『영어영문학연구』 제44권 제3호
(2018) 가을 295－317

Studies in English Language & Literature
http://dx.doi.org/10.21559/aellk.2018.44.3.014

The Effects of Reading-based Output Tasks on L2 Vocabulary Acquisition and Learning Strategies*

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Cho, Young Ah. "The Effects of Reading-based Output Tasks on L2 Vocabulary Acquisition and Learning Strategies." ***Studies in English Language & Literature*** **44.3 (2018): 295-317.** The present study explores the effects of reading-based output instruction on productive vocabulary recall and recognition, as well as vocabulary learning strategies, focusing on Korean college students. This study adopted a within-subjects design. Eighty-four learners were assigned to either a summarizing, questioning/answering, predicting, or control group. A background questionnaire, a Vocabulary Size Test, pre- and post-Vocabulary Learning Strategy questionnaires, and pre- and post-vocabulary tests were used in the study. The findings indicate that the questioning/answering and predicting tasks had a significant influence on recall word knowledge gains, whereas all the experimental tasks were effective in yielding higher word recognition. Furthermore, word-focused output tasks done while reading saw learners improve memory and cognitive skills related to vocabulary learning strategies. Based on the results, pedagogical implications are suggested for L2 vocabulary instruction. (Gwangju University)

Key Words: word-focused output tasks, reading input, vocabulary knowledge, vocabulary learning strategies, L2 classroom

I. Introduction

A substantial number of researchers have agreed that lexical knowledge is one of

* This Study was conducted by research funds from Gwangju University in 2018.

the most significant contributors to second language (L2) development and reading comprehension (Bao, 2015; Laufer & Ravenhorst-Kalovski, 2010; Nation, 2001). As for the relation between vocabulary acquisition and reading, although vocabulary knowledge can be incidentally gained through reading input, learners do not seem to have many opportunities to encounter words that would promote vocabulary knowledge gains (Milton, 2009). Taking this into consideration, researchers have explored more intentional approaches to teaching words and consequently stressed the benefits of word-focused tasks during and after reading (Rassaei, 2017; Yang, Shintani, Li, & Zhang, 2017).

A variety of word-focused task conditions have been conducted in vocabulary learning situations, namely while the learners are engaged in a reading activity; these conditions have included cloze sentence questions, sentence completion, input enhancement, summarization, glossing, involvement load, dictionary use, and exposure frequency with target words. Diverse techniques and approaches for facilitating lexical competence have been employed in the previous research studies, but reading-based output tasks, such as summarizing, predicting, and questioning/answering, have mainly been related to reading comprehension abilities, not their potential influence on vocabulary acquisition (Barnett, 1988; Kusiak, 2001; Rassaei, 2017).

It is suggested that vocabulary learning processes could be triggered in various ways, including explicit and implicit teaching approaches, general teaching practices, as well as increasing the learners' motivation and understanding of learning strategies (Coady, 1997; Hamzah, Kafipour, & Abdullah, 2009). Of these variables, there is a significant correlation between vocabulary proficiency and vocabulary learning strategies (Ghazal, 2007; Kalajahi & Pourshahian, 2012; Waldvogel, 2013). More importantly, it is generally acknowledged that though experienced, skillful learners tend to meta-cognitively connect word learning strategies to their learning processes, less-proficient language learners have not yet developed appropriate learning skills to manage vocabulary acquisition more efficiently (Waldvogel, 2013).

Due to the prominent role vocabulary knowledge has on the learning process, vocabulary instruction needs to provide learners with specific practice and strategy training to expand their lexical knowledge (Hulstjin, 1993). However, no studies have yet empirically investigated the mutual relationship between word-focused output tasks and word knowledge competence along with vocabulary learning strategies, specifically focusing on Korean college students. Therefore, it is quite meaningful to examine how certain types of reading-based output tasks－summarizing, questioning/answering, and predicting－affect learners' word knowledge gains and their perceptions towards vocabulary learning strategies. As such, the following research questions were asked in order to investigate those issues:

1. How do different types of reading-based output tasks affect L2 learners' productive recall and recognition of new vocabulary?
2. How do different types of reading-based output tasks affect L2 learners' perceptions towards vocabulary learning strategies?

