

# **Extensive Reading plus Explicit Vocabulary Exercises: Is it Better Than Extensive Reading-Only?**

**FENG TENG**

*Nanning University, China*

## **ABSTRACT**

Fifty-two students with different word levels, all majoring in English, volunteered to take part in an extensive reading program. The participants were divided into two groups: EG (the experimental group), which received instruction in methods of extensive reading plus explicit vocabulary exercises, and CG (the control group), which only received extensive reading instruction. This study was to evaluate the effectiveness of these two different approaches on learning four levels of mastery of word knowledge (form recall, form recognition, meaning recall, and meaning recognition). The results showed that (a) both approaches resulted in significant gains in learning the four levels of word knowledge, but the combination of the incidental and explicit instruction yielded a deeper level of word knowledge; and (b) the students' vocabulary size played a decisive role in acquiring the four levels of word knowledge. These findings demonstrate that the efforts spent on direct teaching of new lexical items after extensive reading are worthy in EFL extensive reading classes.

**KEYWORDS:** Incidental learning, Explicit instruction, Word knowledge, Extensive reading

## Background

There is widespread consensus that vocabulary is one of the most vital aspects of learning English as a foreign language (EFL), and extensive reading can lead to EFL vocabulary growth. People learn to read by reading, and the ability to read proficiently is best achieved through extensive reading (Day & Bamford, 1998; Renandya, 2007). Likewise, it has been widely acknowledged that there is a correlation between vocabulary and extensive reading, for which vocabulary and reading comprehension can be regarded as mutually beneficial entities. This mutual benefit means that vocabulary facilitates a learner's ability to decode meaning from context (e.g., Beck, Perfetti, & McKeown, 1982; Dole, Sloan, & Trathen, 1995; McKeown, Beck, Omanson, & Perfetti, 1983; Stahl & Fairbanks, 1986), and reading provides positive effects on learning vocabulary (Elley & Mangubhai, 1981; Grabe & Stoller, 2002; Krashen, 2004; Nation, 2009; Teng, 2015).

However, the process of vocabulary acquisition is incremental. This incremental process means that the acquisition of vocabulary is learned in bits and pieces, both in acquiring vocabulary size and in individual lexical items (Schmitt, 2010). Henriksen (2008) estimated the improvement in vocabulary size of Danish EFL learners by measuring their L2 and L1 sizes. In her research, although consistent improvement was found, given the prerequisite of an extended period of time, she demonstrated that the vocabulary learning process is incremental in nature.

The nature of incremental vocabulary acquisition adds difficulties to incidental vocabulary learning, which is a 'by-product' of any language learning activity, such as reading (Sonbul & Schmitt, 2010). Therefore, one question is "could incidental learning really occur via extensive reading?" Much research (e.g., Krashen, 1993; Laufer, 2009; Nagy, Herman, & Anderson, 1985) has shown that the successful achievement of incidental vocabulary learning could manifest through extensive reading. In other research, although incidental vocabulary learning did occur, the effects were very small and cumulative. For example, Saragi, Nation and Meister (1978) argued that for the words to be better engraved in the learners' minds, at least 10 instances of exposure to target words were necessary. Similarly, Waring and Takaki (2003) proposed that almost one half of the vocabulary learned incidentally through reading was lost after three months, and the learners needed at least eight instances to achieve a 50% chance of recognizing a word after three months. Moreover, Teng (2014a) also proposed that 10 instances were needed for EFL learners in China to master the form and meaning of target words incidentally. Hence, the extant research questions the effectiveness of only using extensive reading for incidental vocabulary learning for L2 or EFL learners. However, these studies share a common point in that learners could deepen the understanding of previously encountered words, thus making it easier to master the words when they have more exposure to the words through extensive reading. Therefore, according to the research, learning from extensive reading is worthwhile. Indeed, as stated in Nation (2008), extensive reading is, by far, one of the most essential vocabulary learning strategies and an indispensable part of any vocabulary learning program.

However, some researchers (Nation, 2001; Van Zeeland & Schmitt, 2012; Waring & Nation, 2004) have questioned the effectiveness of extensive reading-only on incidental vocabulary learning. For instance, Waring and Nation (2004) argued that extensive reading could not provide enough opportunities to learn vocabulary proficiently within a restricted time. Instead, they proposed that explicit vocabulary learning, wherein attention is paid to linguistic forms, is more effective in learning vocabulary. Likewise, Barcroft (2009) also proposed that the explicit teaching of contextualized lexical items was superior to incidental word learning.

