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Effects of Exposure Frequency, Depth of Processing, and Activity Repetition Types on Vocabulary Learning*

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This study investigated the effects of exposure frequency, depth of processing, and activity repetition types on vocabulary learning. In total, 78 South Korean fifth-grade students were divided into four conditions. Students in each condition were asked to read a passage with four of the eight target words (exposure: four times) and the other four words (exposure: once) for three days, and to perform the vocabulary activities assigned to each condition. According to the results, exposure frequency and activity repetition type had significant effects on vocabulary learning. Activity repetition type also had a significant interaction effect with exposure frequency and depth of processing. Notably, presenting a word 12 times (4x3) in reading intervals had a more positive impact on vocabulary learning than presenting it three times (1x3), particularly when different vocabulary activities were repeated. Meanwhile, when the same activity was repeated, an activity with a higher depth of processing was more effective for vocabulary learning.

Keywords: young EFL learners, vocabulary learning, vocabulary exposure frequency, technique feature analysis, vocabulary activity repetition

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1. INTRODUCTION

Several researchers have argued that vocabulary plays a crucial role in the successful learning of English (Hulstijn, 2001; Nation, 2013; Schmitt, 2008). Learners need to memorize new words for English learning, but they tend to easily forget the memorized vocabulary. This phenomenon affects learners and reduces their motivation to learn English vocabulary. According to a study by Lee and Lee (2011) conducted with fifth and sixth graders in elementary school, learning and memorizing many words were major factors that reduced motivation in English learning. In addition, there is little time availability for vocabulary learning during regular English classes, and teachers are encouraged to look for efficient ways to promote such learning (Folse, 2004; Zou & Xie, 2018). Based on these studies, it is necessary to develop an efficient method for reducing the burden on learners regarding vocabulary memorization.

Incidental vocabulary learning has received much attention as an efficient way for students to learn vocabulary (Laufer & Hultijn, 2001; Nation, 2013; Teng, 2016). This method transforms partial into complete word knowledge by making students repeatedly encounter words in various texts they read. Many researchers have found that exposure frequency is a significant factor in incidental vocabulary learning (Nation, 2013; Schmitt, 2008; Teng, 2016). However, vocabulary learning is a gradual and incremental process that requires considerable time to take place (Ansarin & Bayazidi, 2016; Laufer, 2009). Therefore, reading alone may not be the most effective way to learn vocabulary. In fact, several studies support the positive effects of vocabulary enhancement activities on vocabulary learning and retention compared with reading alone (Ansarin & Bayazidi, 2016; Laufer, 2003; Min, 2008; Pigada & Schmitt, 2006).

There are several different ways of designing and implementing vocabulary activities. Two frameworks for analyzing the best vocabulary activity are the Laufer and Hulstijn's (2001) Involvement Load Hypothesis (ILH) and the Nation and Webb's (2011) Technique Feature Analysis (TFA). These frameworks attempt to operationalize vocabulary activities according to processing levels and based on the processing-level hypothesis (i.e., tasks with a deeper level of processing are more effective in learning vocabulary than other tasks). Previous studies based on these frameworks provided supporting evidence for this hypothesis in the context of immediate learning (Hulstijn & Laufer, 2001; Keating, 2008; Lee & Kim, 2015; Nation & Webb, 2011). However, contrary to this hypothesis, effects of the depth of processing on retention have rarely been found (Lee, 2019). Furthermore, Hulstijn (2001) argued that a decrease in vocabulary acquisition is inevitable without repetition or additional exposure. That is, retention does not occur only through the depth of processing, but should be combined with repetition to avoid forgetting information. Moreover, most studies on vocabulary activity repetition have investigated only the

repetition of the same activity (Ansarin & Bayazidi, 2016; Folse, 2006; Lu, 2013). Therefore, it is necessary to examine the types of vocabulary activities that are most effective for vocabulary learning.

In summary, many variables affect immediate vocabulary learning and retention, such as vocabulary exposure frequency, depth of processing, and activity repetition; however, there is no consistent evidence showing that each of these variables has a positive impact on vocabulary learning retention. In particular, studies on exposure frequency and depth of processing have argued that repetition is absolutely necessary for vocabulary retention (Cameron, 2001; Sobel, Cepeda, & Kapler, 2011), albeit very few have investigated vocabulary activity repetition per se. Moreover, most studies have investigated only one of these variables and had samples comprising either adults or students, with the latter being in middle and high schools. Thus, this study aimed to examine the main and interaction effects of exposure frequency, depth of processing, and activity repetition type on fifth-graders' vocabulary learning. The research questions are as follows:

1) What are the vocabulary exposure frequency effects on learners' immediate and long-term vocabulary learning?
2) What are the depth of processing effects on learners' immediate and long-term vocabulary learning?
3) What are the vocabulary activity repetition types effects on learners' immediate and long-term vocabulary learning?
4) What are the interaction effects of exposure frequency, depth of processing, and vocabulary activity repetition types on learners' immediate and long-term vocabulary learning?

2. LITERATURE REVIEW

2.1. Vocabulary Exposure Frequency

Repeated exposure to words during reading is an important factor in incidental vocabulary learning. Nation (2013) argued that repeated exposure should be the foundation of vocabulary learning, and that exposure to a word once is insufficient. Furthermore, Schmitt (2008) emphasized the importance of repetitive exposure to words in strengthening vocabulary retention.

The following studies further elaborate on the effects of different exposure frequencies on vocabulary learning. Rott (2007) suggests that four exposures (vs. a singular encounter) are required to acquire more productive vocabulary knowledge. Teng (2016) found that EFL learners needed to encounter a word 14 times to recognize it, and at least 18 times for

acquiring productive vocabulary knowledge. Moreover, there was a learning effect when learners were exposed to a word three times or more, and the effectiveness grew when the exposure was 10 times or more (Webb, 2007). Namely, effective vocabulary learning requires at least ten exposures to a word. These findings indicate that repeated exposure to vocabulary generally causes learners to pay attention to the target words, leading to greater word retrieval. However, there is no consensus on the number of times learners must encounter words. Furthermore, in EFL contexts, it is difficult for learners to encounter words at a sufficient rate under diverse reading conditions.

According to Chen and Teng (2017), words presented 10 times showed higher scores than those presented five times or once in the immediate posttest, but word retention rapidly declined in the delayed posttest. This indicates that learners must frequently recycle the target words for retention. Meanwhile, Eckerth and Tavakoli (2012) claimed that the effect of frequency tends to fade gradually over time—implying that mere exposure may not have a positive effect on vocabulary retention. Vocabulary learning is influenced by several other variables including exposure frequency, retention, quality of engagement, and vocabulary activity (Schmitt, 2010; Webb, 2014). Therefore, it is necessary to examine the interaction between exposure frequency and other variables.