II. Literature Review

2.1 Word-focused output tasks through reading input

Vocabulary knowledge and reading comprehension have mutual and strong relationships, which has led researchers to investigate effective word-focused instruction through written input (Laufer & Ravenhorst-Kalovski, 2010; Xiaohui, 2010). The findings of previous studies have demonstrated that vocabulary activities through reading can yield better word knowledge gains, but there has been no general consensus as to what types of teaching approaches would be more helpful for L2 learners in promoting vocabulary proficiency.

Xianhui (2010) examined the benefits of reading comprehension input on incidental word recognition knowledge for college students. The participants were assigned to the four experimental groups which were elaborated input, enhanced input, interactionally modified input, modified output, and one control group. The outcomes indicated that enhanced input and modified output tasks had significantly greater word knowledge gains than any other group.

Yang et al. (2017) investigated the relationships between post-reading word-focused tasks and word gains, as well as working memory. They separated learners into three experimental groups and one control group based on the experimental tasks employed in the study, gap-filling, sentence writing, and comprehension-only activities. A vocabulary-knowledge scale and a reading span test were used to measure learners' word scores and working memory capacities. The study revealed that the sentence writing group significantly outperformed others on the immediate learning scale, while the sentence writing and gap-filling groups had greater word competence than the other groups in terms of long term retention. Moreover, the study showed a correlation between working memory and gap-filling, as well as comprehension only groups.

Rassaei (2017) examined the effectiveness of the three reading-based output activities on learners' vocabulary recognition and recall. The output activities were summarizing texts, generating comprehension questions and answering them, and also making predictions. The results revealed that questioning/answering and prediction task-groups were more effective than the summarizing and control groups in terms of immediate recall word gains. The results also indicated that prediction tasks were better for recognition and recall knowledge gains in the long-term retention.

As the empirical research suggests, word-focused output tasks through reading promoted learners' word knowledge proficiency; however, the results for word learning processes showed mixed results.

2.2 Vocabulary learning strategies in L2 acquisition

Vocabulary learning strategies can be generally defined as a sub group of language learning strategies and activate learning processes by which word knowledge is gained, stored, and retrieved (Nation, 2001; Oxford, 1990; Schmitt, 1997). Schmitt (1997) mentioned "vocabulary learning strategies could be any action which affects this rather broadly-defined process" (p. 203). Similarly, Hamzah et al. (2009) suggested vocabulary learning strategies may be related to actions taken by learners to improve their efficiency in learning new words. In order to discover the relationships between how frequently learners use vocabulary learning strategies and what their language achievement level is, empirical studies have proposed a range of different taxonomies related to vocabulary learning strategies.

Stoffer (1995) clustered vocabulary learning strategies into nine categories: authentic language use, creative activities, physical action, self-motivation, organizing words, mental linkages, overcoming anxiety, memory strategies, and auditory strategies. Gu and Johnson (1996) classified vocabulary learning strategies into four subcategories: metacognitive, cognitive, memory, and activation strategies. The metacognitive strategy factor entails selective attention and self-initiation while guessing, dictionary use, and note-taking are cognitive strategy factors. The memory strategy factor encompasses rehearsal and encoding, and the activation strategy factor includes using unfamiliar words in different contexts. Schmitt (1997) distinguished two groups of vocabulary learning strategies, discovery and consolidation. The discovery strategies are related to defining the meanings of words, including their determination and social factors, whereas the consolidation strategies are related to consolidating the meaning of words and are made up of social, memory, cognitive, and metacognitive factors. Nation (2001) divided word learning into planning, sources, and processes strategies.

Hamzah et al. (2009) concluded that memory strategies were used the most frequently, and social strategies were found to be the least used frequency for

Iranian learners. Tsai and Chang (2009) suggested that dictionary use strategies were chosen as the most frequently used one while vocabulary perception strategies ranked the least used frequency in EFL environments. With regard to the relationships between vocabulary learning strategies and language proficiency levels, Waldvogel (2013) proved that metacognitive and social learning strategies may be beneficial for advanced learners while memorization strategies could be suited for less successful learners.