However, notwithstanding the efficacy of explicit learning, incidental learning is clearly the dominant method for vocabulary acquisition because classroom time is restricted to learn every word explicitly. As claimed in Nation (2001), many L2 learners do not experience the conditions that are needed for incidental vocabulary learning to occur, and focusing solely on incidental vocabulary learning from extensive reading is not sufficient. Consequently, some researchers (e.g., Pellicer-Sanchez & Schmitt, 2010; Pigada & Schmitt, 2006; Teng, 2014b; Teng & He, 2015) have recommended a learning method that combines incidental learning and explicit vocabulary exercises, arguing that, although extensive reading does contribute to the incidental learning of vocabulary, a supplementary regime with explicit vocabulary-enhancing exercises yields more vocabulary gains.

In practice, researchers in many foreign language contexts combine incidental vocabulary learning and explicit vocabulary exercises, and with cogent evidence, their research has shown that this combination was effective. For example, in an early research study conducted by Paribakht and Wesche (1997), they measured the effects of reading-only and reading plus various types of vocabulary exercises on vocabulary learning. Although both treatments were helpful, the latter yielded a larger quantity and deeper quality of word knowledge. Similar results were also found in Rott, Williams, and Cameron (2002), wherein reading plus multiple-choice glosses yielded better scores than the reading-only approach. In Zimmerman's (1997) study, a group which received interactive vocabulary exercises after reading performed better in learning words than a reading-only group. Likewise, Hill and Laufer (2003) also found out that reading plus explicit exercises on target words yielded better results than finishing post-reading comprehension questions. Armed with the knowledge we gained from the above studies, it can be stated with confidence that using explicit vocabulary exercises is a useful follow-up to incidental learning.

The four studies mentioned above attempted to measure learners' vocabulary mastery from zero knowledge to complete productive mastery. When learners are first exposed to a new word, the initial stage for them is to establish a form-meaning link (Nation, 2001; Schmitt, 2010). Hence, it might be more reliable to try to measure this initial stage of word knowledge acquisition. Although there is one research study focusing on this (Sonbul & Schmitt, 2010), the participants in their research only read passages silently for 10 minutes. Hence, it is worthwhile to conduct a similar research on the learning condition of extensive reading.

The current study, with an aim to measure the added value of explicit vocabulary exercises to incidental vocabulary learning from extensive reading, employed two different groups: a control group (CG) receiving extensive reading only, and an experimental group (EG) using a combined method of extensive reading plus explicit vocabulary exercises. Unlike most previous studies in this field, the participants in the present study were of different word levels.

Three research questions were addressed in the current study:

1. Which learning condition results in a deeper level of word knowledge: incidental learning alone (extensive reading-only) or a combination method (extensive reading-plus)?
2. To what degree do the extensive reading-only and extensive reading-plus conditions facilitate acquisition of the four levels of mastery of the form–meaning link (form recall, form recognition, meaning recall, and meaning recognition)?
3. Do learners' vocabulary size have a moderating effect on learning word knowledge?
4. What are participants' attitudes towards the two learning conditions?

## Method

### *Participants*

Fifty-two first-year students, majoring in English, volunteered to participate in this study, hoping to improve their proficiency level. The participants ranged from 18-20 years of age. They were all native speakers of Chinese who started learning English at the age of 12 (6-8 years of study).

The participants were required to take Nation and Beglar's (2007) vocabulary size test (VST) before the study. The reliability of this test was shown in Beglar's (2010) study, and a great deal of positive information about this test has been presented by Schmitt (2010) and Lessard-Clouston (2013). This test was applied to measure the participants' written receptive vocabulary size in English. As this test measures knowledge of written word form, the form-meaning connection, and to a smaller degree concept knowledge, it is suitable for EFL learners in the present study. This test measures a learner's vocabulary size from the first 1,000 to the fourteenth 1,000 word families. There are a total of 140 multiple-choice items, with 10 items from each 1,000 word family level. A sample test item of the first 1,000 word family can be seen below:

SEE: They saw it  
a. cut   b. waited for   c. looked at   d. started

The *c* option has a similar meaning as *saw*. The learner received one point for choosing the correct item. Each test-taker's total score was multiplied by 100 to get his/her total receptive vocabulary size. The results of the test are shown in Table 1.