2.2. Depth of Processing in Vocabulary Learning

The literature shows that, alongside reading, learning words through activities is effective for immediate vocabulary learning and retention (Laufer, 2003; Meganathan, Yap, Paramasivam, & Jalaluddin, 2019; Min, 2008). However, Nation and Webb (2011) argued that it is sensible to choose the most effective ones from various deliberate learning activities. One factor that affects vocabulary activity effectiveness is the depth of processing that learners engage in during the activity. According to the processing hypothesis of Craik and Lockhart (1972), conducting tasks at a deeper processing level is more effective for vocabulary improvement. Nonetheless, the deep processing concept is difficult to implement. Thus, two theoretical frameworks have attempted to operationalize the depth of processing in vocabulary learning: ILH and TFA. These frameworks are useful for evaluating and establishing vocabulary teaching activities. The ILH proposed by Laufer and Hulstijn (2001) was based on the depth-of-processing theory and studied the effect of task involvement in vocabulary learning by including three components: need, search, and evaluation. However, it has been criticized for being too simplistic. To compensate for this inadequacy, Nation and Webb (2011) proposed the TFA framework.

2.2.1. Technique feature analysis

Nation and Webb (2011) have proposed that tasks with higher TFA scores (vs. lower scores) generate better vocabulary learning. TFA is a method of vocabulary task evaluation that determines whether the features are conducive to vocabulary learning (Hirata, 2019). It is an expanded checklist that includes five components: motivation, noticing, retrieval, generation, and retention. Each component includes three to five questions, totalizing 18 questions on each checklist, with a score of either 0 or 1 (Table 1).

TABLE 1

A Checklist for Technique Feature Analysis (Nation & Webb, 2011, p. 7)

Criteria	Scores	
1. Motivation		
1-1 Is there a clear vocabulary-learning goal?	0	1
1-2 Does the activity motivate learning?	0	1
1-3 Do learners select the words?	0	1
2. Noticing		
2-1 Does the activity focus attention on the target words?	0	1
2-2 Does the activity raise awareness of new vocabulary learning?	0	1
2-3 Does the activity involve negotiation?	0	1
3. Retrieval		
3-1 Does the activity involve retrieval of the word?	0	1
3-2 Is it productive retrieval?	0	1
3-3 Is it recall?	0	1
3-4 Are there multiple retrievals of each word?	0	1
3-5 Is there spacing between retrievals?	0	1
4. Generation		
4-1 Does the activity involve generative use?	0	1
4-2 Is it productive?	0	1
4-3 Is there a marked change that involves the use of other words?	0	1
5. Retention		
5-1 Does the activity ensure successful linking of form and meaning?	0	1
5-2 Does the activity involve instantiation?	0	1
5-3 Does the activity involve imaging?	0	1
5-4 Does the activity avoid interference?	0	1
Maximum score	18	

The specific criteria for scoring in the TFA items are presented by Nation and Webb (2011) and Webb (2013), and are as follows. Motivation is measured by whether the vocabulary activity has a clear learning goal, motivates learning, or whether the words are selected by the learners themselves. Noticing is measured by whether an activity induces attention to target words, raises awareness of learning new words, and involves negotiation. Retrieval is measured through receptive and productive retrieval, recall, multiple retrievals, and spacing

between retrievals. Generation includes both receptive and productive generation, the former of which involves familiarizing oneself with a word while listening to or reading it in an unfamiliar context; the latter refers to using the word in new contexts. Retention is measured by whether the vocabulary activity successfully links form and meaning, involves instantiation and imaging, and avoids interference.

Regarding past studies based on TFA, for example, Lee (2019) studied the effects of vocabulary-learning activities with glosses based on TFA among elementary school students. In this cited study, the group that performed reading plus gap-fill activities with higher TFA scores obtained higher mean scores on receptive recall than the group that performed reading comprehension activities, which is consistent with the TFA hypothesis. However, the study found no difference between the groups after two weeks and claimed that activity repetition is needed to prevent attrition in vocabulary knowledge.

2.3. Vocabulary Activity Repetition Type

In vocabulary learning, a high depth of processing has a positive effect on long-term memory (Cho & Ma, 2013; Eckerth & Tavokoli, 2012; Hulstijn & Laufer, 2001; Lee & Kim, 2015). In other studies, depth of processing had no significant effect on word retention (Keating, 2008; Laufer, 2003; Lee, 2019), and authors argued that vocabulary activities must be repeated over time to prevent memories from fading.

Most existing studies on vocabulary activity repetition have included depth of processing in their analyses. Ansarin and Bayazidi's (2016) study conducted with adults found that learning is affected more by activity repetition than by meaning elaboration. In this context, Folse (2006), who conducted research with college students, suggested that depth of processing and number of activity repetitions are important features of a vocabulary activity. A limitation of these cited studies is that they conducted only an immediate posttest.

In Lu's (2013) study, the group that performed the fill-in-the-blank activity three times had higher vocabulary scores on the immediate posttest (vs. the group that performed it only once); however, on the delayed posttest (two weeks later), there was no difference in scores between the two groups. This is supported by Lotfolahi and Salehi's (2017) finding that distributed practice (i.e., learning occurs across separate sessions) has a greater positive effect on vocabulary retention than mass practice (i.e., learning is concentrated in one session). That is, vocabulary learning must include word reviews and vocabulary activity repetitions at regular intervals (Cameron, 2001; Sobel et al., 2011).

To summarize, the evidence shows that same vocabulary activity repetition has a positive effect on vocabulary learning, but there is generally no reports on the effects of distributed vocabulary activity practices. Moreover, the aforementioned studies failed to demonstrate the effects of different activity repetition types on vocabulary learning. Therefore, this study

aimed to investigate the effects of repeating same and different vocabulary activities based on distributed vocabulary practices.

3. METHODOLOGY

3.1. Participants

In this study, participants were 78 fifth-grade students from a public elementary school in Anyang, Gyeonggi province, South Korea. Of the participants, 48.7 % (n = 38) were male; 51.3% (n = 40) were female; 98.7% (n = 77) were receiving private English education; 75.4% (n = 58) had started private English education before third grade.

The participants were divided into four conditions (groups) according to the study experiments. The Korean version of Nation and Beglar's (2007) Vocabulary Size Test was used to check for participant homogeneity (Table 2). The results showed that the proficiency levels among the groups were homogeneous.