III. Methods

3.1 Participants

A total of 84 first-year college students participated in the current study (age=19-27). The participants consisted of 26 male students and 58 female students. They were enrolled in a general English course and majored in the four different specialties: adolescent counseling, library and information science, in-flight services, and early childhood education.

To confirm the homogeneity of the participants, a pre-target word test was administered, and the results indicated that the four groups were comparable in terms of initial word knowledge competence (see Results and Discussion for details). Additionally, based on the results of the self-rated English lexical knowledge competence in the background questionnaire, 52 learners (61.9%) evaluated themselves as low-proficiency and 32 learners (38.1%) as intermediate-proficiency learners.

The participants were randomly assigned to three experimental groups and one control group. All task conditions were counterbalanced through a within-subjects design, and each experimental group, all with equal numbers of learners, received three different sets of vocabulary instruction.

3.2 Instruments

This study employed four instruments: a background questionnaire, the Vocabulary Size Test (VST), pre- and post-Vocabulary Learning Strategies (VLS) questionnaires, and pre- and post-vocabulary tests. The background questionnaire was designed to identify the participants' demographic information, such as their gender, age, major, and self-reported English word proficiency levels.

The VST, developed by Nation (2015), was adapted and used to measure learners' general vocabulary size. Based on the learners' English word proficiency self-assessment, the third 1,000 and the fourth 1,000 word-level parts were administered out of the fourteen 1,000 parts on the VST. Each word-level part, which contained 10 words, was presented on the receptive recognition test condition with each word being worth one point each.

The pre-test was designed to ascertain learners' initial target word scores and contained initial 30 question-items in the third to the fifth 1,000 word-level parts with a receptive recall test format. The criteria used to select the target word-level size for the current study was based on learners' performance on the VST. More specifically, the mean scores of the third 1,000 were 6.74, and the fourth 1,000 were 5.88 out of 10 respectively, showing that learners in the study may not have fully mastered the two word level parts. Therefore, the target vocabulary items from the third 1,000 to the fifth 1,000 word levels were selected from the three reading treatment passages by using VP-Compleat. Based on the results of the pre-test, a total of 24 target words, the least unknown by over 95 percent of learners, were chosen to be tested in the three post-tests with 8 items, respectively. The parts of speech of the target items were nouns, verbs, adjectives, and adverbs. The post-tests were presented in productive recall and productive recognition test-types.

Lastly, the pre- and post-VLS questionnaires from Schmitt’s (1997) study were adopted and slightly modified to identify learners' perceptions towards word learning strategies before and after the treatment sessions. Initially, the VLS consisted of two domains with 58 items, that is, discovery and consolidation strategy categories. The discovery strategies include determination and social subcategories, whereas the consolidation strategies contained social, memory, cognitive, and metacognitive strategies. Considering the purpose of the current study, a total of 43 items were extracted and used: determination strategies (7 items), social strategies (4 items), social strategies (2 items), memory strategies (18 items), cognitive strategies (7 items), and metacognitive strategies (5 items). Cronbach's Alpha internal reliability coefficient for VLS was .904, suggesting highly reliable results. All question-items were marked on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

3.3 Procedure

First, the participants were asked to complete the background questionnaire. Then, in order to examine the groups' vocabulary size and target word knowledge, the VST and the pre-vocabulary test were conducted at the onset of the experimental sessions. Afterwards, the three experimental groups undertook three different tasks once a week for three successive weeks. Since this study used a within-subjects design, all the experimental groups were exposed to the three different task conditions.

In terms of the reading treatment texts, the three descriptive passages were chosen from *Reading Town 1* (Kim, Maguire, & Bosiak, 2010), and the texts' grade level on the Flesch-Kincaid scale ranged between 8.5 to 9.2. The contexts of the texts were about arts, people and culture, and sports. Each passage had 256-264 words and 8 target words presented in boldface.