Table 1. Results of VST

	Lower than 10	10-19	20-29	30-39	Above 40	M	S.D.
						24.36	6.79
Number	0	20	22	10	0		

According to Table 1, the mean score was 24.36, which indicated that the participants' overall English proficiency was lower-intermediate. In this study, the control group consisted of 26 students, with 10 students from the 10-19 word level, 11 from the 20-29 word level, and 5 from the 30-39 word level. The experimental group receiving reading plus explicit vocabulary exercises also consisted of 26 students: 10 students from the 10-19 word level, 11 from the 20-29 word level, and 5 from the 30-39 word level. Each group included the same number of students at almost the same word level before the study, and the students were not informed of the real purpose of the study.

### Materials

It is claimed that graded readers are useful reading materials for students with a lower-intermediate level to improve the learning of vocabulary (e.g., Nation, 2001, 2009; Waring & Takaki, 2003). As mentioned above, the participants' overall English proficiency was lower-intermediate. Therefore, graded readers, including *Black Beauty*, *Silas Marner*, *A Tale of Two Cities*, *Gulliver's Travels*, and *Treasure Island* were selected from level four of the Bookworm series published by Oxford University Press. These famous stories remain popular with adult readers as well as with children. In addition, these books were written using simplified language structures and words. Hence, participants hopefully found those books easy and interesting to read in this extensive reading program. The details of the books are shown in Table 2.

Table 2. Details of the five books

Graded Readers	Token (running words)	Word types	Word families
Black Beauty	15,745	1,604	824
Silas Marner	16,805	1,718	851
A Tale of Two Cities	15,125	1,399	797
Gulliver's Travels	15,595	1,960	969
Treasure Island	15,549	1,563	844

Note. The analysis was based on the Range program (Heatley, Nation, and Coxhead, 2002)

### Target items

Thirty words were selected from the books mentioned above (six words from each book). The author replaced the item with a new word of a similar meaning. Since the participants were under the 4,000 word level, the new words were beyond the 4,000 word level. This was determined by the *vocabprofile* program (Cobb, n.d.). The details of the new words (Target words) and original words are shown in Appendix I.

Based on the researcher's teaching experience, the new words were probably unknown to the participants. To verify this, participants took two pre-tests. The first one was a

productive vocabulary test (Peters, 2014). In this test, the fifteen words were provided with their target language (Chinese) and English definition. Participants were required to produce the target words in English (the first letter had been given to avoid another word with a similar meaning).

*Example:*

迅速地 [quickly] e\_\_\_ (expeditiously)

In the second test, they were required to circle the correct definition of the target word from four options. To avoid guesses, participants were encouraged to choose E if they do not know the target word.

*Example:*

expeditiously

A. happily B. luckily C. quickly D. sadly E. I don't know

Following the pre-tests, it was confirmed that the participants had no prior knowledge of the thirty items. Thirty high-frequency words were also included in the pretests. The pretests were administered four weeks before the reading program. This was to ensure that participants would not pay particular attention to the target words.

### ***Group Differences***

The participants in the control group (CG) received extensive reading only. The condition for CG is glossed reading. For example:

#### A Tale of Two Cities

He left the house and began to walk **expeditiously** towards Saint Antoine. His face was calm and serious; he looked like a man who had decided to do something.

Expeditiously:  
quickly

Both groups received extensive reading instruction. The participants in the experimental group (EG) were also required to do some additional explicit vocabulary exercises (Figure 1).

Figure1. Example of Different Exercise Types

1. Explicit word usage explanation provided by the teacher, e.g, the meaning of *expeditiously* and how to use the word in a sentence
2. Cross word puzzle: Teachers provided the initial letter, in-between letter, last letter, while students wrote the word down. E.g., ex\_\_\_ or \_\_\_ditiou\_\_\_, or \_\_\_sly (expeditiously)
3. Think of a synonym, antonym, hyponym or superordinate to each target word. *expeditiously* [Synonym]\_\_\_\_(quickly or fast)
4. Use target words to create a sentence (for any theme)

### ***Dependent measures***

Four paper-and-pencil tests were developed to measure the initial form-meaning link of the 30 target items (See examples in Appendix II).