TABLE 2

Descriptive Statistics on the Vocabulary Size Test

	n	*M*	*SD*	*F*	*p*
Con 1	20	15.43	4.753	.757	.522
Con 2	23	15.43	3.703		
Con 3	16	14.69	2.182		
Con 4	19	16.47	2.875		

Note. Con: condition (group)

3.2. Instruments

3.2.1. Reading text

The achievement standards of the Korean National English Curriculum for grades five and six specify that sentence length should be less than nine words, excluding conjunctions such as *but, and, and or* (Ministry of Education, 2015). Moreover, the achievement standards for reading indicate that the reading text topic should be familiar to students and include clear and accurate information. According to Cameron (2001), reading texts for young learners must have engaging characters and plots and provide a sense of satisfaction. Considering these criteria, Jan Brett's The Mitten (1989) was selected for this study. It was modified and supplemented to match participants' proficiency levels and the research objectives (see Appendix A for the reading text). In addition, the reading text was analyzed

using the VocabProfile tool (Cobb, 2016). The results showed that the eight target words comprised 6.9% of the reading text, and the reading coverage was 93%. According to Prichard and Matsumoto (2011), 92–93% lexical coverage denotes a significant increase in comprehension. The reading text was recorded by a native speaker and played out for the students in the class.

3.2.2. Target words

The target words were *bough, crochet, distend, frigid, porch, snuggle, swoop down, and talon*, which were selected based on Schmitt's (2010) word-selection criteria. The selection criteria included checking for formal similarity, homonymy, polysemy, word class, idiomatic meaning, and frequency. Primarily, it was verified that there were no similar forms, homonymy (words with identical pronunciation and spelling but different meanings), or polysemy (words with several possible meanings) among the target words. To minimize the influence of word class on research results, Schmitt (2010) proposed a method that involved either unifying or diversifying the word class. This study opted for diversifying and equally incorporated nouns, verbs, and adjectives, and excluded words with idiomatic meanings.

In addition, to investigate the effects of exposure frequency, the words *crochet, distend, frigid, and snuggle* were used four times each, and the words *bough, porch, swoop down, and talon* were presented once in the reading text. Since there is repetition three times, the former words are presented 12 times (4 × 3), and the latter words are exposed a total of three times (1 × 3). This experimental structure is based on research findings suggesting that a word's exposure frequency should be over four times or more than ten times, rather than once, for effective vocabulary learning (Chen & Teng, 2017; Cho & Ma, 2013; Rott, 2007; Webb, 2007). The results of a pretest showed that no participant was familiar with the eight target words. Furthermore, to induce vocabulary learning from context, the target words were highlighted in bold to draw the learners' attention and a word glossary with images and L1 translations was provided.

3.2.3. Vocabulary enhancement activities

In this study, fifth-grade English textbooks were analyzed to identify the most frequently used vocabulary enhancement activities (see Appendix B for the activities). Accordingly, true-or-false statements, multiple-choice items, word copying, fill in the blanks, matching sentences with pictures, and guided writing with target words were identified as relevant activities. Meanwhile, for this study, comprehension quiz and writing-the-words-for-pictures were modified to include multiple-choice items and word-copying activities. These vocabulary enhancement activities were analyzed using the TFA (Table 3).

TABLE 3

Analysis of the Vocabulary Activities by Technique Feature Analysis

	VEA 1	VEA 2	VEA 3	VEA 4	VER 5	VER 6
1. Motivation						
Is there a clear vocabulary-learning goal?	0	0	1	1	0	1
Does the activity motivate learning?	1	1	0	1	1	1
Do learners select the words?	0	0	0	0	0	0
2. Noticing						
Does the activity focus attention on the target words?	1	1	1	1	1	1
Does the activity raise awareness of new vocabulary learning?	0	0	1	1	0	1
Does the activity involve negotiation?	0	0	0	0	0	0
3. Retrieval						
Does the activity involve retrieval of the word?	1	1	0	1	1	0
Is it a productive retrieval?	0	0	0	0	0	0
Is it recall?	1	1	0	1	1	0
Are there multiple retrievals of each word?	0	0	0	0	0	0
Is there a marked change that involves the use of other words?	0	0	0	0	0	0
4. Generation						
Does the activity involve generative use?	1	1	0	1	1	1
Is it productive?	0	0	0	0	0	1
Is there a marked change that involves the use of other words?	0	0	0	0	0	0
5. Retention						
Does the activity ensure successful linking of form and meaning?	0	0	1	0	1	1
Does the activity involve instantiation?	0	0	1	0	1	0
Does the activity involve imaging?	0	0	0	0	0	0
Does the activity avoid interference?	1	1	1	1	1	1
Maximum score	6	6	6	8	8	8

Note. VEA, vocabulary enhancement activity; VEA 1: true-or-false statements; VEA 2: multiple-choice items; VEA 3: word copying; VEA 4: fill in the blanks; VEA 5: matching sentences with pictures; VEA 6: guided writing with target words.

The vocabulary enhancement activity 1 (true-or-false statements) used in this study is identical to that suggested by Nation and Webb (2011). Students were asked to mark T or F if the given statement was true or false, respectively. The task had a total of six points.

In vocabulary enhancement activity 2 (multiple-choice items), students read the text and completed a comprehension quiz that included the target words. This format is identical to that used in Nation and Webb's (2011) study. The overall TFA score was 6 for this activity.

The vocabulary enhancement activity 3 (word copying) is one of the most fundamental activities for vocabulary learning (Candry, Decloedt, & Eyckmans, 2020), and has a positive impact on elementary learners' reading skills and their ability to retain word forms (Webb

& Piasecki, 2018). In it, students were asked to trace target words using relevant images. Based on a TFA analysis, this activity received six points (motivation 1, noticing 2, retrieval 0, generation 0, and retention 3).

In vocabulary enhancement activity 4 (fill in the blanks), based on Nation and Webb's (2011) research, eight target words and two distracters were presented, and students were asked to write the appropriate word in the sentence's blank. It received a total of eight points in the TFA.

Vocabulary enhancement activity 5 (matching sentences with pictures) required students to match sentences with relevant pictures. Based on a TFA analysis, the overall score was eight points (motivation 1, noticing 1, retrieval 2, generation 1, and retention 3).

The vocabulary enhancement activity 6 (guided writing with target words) was modified to improve performability. According to Keating (2008) and Lu (2013), learners may not be capable of fully carrying out composition activities, and these may appear relatively ineffective in vocabulary learning. Thus, such activities require scaffolding, so that learners can engage in composition (Schmitt, 2008). Based on the aforementioned points, this study offered a guideline for vocabulary enhancement activity 6, unlike the existing similar textbook activities. Based on TFA, the overall score was eight points (motivation 2, noticing 2, retrieval 0, generation 2, and retention 2).

