages. The current findings supported the previous study (Jacobs, Dufon and Hong 1994; Salehi and Naserieh 2013; Watanabe 1997; Yanagisawa et al. 2020), showing that glosses in incidental reading produced significantly greater learning of L2 words than non-glossed reading. However, most of the previous studies indicate that there did not appear to be any significant differences between gloss types (Miyasako 2002, Watanabe 1997) or between gloss languages (L1 vs. L2) (Jacobs, Dufon and Hong 1994, Ko 2012, Yoshii 2006). Therefore, any interventions in incidental reading through glossing in different types or languages can be useful for L2 vocabulary learning.

However, the previous studies indicate that the more extra interventions such as additional visual cues (Yoshii 2006), frequency (Choi 2016, Waring and Takaki 2003, Webb 2007), and L1 plus L2 (Ko 2017, Salehi and Naserieh 2013, Xu 2010) could lead to students' active participations, which can in turn promote L2 vocabulary learning. Therefore, teachers must encourage students to make more cognitive efforts in processing words and increase L2 vocabulary knowledge by providing additional treatments in class.

As for L2 learners' opinions about gloss types and languages, most of the participants preferred STGs to MCGs, and more participants showed their preferences for L1 glosses rather than L2 glosses. However, the advanced group reported an equal preference for gloss languages. The previous findings seemed to be uncertain about the preferences. For example, some studies reported the participants' preference for marginal and L2 glosses (Jacobs, Dufon and Hong 1994, Ko 2012) while the participants in other studies preferred L1 to L2 glosses (Salehi and Naserieh 2013). The preferences could be context-specific (e.g., proficiency, age, grade, etc.), but comprehensibility and transparency can play a crucial role in the efficacy of glossing (Jacobs, Dufon and Hong 1994).

References

- Choi, S. 2016. Effects of L1 and L2 glosses on incidental vocabulary acquisition and lexical representations. *Learning and Individual Differences* 45, 137-143.
- Grundy, P. 2008. *Doing Pragmatics*, 3rd ed. Hodder Education.
- Hulstijn, J. H., M. Hollander and T. Greidanus. 1996. Incidental vocabulary learning by advanced foreign language students: The influence of marginal glosses, dictionary use, and reoccurrence of unknown words. *The Modern Language Journal* 80(3), 327-339.
- Jacobs, G. M., P. Dufon and F. C. Hong. 1994. L1 and L2 vocabulary glosses in L2 reading passages: Their effectiveness for increasing comprehension and vocabulary knowledge. *Journal of Research in Reading* 17, 19-28.
- Kang, Dongho. 2022. Effects of multiple-choice glosses and frequency on L2 academic vocabulary

- learning in Korea. *Korean Journal of English Language and Linguistics* 21, 695-705.
- Ko, M. H. 2012. Glossing and second language vocabulary learning. *TESOL Quarterly* 46(1), 56-79.
- Ko, M. H. 2017. The relationship between gloss type and L2 proficiency in incidental vocabulary learning. *Modern English Education* 18(3), 47-69.
- 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, 469-479.
- Peters, E., J. H. Hulstijn, L. Sercu and M. Lutjeharms. 2009. Learning L2 German vocabulary through reading: The effect if three enhancement techniques compared. *Language Learning* 59(1), 113-151.
- Rott, S., J. Williams and R. Cameron. 2002. The effect of multiple-choice L1 glosses and input-output cycles on lexical acquisition and retention. *Language Teaching Research* 6(3), 183-222.
- Salehi, V. and F. Naserieh. 2013. The effects of verbal glosses on vocabulary learning and reading comprehension. *Asian EFL Journal* 15, 24-64.
- Waring, R. and M. Takaki. 2003. At what rate do learners learn and retain new vocabulary from reading a graded reader? *Reading in a Foreign Language* 15(2), 130-163.
- Watanabe, Y. 1997. Input, intake and retention: Effects of increased processing on incidental learning of foreign language vocabulary. *Studies in Second Language Acquisition* 19(3), 287-307.
- Webb, S. 2007. The effects of repetition on vocabulary knowledge. *Applied Linguistics* 28(1), 46-65.
- Xu, X. 2010. The effects of glosses on incidental vocabulary acquisition in reading. *Journal of Language Teaching and Research* 1, 117-120.
- Yanagisawa, A., S. Webb and T. Uchihara. 2020. How do different forms of glossing contribute to L2 vocabulary learning from reading?: A meta-regression analysis. *Studies in Second Language Acquisition* 42(2), 411-438.
- Yoshii, M. 2006. L1 and L2 Glosses: Their effects on incidental vocabulary learning. *Language Learning & Technology* 10, 85-101.
- Yoshii, M. 2013. Effects of gloss types on vocabulary learning through reading: Comparison of single translation and multiple-choice gloss types. *CALICO Journal* 30, 203-229.

Examples in: English

Applicable Languages: English

Applicable Levels: Tertiary