#### ***Form recall test***

On the first test, which measured recall of form, the author pronounced each target word twice and the participants were required to write the item in 10 seconds. Any incorrect spelling was scored as incorrect.

#### ***Form recognition test***

The second test, measuring the recognition of form, was a multiple-choice test. On this test, participants were required to choose the correct spelling from three distracters. The distracters resembled the target words both in orthography and phonetics. An *I don't know option* was also provided to avoid wild guesses. Take the target word *expeditiously* as an example:

- A. exteditiously B. expedisiously C. expetitiously D. expeditiously  
E. I don't know

#### ***Meaning recall test***

The meaning recall test in this study was an active recall test. Students were exposed to a short context with the target word. They were required to produce the meaning of the target word. For example,

To walk *expeditiously* is to walk \_\_\_\_\_

Direct translations of the target words or their synonyms were scored as correct. For the word *expeditiously*, the following responses would have been scored as correct: fast, quickly, in a fast speed.

#### ***Meaning Recognition Test***

The meaning recognition test in this study was a multiple-choice test. Each of the target items consisted of a correct meaning, three distracters, and an *I don't know* option. An example can be found below:

- To walk *expeditiously* is to walk \_\_\_\_\_  
A. in a good mood B. in a sad mood C. in a fast speed D. in a confident way  
E. I don't know

Simple words were used in the distracters because using difficult words might have compromised the results of the study.

The author scored the four tests. The tests was scored dichotomously with one point for providing the correct answer and zero points for providing the wrong answer. The maximum possible scores for each test were 30 points.

The four tests were finished separately. The order in which the tests were taken was form recall, followed by form recognition, meaning recall, and meaning recognition. This was to avoid earlier tests possibly giving hints to subsequent tests. To avoid wild guesses, participants were also encouraged to choose the *I don't know* option if they had no knowledge of the word ('I don't know' choices were scored as zero points).

### **Procedures**

Data was collected in the classroom during class hours (See Table 3). The whole study lasted for seven weeks.

Table 3. Procedure

	Group1	Group2
Session 1: Week 1	Pre-tests	
Session 2: Week 5	Extensive Reading + first post test	Extensive reading, output exercises + first post test
Session 3: Week 7	Second post-test Questionnaire	Second post-test Questionnaire

Participants in both groups took two pre-tests measuring the 30 target words four weeks prior to the reading session. The 30 target words were intermixed with another 30 high-frequency words in order to prevent altering the participants' focus on the target words. Results showed that none of the participants had prior knowledge of the target words. None of target words were instructed in class in those four weeks.

During the second session, participants in both groups read one book in four hours per day, for a total of five books in five days. In addition, participants in EG also conducted some output exercises with the target words, for which an average of an additional 20 minutes were needed. Six words were selected from each book and replaced with a new word. The 30 new words were the target items. The meaning of each new word was provided in the book. The author also provided the meaning of 30 other words in order to prevent focusing the participants' attention on the target words. The author prepared copies of the books and distributed them to the participants. The participants were told to read silently. In order to focus the participants' attention on reading for meaning, they were required to do some multiple-choice comprehension questions after reading. However, their responses were not scored because the outcome of reading comprehension was not the focus in the current study. A pilot study involving three students with different vocabulary proficiency levels showed that four hours were enough for them to read a similar graded reader written with simple words. On the sixth day of week 5, participants were required to take the four tests in the strict order mentioned above.

During the third session (two weeks after the reading program), participants in both groups took the second post-tests to assess retention of the target words over time. During



the two weeks, the author did not provide the target materials for the participants. Although it is not impossible, the participants were not likely to learn those words in their normal classroom studies. The second post-tests were identical with the first post-test, except for the order in which the items were presented. This was to avoid the difficulties involved in creating equal-level word-proficiency tests. During the whole process, the tests were administered unannounced. This was to prevent participants intentionally preparing for the tests. Thus, this whole experimental process was defined as incidental learning.

After the reading program, all the students answered a retrospective questionnaire, which was to investigate whether they had been exposed to the target words outside the classroom and how they regarded the reading program.

## Results and discussion

Results were presented according to Four Research Questions. Tables 4 and 5 represent the total learning gained from the extensive reading-only and extensive reading-plus condition, both immediately and after two weeks.