3.3. Measures and Data Collection

This study included Conditions 1 (n = 20), 2 (n = 23), 3 (n = 16), and 4 (n = 19). On the first day, participants were surveyed on their backgrounds and took the Vocabulary Size Test developed by Nation and Beglar (2007) to examine their proficiency levels. The Vocabulary Knowledge Scale developed by Paribakht and Wesche (1993) was used to determine whether participants knew the target words.

On the second and fourth days, the participants were asked to read a text containing the target words. After reading, participants performed vocabulary activities pertaining to each condition. In Conditions 1 and 2, activities with a TFA score of six were assigned to the students; in Condition 1, they repeated the same vocabulary activity, and in Condition 2, they performed various vocabulary activities. In Conditions 3 and 4, activities with a TFA score of 8 were assigned; in the former condition; in Condition 3, the same vocabulary activity was repeated; in Condition 4, various vocabulary activities were performed (Table 4).

TABLE 4

Procedure of the Treatment

	Condition 1	Condition 2	Condition 3	Condition4
Day 1	Basic information questionnaire, VST, VKS			
Day 2	Reading a text (including 8 target words: four words 1EF; four words 4EF)			
	True or false statement [TFA: 6]	True or false statement [TFA: 6]	Fill in the blanks [TFA: 8]	Fill in the blanks [TFA: 8]
	Posttest: passive recall, active recall, word reading			
Day 3	Reading a text (including eight target words: four words 1EF; four words 4EF)			
	True or false statement [TFA: 6]	Multiple-choice items [TFA: 6]	Fill in the blanks [TFA: 8]	Matching sentences with pictures [TFA: 8]
	Posttest: passive recall, active recall, word reading			
Day 4	Reading a text (including eight target words: four words 1EF; four words 4EF)			
	True or false statement [TFA: 6]	Word copying [TFA: 6]	Fill in the blanks [TFA: 8]	Guided writing [TFA: 8]
	Posttest: passive recall, active recall, word reading			
After 2 weeks	Delayed posttest: passive recall, active recall, word reading			

Note. VSK, vocabulary size test; VKS, vocabulary knowledge scale; 1EF, exposure to each word once; 4EF, exposure to each word four times; TFA, technique feature analysis.

After completing the activities, the participants took an unannounced posttest, which included an active recall test (i.e., writing in L2 for provided L1), a passive recall test (i.e., writing in L1 for the provided L2), and a word reading test. Eight target words and four distracters were included for the active and passive recall tests, and the order of the words changed in each test. Word reading entailed recording words from a given vocabulary list, which in turn included eight target words and two distracters; the order of the words was changed for each test. Finally, a delayed posttest was conducted after two weeks without prior notice.

3.4. Data Analysis

This study investigated the effects of exposure frequency, depth of processing, and activity repetition type on vocabulary learning. Among the independent variables, exposure frequency (two levels) and number of measure repetitions (three levels) were treated as within-subject variables, and depth of processing (two levels) and activity repetition type (two levels) were treated as between-subject variables. The dependent variables included participants' scores for the passive recall, active recall, and word reading tests. IBM SPSS Statistics software (version 24.0) was used to examine the effects of the variables on vocabulary learning.

Because the assumption for the parametric statistical test was met, the following procedure was performed. First, a repeated-measures MANOVA was conducted to determine the effects of exposure frequency, depth of processing, and vocabulary activity type on learners' immediate vocabulary scores. Subsequently, MANOVA was used for the delayed posttest data to test the hypothesis for each variable. Paired-sample *t*-tests and independent *t*-tests were additionally used to check for statistically significant results.

4. RESULTS

4.1. Descriptive Statistics

4.1.1. Immediate posttest results for each condition

Descriptive statistics were computed for scores in the passive recall, active recall, and word reading tests in each condition. The results are presented in Table 5.

TABLE 5

Descriptive Statistics of Each Condition for Immediate Vocabulary Learning

			Test 1	Test 2	Test 3
Passive recall	Con 1	*M*	5.10	6.35	7.20
		SD	2.36	1.98	1.70
	Con 2	*M*	4.74	6.13	6.74
		SD	2.49	2.32	2.30
	Con 3	*M*	5.81	7.25	7.56
		SD	2.48	1.44	1.26
	Con 4	*M*	4.42	5.63	7.16
		SD	2.31	1.98	1.46
Active recall	Con 1	*M*	1.90	4.35	5.70
		SD	1.62	2.48	2.27
	Con 2	*M*	2.26	3.70	4.83
		SD	2.60	2.74	2.57
	Con 3	*M*	4.19	6.81	6.88
		SD	2.17	1.76	1.82
	Con 4	*M*	2.11	3.42	4.95
		SD	1.94	2.61	2.95
Word reading	Con 1	*M*	5.10	6.05	6.40
		SD	1.80	1.85	1.85
	Con 2	*M*	5.09	5.70	6.00
		SD	1.68	1.74	1.57
	Con 3	*M*	6.25	7.25	7.50
		SD	.96	.68	.63

	Con 4	*M*	4.58	4.84	5.21
		SD	2.17	2.29	1.87

Note. Con 1 (low depth of processing, TFA 6 + same activity), Con 2 (low depth of processing, TFA 6, + different activity), Con 3 (high depth of processing, TFA 8 + same activity), and Con 4 (high depth of processing, TFA 8 + different activity).

In the immediate posttest, the overall vocabulary scores increased, with the scores of those in Condition 3 being the highest in all tests. The passive recall test scores were higher than those of the other tests. Meanwhile, scores for the active recall test were relatively low.

4.1.2. Delayed posttest results for each condition

Descriptive statistics were computed for the passive recall, active recall, and word reading scores at the delayed posttest, which was conducted two weeks later. The results are presented in Table 6.

TABLE 6

Descriptive Statistics of Each Condition for Long-Term Vocabulary Learning

	Passive Recall		Active Recall		Word Reading	
	M	*SD*	*M*	*SD*	*M*	*SD*
Con 1	6.55	1.877	3.75	2.673	6.30	1.809
Con 2	6.65	2.386	3.43	2.626	6.04	1.492
Con 3	7.00	2.033	4.75	2.176	7.38	.619
Con 4	6.79	1.619	3.05	2.718	5.16	1.951

In the delayed posttest, Condition 3 showed the highest scores in all vocabulary tests, and the average differences were higher for the active recall and word reading tests than for the passive recall test.

4.2. Results of the Immediate Posttest

First, Pearson's correlation was used to check the correlation between the dependent variables, which is the main assumption of MANOVA. The results are presented in Table 7.