As for vocabulary task intervention, three reading texts and worksheets were modified to be adequate for the three task conditions based on Rassaei's (2017) study. First of all, all the groups involved in reading were asked to do so carefully, and then the instructor asked them some questions related to the text to make learners fully understand the reading story. However, the experimental groups received different worksheets depending on their task types.

When the stories were collected, learners in the summarizing task condition received the worksheet in which target words with L1 translations were presented, and they were also asked to summarize the text by including target words in up to eight sentences. On the worksheet, the first sentence was written without target words. After completing the task, the instructor collected learners' tasks and briefly gave them feedback. Finally, learners took the two different word post-tests in the productive recall and recognition types. In the questioning/answering task condition, learners also received the worksheet. On the worksheet, there were target words with L1 translations and several prompts, such as ‘Explain why...’, ‘What cause...?’ As with the summarizing task, the first sentence without target words was written on the worksheet. Learners were taught to formulate four question-items regarding main events, details, and cause/effect in the text and then answer those questions using target words. After completing the tasks, they received feedback and took the post-tests. As for the predicting task, learners received the worksheet and were told to make predictions about the events or main ideas which were not presented in the text by using target words. The instructor guided them to generate sentences on their own creatively. After the instructor collected the tasks, learners received feedback and took the post-tests.

Although the control group received the same text as the experimental groups, they were not involved in any explicit word learning activities. Instead, learners read the text and then had to respond to five reading comprehension question-items in which they chose the correct statements regarding the story. To adjust for the effects of input frequency, the statement included the target words. Then, they received feedback and took the post-tests.

The instruction session lasted approximately 40 minutes. After the three-week instruction periods, all groups took part in the post-VLS questionnaire two weeks later.

3.4 Data analysis

The background questionnaire was measured by an analysis of frequency. The VST was calculated using descriptive statistics and an ANOVA. The pre- and post-VLS questionnaires were checked by Cronbach's alpha coefficients, descriptive statistics, a MANOVA, and post-hoc pairwise comparisons. The pre- and post-tests were calculated with descriptive statistics and a repeated-measures ANOVA. In addition, to exactly identify significant differences among groups, post-hoc pairwise comparisons were also employed for the word tests. All data was analyzed using SPSS 20.0.

IV. Results and discussion

4.1 The effects of reading-based output tasks on vocabulary acquisition

The first research question asked whether different types of reading-based output tasks affected L2 learners' productive recall and gains in recognizing vocabulary. First of all, the outcomes of the pre-test was run by a descriptive statistics and an ANOVA in order to find out if there were any significant differences regarding the target words initially (see Table 1). The mean scores of experimental group 1 (hereafter, EG1) were 3.81, experimental group 2 (hereafter, EG2) were 5.33, experimental group 3 (hereafter, EG3) were 5.43, and the control group (hereafter, CG) were 3.76 out of 30 possible points. The results indicated that learners in the study had a little vocabulary knowledge, further revealing no apparent differences before the treatment (*Sig.*=.262).

Table 1 The results of descriptive statistics and an ANOVA on the pre-test(*K*=30)

Groups	*N*	M	*SD*	F	*Sig.*	*ES*
EG1	21	3.81	3.669	1.357	.262	.048
EG2	21	5.33	2.726			
EG3	21	5.43	4.094			
CG	21	3.76	3.872			
Total	84	4.58	3.651			

$p<.05$, *ES*= Effect Size, *K:* the number of test items

This study employed a within-subjects design; thus, three experimental groups took three different vocabulary learning tasks except for the control group. To examine the effects of reading-based output tasks on learners' productive recall and recognition word gains, learners' performance on the three post-tests was separately analyzed using descriptive statistics depending on two-type test conditions. Table 2 depicts the descriptive statistics of the productive recall word knowledge on the post-tests.