Table 4. The mean number of items answered correctly on the four tests for extensive read-only

Word level	N	Form recall		Form recognition		Meaning recall		Meaning recognition	
		Imm.	Del.	Imm.	Del.	Imm.	Del.	Imm.	Del.
1,000-1,900	10	3.72 (1.00)	1.72 (.82)	7.09 (1.04)	4.90 (.73)	4.63 (.67)	2.80 (.63)	6.72 (.64)	5.60 (.69)
2,000-2,900	11	5.75 (.75)	3.72 (.78)	11.08 (.90)	9.36 (.92)	6.66 (.65)	4.54 (.68)	11.00 (.89)	8.81 (.71)
3,000-3,900	5	7.50 (.87)	5.50 (.70)	14.50 (.81)	13.50 (.70)	8.50 (.91)	7.50 (.70)	14.50 (.91)	12.00 (.00)
Total	26	5.08 (1.47)	3.00 (1.47)	9.69 (2.67)	7.78 (2.93)	6.00 (1.71)	4.04 (1.52)	9.43 (2.74)	7.69 (2.20)

Note. Imm.=immediate test; Del.=delayed test; maximum score=30; standard deviations are in parentheses

Table 5. The mean number of items answered correctly on the four tests for extensive read-plus

Word level	N	Form recall		Form recognition		Meaning recall		Meaning recognition	
		Imm.	Del.	Imm.	Del.	Imm.	Del.	Imm.	Del.
1,000-1,900	10	12.80 (.63)	12.30 (.67)	21.60 (.96)	21.10 (1.28)	14.70 (.82)	14.40 (.84)	17.00 (.94)	16.70 (.67)
2,000-2,900	11	15.63 (.67)	15.54 (.68)	25.54 (.82)	25.45 (.82)	16.54 (1.03)	16.45 (.93)	19.27 (1.00)	19.09 (1.04)
3,000-3,900	5	21.50 (.70)	21.50 (.70)	28.50 (.70)	28.50 (.70)	22.50 (.70)	22.00 (1.41)	24.50 (.70)	24.50 (.70)
Total	26	14.91 (2.57)	14.65 (2.75)	24.08 (2.52)	23.82 (2.77)	16.26 (2.33)	16.04 (2.30)	18.73 (2.32)	18.52 (2.37)

Note. Imm.=immediate test; Del.=delayed test; maximum score=30; standard deviations are in parentheses

As shown in Tables 4 and 5, the participants that received extensive reading-plus produced higher scores in the four levels of word knowledge than the participants that received extensive reading-only, irrespective of their word level.

In the extensive reading-only condition, the participants gained very little form recall (the mean score was 5.08 in total), or meaning recall knowledge (the mean score was 6.00 in total). They were, although, able to recognize more in form recognition (with a mean score of 9.69), and mean recognition (9.43).

In comparison, participants in the extensive reading-plus group yielded better results in the four levels of mastery of word knowledge (14.97 for form recall, 24.08 for form recognition, 16.26 for meaning recall, and 18.73 for meaning recognition).

A Wilcoxon signed-rank test was run to determine the advantage of the extensive reading-plus condition over the extensive reading-only condition. The results are concluded in Table 6.

Table 6. Results of comparing the two modes by using Wilcoxon Signed-Rank Test

Word level	Form recall	Form recognition	Meaning recall	Meaning recognition
1,000-	Z=-2.820	Z=-2.285	Z=-2.825	Z=-2.911
1,900	P<.05	P<.05	P<.05	P<.05
2,000-	Z=-2.969	Z=-2.955	Z=-2.979	Z=-2.958
2,900	P<.05	P<.05	P<.05	P<.05
3,000-	Z=-2.214	Z=-2.041	Z=-2.032	Z=-2.121
3,900	P<.05	P<.05	P<.05	P<.05

The results in Table 6 show that the amount of advantage of the extensive reading-plus instruction over the extensive reading-only instruction was statistically large for the four levels of word knowledge ( $P<.05$ ).