TABLE 7

Correlations between Passive Recall, Active Recall, and Word Reading Test Scores

	Passive Recall	Active Recall
Active recall	.823*	
Word reading	.685*	.735*

Note. * $p < .05$

The results revealed positive correlations between passive recall and active recall (r = .823, p = .000), passive recall and word reading (r = .685, p = .000), and active recall and word reading (r = .735, p = .000). Because the assumptions were satisfied, a 2 × 2 × 2 × 3 repeated-measures MANOVA was conducted. Among the assumptions, Box's M test for homoscedasticity did not hold and Pillai's trace value was confirmed in the multivariate test results.

The analysis revealed significant effects of exposure frequency (Pillai's trace= .330, F = 11.825, p = .000, η2 = .330), activity repetition type (Pillai's trace= .172, F = 5.000, p = .003, η2 = .172), and number of measure repetitions (Pillai's trace= .806, F = 47.799, p = .000, η2 = .806). However, there was no significant effect of depth of processing. Thus, vocabulary scores were affected by exposure frequency, activity repetition type, and number of measure repetitions with large effect sizes, and the number of measure repetitions best explained the variation in vocabulary scores—and showed a very large effect size (Table 8).

TABLE 8

MANOVA: Effects of Exposure Frequency, Depth of Processing, and Activity Repetition Type on Immediate Vocabulary Learning

Source	Value	*df*	*F*	*p*	η2Partial
Exposure frequency	.330	3	11.835*	.000	.330
Depth of processing	.084	3	2.191	.097	.084
Activity repetition type	.172	3	5.000*	.003	.172
Number measure repetitions	.806	6	47.799*	.000	.806
EF x DP	.057	3	1.459	.233	.057
EF x ART	.230	3	7.174*	.000	.230
EF x NR	.159	6	2.174	.056	.159
DP x ART	.134	3	3.718*	.015	.134
DP x NR	.103	6	1.314	.263	.103
ART x NR	.205	6	2.962*	.012	.205
EF x ART x DP	.035	3	.879	.456	.035
EF x ART x NR	.141	6	1.893	.094	.141
EF x DF x NR	.044	6	.534	.782	.044
DF x ART x NR	.143	6	1.922	.089	.143
EF x DP x ART x NR	.043	6	.521	.790	.043

Note. EF, exposure frequency; DP, depth of processing; ART, activity repetition type; NR, number of measure repetitions; * p < .05

We further checked for significant two-way interactions between the variables. Activity repetition type significantly interacted with exposure frequency (Pillai's trace= .230, F = 7.174, p = .000, η2 = .230), depth of processing (Pillai's trace= .134, F = 3.718, p = .015, η2 = .134), and number of measure repetitions (Pillai's trace= .205, F = 2.962, p = .012, η2 = .205). Still, the three- and four-way interactions between variables did not reveal any

significant effects. These findings showed that the effect of activity repetition type on vocabulary learning is influenced by exposure frequency, depth of processing, and number of measure repetitions.

4.2.1. The effects of exposure frequency and activity repetition type on immediate vocabulary learning

A paired-sample *t*-test was conducted to examine the detailed differences of the effects of activity repetition type on immediate vocabulary learning according to exposure frequency. The results are presented in Table 9.

TABLE 9

Paired *t*-test for Exposure Frequency and Activity Repetition Type on Immediate Vocabulary Learning

	ART	EF	*M*	*SD*	*t*	*p*
Passive recall	S	1	3.26	.847	-.107	.915
		4	3.25	.961		
	D	1	2.91	1.026	-.176	.861
		4	2.90	1.058		
Active recall	S	1	2.30	1.106	2.195*	.035
		4	2.56	1.063		
	D	1	1.49	1.267	4.112*	.000
		4	2.06	1.256		
Word reading	S	1	3.22	.847	-.243	.810
		4	3.19	.806		
	D	1	2.25	1.107	5.303*	.000
		4	3.02	.911		

Note. ART, activity repetition type; S, same; D, different; EF, exposure frequency; * $p < .05$

Regarding passive recall, there was no difference between the two levels of exposure frequency, both for the group that repeated the same vocabulary activity and the group that performed different vocabulary activities. Regarding active recall, the mean scores of both groups were significantly higher for words that were presented four times (vs. words presented once). Regarding word reading, only the group that performed different vocabulary activities scored significantly higher for the words presented four times, compared to words presented once ($t = 5.303$, $p = .000$).

These results indicated that word meaning acquisition did not differ according to exposure frequency in the two activity repetition types. However, word form scores were higher for words with higher exposure frequencies in both activity repetition types. These findings showed that acquiring word form knowledge requires more exposure than acquiring word

meaning knowledge.

4.2.2. The effects of depth of processing and activity repetition type on immediate vocabulary learning

An independent sample *t*-test was performed to examine the differences in the effect of activity repetition type on immediate vocabulary learning according to depth of processing. The results are presented in Table 10.

TABLE 10

Independent *t*-test for Effects of Depth of Processing and Activity Repetition Type on Immediate Vocabulary Learning

	ART	DP	*M*	*SD*	*t*	*p*
Passive recall	S	TFA 6	6.22	1.920	-1.135	.264
		TFA 8	6.88	1.450		
	D	TFA 6	5.87	2.192	.212	.834
		TFA 8	5.74	1.797		
Active recall	S	TFA 6	3.98	1.966	-3.256*	.003
		TFA 8	5.96	1.586		
	D	TFA 6	3.59	2.416	.139	.890
		TFA 8	3.49	2.358		
Word reading	S	TFA 6	5.85	1.742	-2.995*	.006
		TFA 8	7.13	.687		
	D	TFA 6	5.59	1.527	1.302	.200
		TFA 8	4.88	2.040		

* $p < .05$

For passive recall, mean vocabulary scores did not differ statistically according to depth of processing, regardless of whether the same or different vocabulary activities were performed. For active recall, among the groups that repeated the same vocabulary activity (t = -3.256, p = .003), the group with a TFA score of 8 had a significantly higher immediate vocabulary score than the group with a TFA score of 6. For word reading, among the groups that repeated the same vocabulary activity (t = -2.995, p = .006), the group with a TFA score of 8 had a significantly higher immediate vocabulary score than the group with a TFA score of 6.

That is, the scores for word-meaning knowledge showed no differences according to the depth of processing in either activity repetition type. Then, when repeating the same activity, the group that performed the activity with the greater depth of processing had a positive effect on the scores for word form and sound knowledge. Nevertheless, when repeating different activities, the scores for word form and sound knowledge did not differ according

to depth of processing.

4.2.3. The effects of activity repetition type and number of measure repetitions on immediate vocabulary learning

An independent sample *t*-test was conducted to investigate possible differences in immediate vocabulary learning according to activity repetition type and number of measure repetitions. The results are shown in Table 11.