Table 2 Descriptive statistics of productive recall vocabulary gains (*K*=10)

		Test 1		Test 2		Test 3	
Task-types	*N*	M	*SD*	M	*SD*	M	*SD*
Summarizing	21	3.90	1.044	4.10	2.256	4.05	2.418
Questioning/answering	21	4.81	1.721	5.14	2.007	6.29	1.901
Predicting	21	5.05	1.203	5.29	1.488	6.14	1.797
Control condition	21	2.62	2.085	2.90	2.047	3.10	2.256

The findings revealed that the mean scores of the predicting task were the highest for immediate knowledge gains between the Test 1 and 2, followed by the question/answering task, the summarizing task, and then the control condition. On the other hand, the mean scores of the question/answering task outscored other groups on Test 3. In order to exactly see if a significant difference existed, a repeated-measures ANOVA was calculated in the productive recall test (see Table 3). The results proved that there was a significant main effect for tasks (*Sig.*=.000) with a relatively large effect size (*ES*=.457).

Table 3 Repeated-measures ANOVA of productive recall vocabulary gains

Source	*SS*	*df*	*MS*	F	*Sig.*	*ES*
Posttest	27.770	2	13.885	4.333	.015	.051
Posttest*Task	14.167	6	2.361	.737	.621	.027
Task	295.345	3	98.448	22.482	.000	.457

$p<.05$, *ES*= Effect Size

Table 4 summarizes the results of the post-hoc pairwise comparisons on the productive recall word knowledge measure. The findings showed that performance on the three reading-based output tasks were more effective than that of the control group on vocabulary learning.

Table 4 Post-hoc pairwise comparisons of productive recall vocabulary gains

(I) Task	(J) Task	MD (I-J)	Std. Error	*Sig.*
Summarizing	Questioning/answering	-1.397*	.373	.002
	Predicting	-1.476*	.373	.001
	Control condition	1.143*	.373	.018
Questioning/answering	Predicting	-.079	.373	1.000
	Control condition	2.540*	.373	.000
Predicting	Control condition	2.619*	.373	.000

$p<.05$

This study also demonstrated that significant differences could be observed depending on the type of task intervention. More specifically, both questioning/answering and predicting tasks were more beneficial for productive recall word gains than the summarizing condition. The results are in accordance with those of Rassaei's (2017) study, meaning that the learners in the predicting and questioning/answering group significantly outperformed the summarizing and control groups in terms of immediate productive recall word knowledge.

One plausible explanation is that learners in the questioning/answering and predicting conditions seemed to make effort to figure out the meanings and linguistic forms of target words to generate shorter texts in new contexts. That is, they may have consciously paid attention to target word-forms and creatively rewritten sentences by choosing appropriate words, and as such, they had greater word retention than the summarizing task group, which had been asked to merely reconstruct the information provided to them in the reading passage. Considering that mastering productive lexical knowledge may be more difficult than receptive skills (Laufer & Aviad-Levitzky, 2017), it can be said that predicting and questioning/answering word-focused tasks could be helpful for learners to acquire word knowledge in the short-term.

Next, Table 5 demonstrates the descriptive statistics of the productive recognition word gains on the post-tests. The mean scores of the questioning/answering task showed the greatest effects on Test 2 and 3, whereas the predicting task had the largest mean scores on Test 1. The results also indicated that the outcomes of the summarizing task rated third, and the control group had the lowest productive recognition of word knowledge gains.

Table 5 Descriptive statistics of productive recognition vocabulary gains (*K*=10)

		Test 1		Test 2		Test 3	
Task-types	*N*	M	*SD*	M	*SD*	M	*SD*
Summarizing	21	7.00	1.612	7.05	1.396	7.05	1.532
Questioning/answering	21	7.19	1.327	7.48	1.078	7.90	.301
Predicting	21	7.57	.870	7.38	.590	7.48	1.123
Control condition	21	4.90	1.513	5.52	1.167	5.86	1.276

To find out if there was a significant difference and where it laid, a repeated-measures ANOVA was used in the productive recognition test. Table 6 reveals that there was a statistically significant main effect for tasks (*Sig.*=.000) with a relatively large effect size (*ES*=.553)

Table 6 Repeated-measures ANOVA of productive recognition vocabulary gains

Source	*SS*	*df*	*MS*	F	*Sig.*	*ES*
Posttest	6.889	2	3.444	2.706	.070	.033
Posttest*Task	8.762	6	1.460	1.147	.338	.041
Task	182.619	3	60.873	33.025	.000	.553

p<.05, *ES*= Effect Size

Table 7 explains the outcomes of the post-hoc pairwise comparisons on the productive recognition lexical competence measure. As with productive recall vocabulary gains, performance on the three reading-based output tasks were superior to that of the control group in terms of promoting vocabulary learning. Yet, these are quite interesting results, which mean that there were no significant differences among task interventions in terms of productive recognition vocabulary gains.