TABLE 11

Independent *t*-test for Effects of Activity Repetition Type and Number of Measure Repetitions on Immediate Vocabulary Learning

		ART	*n*	*M*	*SD*	*t*	*p*
Passive recall	1	S	36	5.42	2.407	1.508	.136
		D	42	4.60	2.390		
	2	S	36	6.75	1.795	1.860	.067
		D	42	5.90	2.162		
	3	S	36	7.36	1.515	1.078	.284
		D	42	6.93	1.956		
Active recall	1	S	36	2.92	2.183	1.424	.159
		D	42	2.19	2.298		
	2	S	36	5.44	2.489	3.199*	.002
		D	42	3.57	2.652		
	3	S	36	6.22	2.140	2.394*	.019
		D	42	4.88	2.716		
Word reading	1	S	36	5.78	1.658	2.256*	.027
		D	42	4.86	1.907		
	2	S	36	6.58	1.556	3.132*	.002
		D	42	5.31	2.030		
	3	S	36	6.89	1.526	3.339*	.001
		D	42	5.64	1.737		

Note. ART: activity repetition type; S: same; D: different; *$p < .05$

For passive recall, there was no statistically significant difference between the group that repeated the same vocabulary activity and that which repeated different vocabulary activities from the first to the third measures. For active recall, the group that repeated the same vocabulary activity scored significantly higher than the group that performed different vocabulary activities on the second ($t = 3.199$, $p = .002$) and third ($t = 2.394$, $p = .019$) measures. Finally, for word reading, the group that repeated the same vocabulary activity scored significantly higher than the group that performed different vocabulary activities for all three measures [first ($t = 2.256$, $p = .027$), second ($t = 3.132$, $p = .002$), and third ($t = 3.339$, $p = .001$)].

To summarize, the scores for word-meaning knowledge did not differ by activity repetition type at the early stages, implying that word-meaning knowledge is relatively easy to acquire. In contrast, the scores for word form of the group that repeated the same vocabulary activity were significantly higher in the second test. The scores for word-sound knowledge were also higher in the group that repeated the same activity at an early stage.

4.3. The Results of the Delayed Posttest

A MANOVA was conducted with exposure frequency (two levels), depth of processing (two levels), and activity repetition type (two levels) as independent variables, and passive recall, active recall, and word reading as dependent variables. Among the assumptions, Box's M test for homoscedasticity did not hold and Pillai's trace value was confirmed in the multivariate test results (Table 12).

TABLE 12

MANOVA: Effects of Exposure Frequency, Depth of Processing, and Activity Repetition Type on Long-Term Vocabulary Learning

Source	Value	*df*	*F*	*p*	η2Partial
Exposure frequency	.214	3	6.530*	.001	.214
Depth of processing	.006	3	.144	.933	.006
Activity repetition type	.174	3	5.052*	.003	.174
EF x DP	.073	3	1.895	.138	.073
EF x ART	.151	3	4.281*	.008	.151
DP x ART	.106	3	2.841*	.044	.106
EF x ART x DP	.101	3	2.702	.052	.101

Note. EF, exposure frequency; DP, depth of processing; ART, activity repetition type; * $p < .05$

The findings show significant effects of exposure frequency (Pillai's trace= .214, F = 6.530, p = .001, η2 = .214) and activity repetition type (Pillai's trace= .174, F = 5.052, p = .003, η2 = .174). However, there was no significant effect of depth of processing. These major effects were qualified by significant two-way interactions between the different variables, and there were no significant three-way interactions. Specifically, activity repetition type significantly interacted with exposure frequency (Pillai's trace= .151, F = 4.281, p = .008, η2 = .151) and depth of processing (Pillai's trace= .106, F = 2.841, p = .044, η2 = .106).

Therefore, the delayed posttest scores differed depending on exposure frequency and activity repetition type, and these variables had a large effect size. The effects of activity repetition type differed significantly by exposure frequency, with a large effect size, and by depth of processing, with a moderate effect size.

4.3.1. The effects of exposure frequency and activity repetition type on long-term vocabulary learning

A paired-sample *t*-test was conducted to examine the differences in the effects of activity repetition type on long-term vocabulary learning according to exposure frequency. The results are presented in Table 13.

TABLE 13

Paired *t*-test for Effects of Activity Repetition Type and Exposure Frequency on Long-Term Vocabulary Learning

	ART	EF	*M*	*SD*	*t*	*p*
Passive recall	S	1	3.28	1.031	1.869	.070
		4	3.47	1.000		
	D	1	3.29	1.043	1.961	.057
		4	3.43	1.063		
Active recall	S	1	1.94	1.413	1.539	.133
		4	2.25	1.339		
	D	1	1.31	1.473	3.576*	.001
		4	1.95	1.413		
Word reading	S	1	3.44	.909	-.751	.457
		4	3.33	.828		
	D	1	2.52	1.152	3.719*	.001
		4	3.12	.861		

*$p < .05$

For passive recall, the vocabulary scores between the two levels of exposure frequency did not differ, regardless of activity repetition type. For active recall, only the group that performed different vocabulary activities had a higher mean score for words presented four times compared to words presented once ($t = 3.576$, $p = .001$). This group also had a higher mean word-reading score for words presented four times compared to those presented once ($t = 3.719$, $p = .001$). However, when the same vocabulary activity was repeated, the scores did not differ by exposure frequency.

Therefore, delayed posttest scores for word meaning, form, and sound knowledge did not differ by exposure frequency when the same activity was repeated. Still, the delayed posttest scores for word form and sound knowledge were higher for words that were more frequently presented when repeating different vocabulary activities.

4.3.2. The effects of depth of processing and activity repetition type on long-term vocabulary learning

An independent samples *t*-test was conducted to investigate the difference in long-term

vocabulary learning according to the interaction between depth of processing and activity repetition type. The results are presented in Table 14.

TABLE 14

Independent *t*-test for Depth of Processing and Activity Repetition Type on Long-Term Vocabulary Learning

	ART	DP	*M*	*SD*	*t*	*p*
Passive recall	S	TFA 6	6.55	1.877	-.689	.496
		TFA 8	7.00	2.033		
	D	TFA 6	6.65	2.386	-.213	.832
		TFA 8	6.79	1.619		
Active recall	S	TFA 6	3.75	2.673	-1.209	.235
		TFA 8	4.75	2.176		
	D	TFA 6	3.43	2.626	.462	.646
		TFA 8	3.05	2.718		
Word reading	S	TFA 6	6.30	1.809	-2.482*	.020
		TFA 8	7.38	.619		
	D	TFA 6	6.04	1.492	1.667	.103
		TFA 8	5.16	1.951		

* $p < .05$

For both passive and active recall, the difference in vocabulary scores by depth of processing (i.e., between the two TFA levels) was not statistically significant, regardless of whether the group repeated the same or different vocabulary activities. However, for word reading, the mean score was higher in the group with a TFA score of 8 (vs. TFA score of 6) when the same vocabulary activity was repeated ($t = -2.482$, $p = .020$).

4.3.3. The effects of activity repetition type on long-term vocabulary learning

An independent sample *t*-test was conducted to examine differences in long-term vocabulary learning according to activity repetition type. The results are presented in Table 15.

TABLE 15

Independent *t*-test for Activity Repetition Type on Long-Term Vocabulary Learning

	ART	*n*	*M*	*SD*	*t*	*p*
Passive recall	S	36	6.75	1.933	.079	.937
	D	42	6.71	2.052		
Active recall	S	36	4.19	2.482	1.598	.114
	D	42	3.26	2.642		
Word reading	S	36	6.78	1.495	3.051*	.003
	D	42	5.64	1.751		

* $p < .05$

Regarding passive and active recall, the groups did not differ significantly from each other by activity repetition type. Notwithstanding, for word reading, the difference was statistically significant (t = 3.051, p = .003), as the mean scores of the group that repeated the same vocabulary activity and the one that performed different vocabulary activities were 6.78 and 5.64, respectively.

5. DISCUSSION

5.1. The Effects of Exposure Frequency on Vocabulary Learning

This study shows that exposure frequency positively influences vocabulary learning. These findings are consistent with the literature showing that the higher the word exposure frequency, the greater its effect on vocabulary learning (Eckerth & Tavakoli, 2012; Pellicer-Sánchez & Schmitt, 2010; Webb, 2007).

Further investigations into the interaction effects between exposure frequency and activity repetition type revealed no difference in passive recall according to exposure frequency when repeating the same or different vocabulary activities. For active recall, nevertheless, the mean score for vocabulary with a high exposure frequency was higher for both activity repetition types. In word reading, there was no difference according to exposure frequency when repeating the same activity, but the mean score of vocabulary with a high exposure frequency was higher when participants repeated different vocabulary activities. The major implication is that the meaning of words can be learned with minimal effort, regardless of the exposure frequency and activity repetition type. Meanwhile, greater word exposure is necessary to acquire word forms in both types of activity repetitions. These findings corroborate past research showing that the acquisition of word form requires more effort than the acquisition of word meaning (Laufer, 1998; Nation, 2013).

In the delayed posttest, there was no effect of exposure frequency when the same vocabulary activity was repeated for word meaning, form, and sound. However, when different vocabulary activities were performed, the retention of the form and sound of words with high exposure frequency was better. These findings imply that the effect of exposure frequency becomes greater when different activities are performed. To put it differently, this suggests that it is more effective to use words with a high exposure frequency for word retention when repeating different activities. For those words that registered high exposure frequency with the learners, it would have been more effective to improve the vocabulary knowledge through various vocabulary activities.

5.2. The Effects of Depth of Processing on Vocabulary Learning

Although depth of processing is an important factor in vocabulary learning, it has a positive effect in our sample only when it interacted with another factor. This finding contradicts previous evidence showcasing that depth of processing positively affects vocabulary learning (Alavinia & Rahimi, 2019; Eckerth & Tavacoli, 2012; Hulstijn & Laufer, 2001; Keating, 2008; Zou, Wang, Kwan, & Xie, 2018). Meanwhile, the result supports the arguments of Ansarin and Bayazidi (2016) and Folse (2006) that depth of processing might not be as important as repeated exposure for vocabulary learning. J. Y. Kim (2015), who studied undergraduate students, showed that unlike high-proficiency students, low-proficiency students did not show differences in depth of processing; this entails that the effect of depth of processing may be different for low-proficiency students or young learners.

The depth of processing interacted significantly with activity repetition type but not with exposure frequency, which corresponds to the findings of Cho and Ma (2013) and Eckerth and Tavakili (2012). The analysis of the interaction between activity repetition type and depth of processing revealed that passive recall at the immediate posttest exhibited no difference in scores by activity repetition type. This illustrates that passive vocabulary knowledge is easily acquired and contrasting the difficulty in acquiring other types of vocabulary knowledge. However, when the same vocabulary activity was repeated, the repetition of the activity with a high TFA score was effective in improving active recall and word reading. This finding partially supports the TFA and its hypothesis as proposed by Nation and Webb (2011). In other words, the repetition of the same activity with high TFA scores (e.g., fill in the blanks) positively influenced immediate vocabulary learning. Thus and corroborating the argumentations of Folse (2006) and J. Kim (2015), searching for various words during the activity of filling in blanks with correct words was effective in vocabulary learning even if it may seem superficial at a first glance. In contrast, repeating different activities did not induce differences in vocabulary scores according to the TFA scores. This implies that when stakeholders expose students to different vocabulary activities, choosing those with a relatively low depth of processing is more effective for the learners.

In the delayed posttest, repeating the same vocabulary activity with a high depth of processing showed effectiveness in improving word reading only. Meanwhile, no difference was observed in the vocabulary scores when performing different vocabulary activities according to the TFA scores. These results indicate that depth of processing plays a diminished role in vocabulary learning and retention when repeating different vocabulary activities. Moreover, these findings align with those of Schmitt (2010) and Webb (2014) who demonstrated that a learner's retention of words is affected by the depth of processing and many other variables.

5.3. The Effects of Activity Repetition Type on Vocabulary Learning

The results revealed that repeating vocabulary activities exerted a positive influence on vocabulary learning, and interacted with the number of measure repetitions. For passive recall in the immediate posttest, there was no significant difference between the two activity repetition types from the first to the third measure–albeit the mean score for passive recall was relatively high compared to other vocabulary knowledge. This entails that, as mentioned above, word meaning is more easily acquired than other vocabulary knowledge types. In active recall, the group that repeated the same vocabulary activity in the second and third measures exhibited a higher average score than the group that performed different vocabulary activities. Furthermore, for word reading, the group that repeated the same vocabulary activity from the first to the third measures exhibited a higher average score. This supports the findings of earlier studies showing that repeating the same vocabulary activities positively influences immediate vocabulary learning (Ansarin & Bayazidi, 2016; Folse, 2006; Lu, 2013). Thus, repeating the same vocabulary activities exerted a more positive influence on immediate vocabulary learning than performing different vocabulary activities.