Table 7 Post-hoc pairwise comparisons of productive recognition vocabulary gains

(I) Task	(J) Task	MD (I-J)	Std. Error	*Sig.*
Summarizing	Questioning/answering	-.49	.242	.271
	Predicting	-.44	.242	.419
	Control condition	1.60*	.242	.000
Questioning/answering	Predicting	.05	.242	1.000
	Control condition	2.10*	.242	.000
Predicting	Control condition	2.05*	.242	.000

$p<.05$

The findings were consistent with Rassaei's (2017) study, adding that the three treatment groups, that is, prediction, questioning/answering, and summarization, contributed to similar improvement on recognition vocabulary knowledge and significantly outperformed the control group. In addition, this study implies that as the production activities require learners to evaluate suitable target items to complete given tasks, learners may retrieve and rehears words more, which might stretch out learners' capacity to recognize vocabulary items. Accordingly, this study is in line with Keating's (2008) conclusions that producing connected discourse might be better than disconnected sentences in the productive lexical knowledge partly because writing a composition involves more elaborate learning processing of the target words.

Overall, this study validated the importance of reading-based output tasks on word knowledge gains, adding that word-focused tasks offer learners a chance to negotiate the meanings and forms of target words and enhance their retention of the target items. In terms of task intervention, questioning/answering and predicting tasks notably affected learners' outcomes on the productive recall of word knowledge types. Meanwhile, the three reading-based output tasks, summarizing, questioning/answering, and predicting activities, were proved to be useful approaches to increasing productive recognition of words.

4.2 The effects of reading-based tasks on vocabulary learning strategies

The second research question dealt with how different types of reading-based output tasks affected L2 learners' vocabulary learning strategies. Table 8 presents the four groups' mean scores for the pre-VLS. The results indicate that the learners in the study reported cognitive strategies (M=3.265) as the most frequently used one, followed by determination strategies (M=3.163), memory strategies (M=2.734), social strategies in the discovery strategies (M=2.473), metacognitive strategies (M=2.471), and social strategies (M=2.101) in the consolidation strategies. In terms of scoring systems for strategy use frequency (Oxford, 1990; Schmitt, 2000), cognitive, determination, and memory strategies were used at a medium level (M=2.5-3.5) while the social strategies in the discovery and consolidation groups and also the metacognitive strategies were evaluated at a low level (M=1-2.4). Thus, it can be said that the learners in the current study did not employ a variety of word learning strategies during their own learning processes. In addition, the results of a MANOVA on the pre-VTS indicated that there was no significant difference among groups in terms of word learning strategies before the treatment (F=1.384, *Sig.*=.141).

Table 8 Descriptive Statistics on the pre-VLS

Categories	Subcategories	Group	M	*SD*	Rank
Discovery Strategies	determination strategies	EG1	3.252	.423	2
		EG2	3.020	.386	4
		EG3	3.313	.568	1
		CG	3.068	.464	3
		sub-total	3.163	.473	2
	social strategies	EG1	2.464	.566	2
		EG2	2.452	.620	3
		EG3	2.667	.775	1
		CG	2.309	.786	4
		sub-total	2.473	.693	4
Consolidation Strategies	social strategies	EG1	2.191	.732	1
		EG2	1.976	.828	4
		EG3	2.048	.522	3
		CG	2.191	.715	1
		sub-total	2.101	.701	6
	memory strategies	EG1	2.614	.437	4
		EG2	2.685	.462	2
		EG3	2.966	.487	1
		CG	2.669	.523	3
		sub-total	2.734	.489	3
	cognitive strategies	EG1	3.319	.549	2
		EG2	3.095	.568	4
		EG3	3.415	.641	1
		CG	3.231	.621	3
		sub-total	3.265	.597	1
	metacognitive strategies	EG1	2.286	.611	4
		EG2	2.400	.663	3
		EG3	2.686	.571	1
		CG	2.514	.454	2
		sub-total	2.471	.5887	5
	Total	EG1 (*N*=21)	2.761	.400	2
		EG2 (*N*=21)	2.719	.363	4
		EG3 (*N*=21)	2.992	.456	1
		CG (*N*=21)	2.752	.389	3
		Total (*N*=84)	2.806	.411	