In the delayed posttest of word reading, repeating the same activity had a greater effect on word retention than performing different activities; still, for the delayed posttest scores of passive and active recalls, there was no difference between the group that repeated the same activity and the group that repeated different activities. Actually, the mean score in the delayed posttest for active recall decreased remarkably compared to the immediate posttest and to the mean score for other vocabulary knowledge. This underpins the challenges related to retaining word form knowledge in long-term memory only by repeating vocabulary activities. This finding also supports Laufer's argument (1998) that word form knowledge is more difficult to retain than other vocabulary. These results collectively imply that performing the same activity (fill in the blank activity) three times at intervals is an efficient method for reducing learners' cognitive burden, and teachers' class preparation burden, and enhancing vocabulary learning.

6. CONCLUSIONS

This study examined the effects of exposure frequency, depth of processing, and activity repetition type on vocabulary learning among fifth-grade elementary school students, as well as the interaction effects between the three factors. The findings are summarized as follows. Exposing words 12 times (4 × 3) during reading and at three different times at regular intervals not only enhanced vocabulary learning but also positively influenced retention. Importantly, the mean scores were the highest for passive recall, followed by word reading

and active recall. These results suggest that it would be more effective if classroom vocabulary learning incorporated various word exposure rates, which in turn should vary by vocabulary knowledge, and exposed students to the same words at frequent intervals.

Furthermore, repeating the same vocabulary activities had a significantly positive effect on vocabulary learning regardless of exposure frequency. At the same time, when repeating different vocabulary activities, it may be optimal to use words with which the learner is familiarized to expand vocabulary knowledge. Finally, repeating the same vocabulary activity (e.g., fill in the blank) with a high depth of processing was effective for vocabulary learning in the classroom. The fill in the blank activity applied in this study is also widely used even in elementary school English textbooks, albeit these textbooks provide only one or two activities involving the target word in each chapter. Thus, to achieve the maximum vocabulary learning effect in a resource-constrained environment, teachers should encourage students to fill in blanks using the target words in each chapter at least three times in order to ensure distributed retrieval. Since class time is limited, teachers are suggested to give students homework or extra work, so that the vocabulary activity can be repeated three or more times.

Despite these findings, this study has some limitations. First, the small sample size of 78 Korean elementary school students does not allow for grand generalizations to a large population. Second, although the vocabulary test sheets for the different parts of the posttest were provided at regular intervals, the possibility that the posttests influenced one another cannot be ruled out. Third, had the difference in TFA scores increased further, it might have caused a difference in the research results. Finally, although Schmitt's (2010) word-selection criteria were used whole target word selection, the same level of attention was not devoted to dividing words into classes of high- and low-frequency words. We suggest for future researchers to close these gaps and further investigate learners' affective attitudes according to vocabulary learning activity repetition.

Applicable levels: Early childhood, elementary

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APPENDIX A

Reading Text

1. Revised Version of *The Mitten* (1989) by Jan Brett

The Mitten

* Mitten 장갑

Nicki's favorite season is winter.
He looks out the window and smiles.

He says, "Wow! It's snowy."
He wears a scarf, coat, earmuffs and a hat.
But he doesn't have any mittens.
His mom says, "I will **crochet** you some red mittens."
She begins to **crochet**, **crochet** and **crochet**.

"Nicki, I'm done! Don't lose your mittens."
"Thank you, Mom!" He runs outside.

Nicki makes a snowball and a big snowman. He feels hot.
So he takes off his mittens. One mitten falls onto the snow.
But he doesn't know that.

* take off 벗다 *fall 떨어지다

A fox sits on a **bough**. He looks down and finds the mitten.
"It's **frigid**. Oh! That mitten looks warm and soft. "
He **snuggles** into the mitten.

Then, an owl **swoops down** from the tree.
He says, "It's **frigid**."
He puts his **talons** in the mitten.
He **snuggles** into it and the mitten **distends**.

A bear sleeps on the snow. The bear says, "It's **frigid**."
She puts her head in and **snuggles** into the mitten.
The mitten **distends** more.

A rabbit hops and play with friends. "It's **frigid**."
She puts her ears in and **snuggles** into the mitten, too.
The mitten **distends** and **distends**.
All the animals shout, "Oh, it's too small!"

Suddenly, the bear sneezes, "Ah… Ah… Ah…choooooooo!"
All the animals fly into the air.
The mitten flies back onto Nicki's house's **porch**.
Nicki picks up the mitten. He is very happy.

* suddenly 갑자기 *sneeze 재채기하다

frigid 몹시 추운	crochet 뜨개질 하다.	bough (나무의 큰) 가지	snuggle (따뜻한 곳으로) 파묻다.
			
swoop down ~에 급습하다. (~에 확 내려오다)	talon (갈고리 모양의) 발톱	distend 팽창하다 (부풀다)	porch 현관

APPENDIX B

Vocabulary Enhancement Activities

1. True or False Statement

A rabbit swoops down from the tree (T / F)

2. Multiple-Choice Items

엄마는 Nicki를 위해 무엇을 했나요?
① She wears the mittens.
② She makes some sandwiches.
③ She crochets some red mittens.
④ She makes a snowman.

3. Word Copying

4. Fill in the Blanks with Given Words

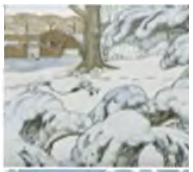
crochet snuggle swoop down frigid house distend porch bough talon snow

It's _____ outside.

5. Matching the Sentences with the Pictures

His mom crochets some red mittens. •

It is frigid outside. •



6. Guided Writing with Target Words

crochet snuggle swoop down frigid distend porch bough talon

It is f_____ outside. My mom c_____ me ①_____.
One of the ①_____ falls onto the snow.
②_____ sees the ①_____ and s_____ d_____.
②_____ s_____ in the ①_____.
③_____ sits on the b_____.
③_____ sees the ①_____.
③_____ puts in his/her t_____.
The ①_____ d_____ more and more.

☞ 쓰기 가이드

① 엄마가 자신에게 무엇을 떠주셨는지 상상해서 적어보세요.
예시➔ mitten (장갑), hat (모자), scarf (목도리), sock (양말), sweater (스웨터), bag (가방) 등.

② 나무 위에서 ①을 보고 아래로 내려온 것은 무엇일지 상상하여 작성해 보세요.
예시➔ raccoon (너구리), flying squirrel (날다람쥐), monkey (원숭이), lizard (도마뱀) 등.

③ (나무의 큰) 가지 위에 앉아있는 갈고리 모양의 발톱을 가진 것은 무엇일지 상상하여 작성해 보세요.
예시➔ squirrel (다람쥐), bird (새), eagle (독수리), hawk (매), monster (괴물) 등.

The ①_____ flies back to my house's p_____.