Table 9 describes the four groups' mean scores for the post-VLS after engaging in word instruction. The results show that cognitive strategies (M=3.424) were found as the most frequently used strategy, followed by memory strategies (M=3.232), determination strategies (M=3.157), metacognitive strategies (M=2.829), social strategies (M=2.819) in the discovery-strategies group, and social strategies (M=2.714) in the consolidation-strategies group. Plus, compared to the outcomes of the pre-VST (refer to Table 8), learners' usage frequency level on the post-VST numerically increased after the treatment.

Table 9 Descriptive Statistics on the post-VLS

Categories	Subcategories	Group	M	*SD*	Rank
Discovery Strategies	determination strategies	EG1	3.259	.453	1
		EG2	3.177	.309	2
		EG3	3.177	.502	2
		CG	3.014	.656	4
		sub-total	3.157	.495	3
	social strategies	EG1	2.857	.625	2
		EG2	2.941	.558	1
		EG3	2.774	.646	3
		CG	2.702	.687	4
		sub-total	2.819	.626	5
Consolidation Strategies	social strategies	EG1	2.809	.858	2
		EG2	2.524	.679	4
		EG3	2.952	.384	1
		CG	2.571	.795	3
		sub-total	2.714	.712	6
	memory strategies	EG1	3.309	.496	3
		EG2	3.410	.385	1
		EG3	3.315	.387	2
		CG	2.892	.309	4
		sub-total	3.232	.441	2
	cognitive strategies	EG1	3.531	.637	2
		EG2	3.612	.482	1
		EG3	3.531	.559	2
		CG	3.020	.409	3

		sub-total	3.424	.570	1
	metacognitive strategies	EG1	2.752	.666	3
		EG2	2.867	.439	2
		EG3	3.038	.668	1
		CG	2.657	.447	4
		sub-total	2.829	.574	4
Total		EG1 (N=21)	3.207	.433	3
		EG2 (N=21)	3.257	.272	1
		EG3 (N=21)	3.228	.393	2
		CG (N=21)	2.873	.347	4
		Total (N=84)	3.141	.392	

In order to identify if there were any significant differences among groups, a MANOVA was run on the post-VST, and the results are displayed in Tables 10 and 11.

Table 10 MANOVA Results on the post-VLS

Effect		Value	F	Hypothesis *df*	*df*	*Sig.*	*ES*
Intercept	Wilks' Lambda	.010	1273.638	6	75.000	.000	.990
Group	Wilks' Lambda	.593	2.397	18	212.617	.002	.160

p<.05, *ES*= Effect Size

Table 11 Group Comparison on the post-VLS

Subcategories	Source	*SS*	*df*	*MS*	F	*Sig.*	*ES*
memory strategies (CS)	Between Groups	3.370	3	1.123	7.004	.000	.208
	Within Groups	12.832	80	.160			
	Total	16.202	83	1.283			
cognitive strategies (CS)	Between Groups	4.642	3	1.547	5.527	.002	.172
	Within Groups	22.397	80	.280			
	Total	27.039	83	1.827			

p<.05, *ES*= Effect Size, CS: Consolidation Strategies

The results reveal that significant differences were found among groups (*Sig.*=.002). Specifically, memory strategies (*Sig.*=.000) and cognitive strategies (*Sig.*=.002) showed significant differences, which are both in the consolidation strategy group.

To closely investigate where the differences laid, post hoc pairwise comparisons were carried out to measure the memory and cognitive strategies (see Table 12).

Table 12 Post hoc pairwise comparisons on the post-VLS

Subcategories	Group		MD (I-J)	Std. Error	*Sig.*
memory strategies (CS)	EG1	EG2	-.1005	.12360	1.000
		EG3	-.0053	.12360	1.000
		CG	.4180*	.12360	.007
	EG2	EG3	.0952	.12360	1.000
		CG	.5185*	.12360	.000
	EG3	CG	.4233*	.12360	.006
cognitive strategies (CS)	EG1	EG2	-.0816	.16329	1.000
		EG3	.0000	.16329	1.000
		CG	.5102*	.16329	.015
	EG2	EG3	.0816	.16329	1.000
		CG	.5918*	.16329	.003
	EG3	CG	.5102*	.16329	.015

$p<.05$

The results indicated that irrespective of the types of word learning tasks, all reading-based output task groups used two of the learning strategy factors significantly more than the control group. According to Schmitt (2000), memory strategies deal with mental processing for recalling words by connecting learners' previously learned knowledge to the new words. The memory strategy factor is composed of studying words with a pictorial representation of their meaning, using semantic maps and keyword methods, grouping words with a storyline, studying the spelling and sounds of the words, configuration, and remembering the parts of speech. Meanwhile, cognitive strategies are related to mechanical techniques of learning vocabulary and contain verbal repetition, written repetition, word lists, note-taking, flash cards, and keeping vocabulary notebooks (Schmitt, 1997). Plus, cognitive strategies help learners to directly manipulate and transform the learning materials using various techniques, such as analyzing, summarizing, outlining, and reorganizing information (Oxford, 2003). This study argues that giving learners explicit training on reading-based word-focused learning can give them more opportunities to employ their own mnemonic and cognitive strategies, which will eventually increase the frequency in which they learn new words.

Taken together, even though learners used word learning strategies at medium and low levels while initially learning new words, the three experimental groups rated memory and cognitive strategy factors at medium and high use-levels after the treatment. Thus, it can be assumed that reading-based output tasks triggered the learners to become more aware of the benefits of effective vocabulary learning strategies, and it also increased their lexical competence.

V. Conclusions

The present study examined to what extent reading-based output instruction affects L2 learners' productive recall and recognition of vocabulary knowledge gains, as well as their perceptions towards vocabulary learning strategies. The results demonstrated that learners in the questioning/answering and predicting task groups significantly outperformed the other groups in terms of productive recall word gains while all experimental conditions, namely summarizing, questioning/answering, and predicting were significantly better than the control group in terms of productive recognition word knowledge. The findings also suggested that word-focused activities through reading helped learners increase the frequency in which they use mnemonic and cognitive learning strategies.

As previous researchers suggested, reading with word-focused tasks can serve as a useful means to guide language learners to acquire lexical knowledge (Laufer & Yano, 2001; Rassaei, 2017; Xiaohui, 2010). During classes with in-depth word-focused instruction, learners have been seen to be able to re-conceptualize their word knowledge in a generative way and increase their abilities to acquire more vocabulary retention skills in the future when shown previously learned vocabulary in new and different learning contexts (Nation, 2001; Schmitt, 2008). In sum, learning new words is quite demanding for L2 learners, but they can overcome the challenges by engaging in vocabulary instruction that incorporates productive word learning activities into their learning. Moreover, since this study's results reveal that vocabulary instruction equipped with reading-based output tasks can help learners consolidate their lexical knowledge and increase their awareness of the importance of learning strategies, a larger variety of writing tasks could be incorporated into classrooms. In particular, considering the effects the task conditions have on different aspects of word knowledge, vocabulary instruction needs to be designed for specific types of tasks with multidimensional aspects of targeted word in L2 classroom.

There are methodological limitations in the current study, however. The study measured learners' productive word knowledge proficiency; thus, receptive word gains need to be gauged to compare the relative effects of vocabulary instruction. Another limitation is that this study did not track learners' long-term vocabulary retention, which, if investigated, could add more depth to the results presented here.

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Received: June 30, 2018 / Revised: July 31, 2018 / Accepted: August 08, 2018