Based on these findings, the first question concerning which input condition (extensive reading-only or extensive-plus) results in more word knowledge is clearly answered. An approach of incidentally learning word knowledge via extensive reading did occur. However, this kind of learning is moderate. In contrast, explicit vocabulary exercises apparently added value to extensive reading and yielded a better learning outcome. Participants in the extensive reading-plus group could recognize most of the word forms, and recall the form and meaning of one-half of the items. Taken with the results found in previous studies (Schmitt, 2008; Sonbul & Schmitt, 2010), it can be stated with confidence that the common teaching practice of explicit vocabulary exercises combined with extensive reading is worthwhile, and will make it easier for EFL learners to build a larger repertoire of lexical items.

In addition to this, the delayed tests scores showed that the extensive reading-only mode presented a larger volume of attrition than extensive reading-plus. In the extensive reading-plus group, there was a little attrition that occurred for the four types of word knowledge (recall word form: from 14.91 to 14.65, recognize word form: from 24.08 to 23.82, recall word meaning: from 16.26 to 16.04, and recognize word meaning: from 18.73 to 18.52). However, there was somewhat more attrition in the extensive reading-only group (recall word form: from 5.08 to 3.00, recognize word form: from 9.69 to 7.78, recall word meaning: from 6.00 to 4.04, and recognize word meaning: from 9.43 to 7.69). This might be explained as that in the extensive reading-plus group, the related explicit

vocabulary exercises served to consolidate and maintain the learning at all four levels of word knowledge.

However, one thing to keep in mind is that this is only over the course of two weeks. The scores might decay over a longer time, such as five weeks. As discovered in Rott, William, and Cameron (2002), reading plus multiple choice glosses did not help learners maintain significant word learning after five weeks. Therefore, although participants in the reading-plus group could maintain substantial initial learning over the course of two weeks, the improved learning needs to be recycled before this learning advantage is lost.

The second research question explored to what degree the two approaches facilitated acquisition of the four levels of form–meaning link. Friedman tests were run to compare the mean scores of four dependent measures. The results are shown in Table 7.

Table 7. Results of Comparing Mean Scores of Four Dependent Measures by Using Friedman Tests

Word level	Imm.		Del.	
	Read-only	Read-plus	Read-only	Read-plus
1,000-	df=3	df=3	df=3	df=3
1,900	X <sup>2</sup> =24.40 P<.001	X <sup>2</sup> =29.72 P<.001	X <sup>2</sup> =27.89 P<.001	X <sup>2</sup> =30.00 P<.001
2,000-	df=3	df=3	df=3	df=3
2,900	X <sup>2</sup> =28.71 P<.001	X <sup>2</sup> =31.20 P<.001	X <sup>2</sup> =29.03 P<.001	X <sup>2</sup> =31.03 P<.001
3,000-	df=3	df=3	df=3	df=3
4,900	X <sup>2</sup> =14.72 P<.05	X <sup>2</sup> =13.88 P<.05	X <sup>2</sup> =14.75 P<.05	X <sup>2</sup> =13.77 P<.05

Note. Imm.=immediate test; Del.=delayed test

The results from Table 7 reveal that significant differences occurred across the four levels of mastery of word knowledge in the immediate and delayed tests under the extensive reading-only and extensive reading-plus conditions. Combined with the descriptive results in Tables 4 and 5, it is concluded that, under both learning conditions and on both the immediate and delayed tests, form recognition was the knowledge that was best learnt, followed by meaning recognition, meaning recall, and form recall. This was similar with the ease-of-learning ranking found in Webb's (2007) study.

Wilcoxon signed-rank tests were then used as a post-hoc comparison. All the comparisons were significant at the  $p<.05$  level, except two cases. First, form recognition versus meaning recognition, and meaning recall versus form recall was not significant in the immediate post-test of the extensive reading-only condition. Second, form recognition versus meaning recognition was not significant in the delayed post-test of the extensive reading-only condition. The results were consistent among groups of students with different word levels. This can be summarized as follows:

*Immediate post-test:*

Extensive reading-only:

Form recognition=meaning recognition>meaning recall=form recall

Extensive reading-plus:

Form recognition>meaning recognition>meaning recall>form recall

*Delayed post-test:*

Extensive reading-only:

Form recognition=meaning recognition>meaning recall>form recall

Extensive reading-plus:

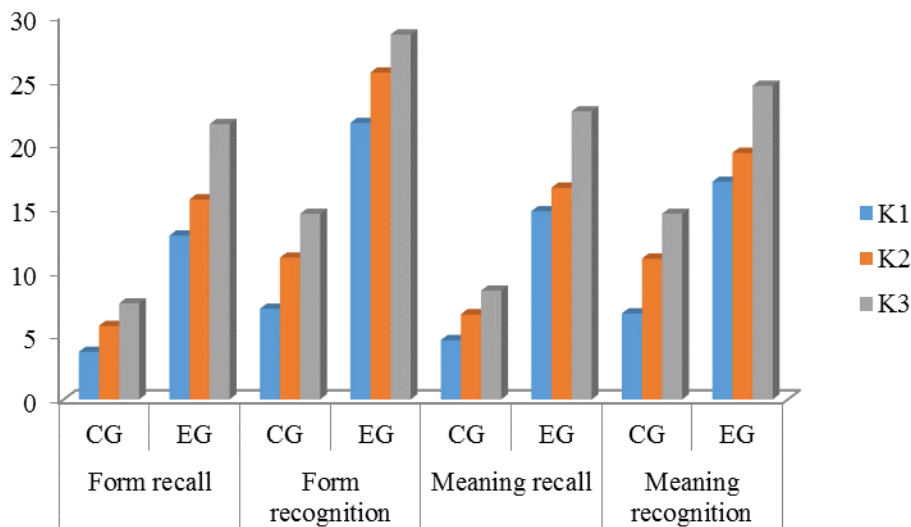
Form recognition>meaning recognition>meaning recall>form recall

(‘>’ represents more learning than, ‘=’ represents ‘equal learning’)

From the above results, it is concluded that receptive knowledge (recognition) is easier to be acquired than productive knowledge (recall). This pattern is similar for students with different word levels. These results also highlight the importance of facilitating learners in building up a recall level of word form. While many teachers regard it difficult to teach the word meaning, it is in fact the productive knowledge of word form which is the most difficult aspect to learn. Moreover, as participants received extensive reading-plus input, they showed better results in meaning recognition and recall (form recognition versus meaning recognition and meaning recall versus form recall was significant). This acquisition profile also occurred in the delayed post-test. This is evidence that the extensive reading-plus condition helped students improve more in their learning of word meaning.

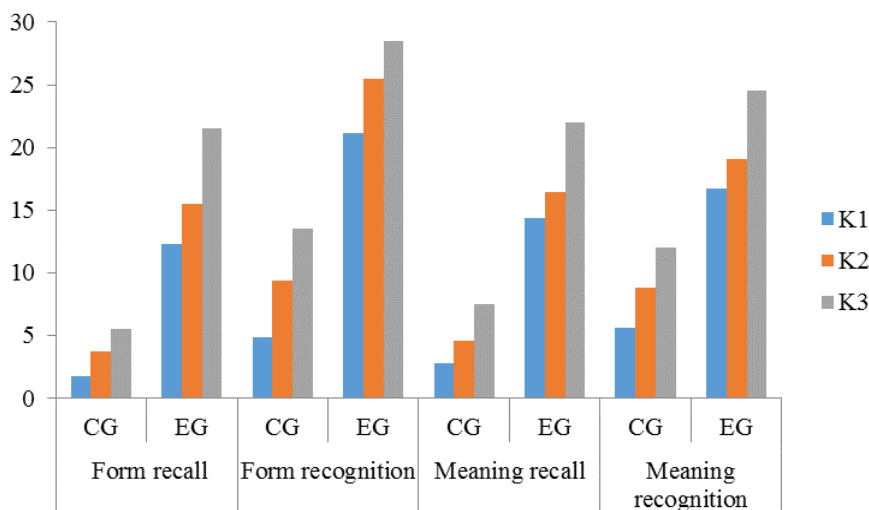
The third research question explored whether learners’ vocabulary size has a moderating effect on learning word knowledge. The data in Tables 4 and 5 seem to show that participants with a higher word level acquired a better level of word knowledge. Figures 1 and 2 graphically present the results.

Figure 1. Mean scores on the immediate posttests by participants with different word levels



Note. K1=1,000-1900 word level; K2=2,000-2,900 word level; K3=3,000-3,900 word level

Figure 2. Mean scores on the delayed posttests by participants with different word levels



Note. K1=1,000-1,900 word level; K2=2,000-2,900 word level; K3=3,000-3,900 word level

Friedman tests were run to compare the results of the groups of participants with different word levels. Results showed that, under both learning approaches and on both the immediate and delayed tests, a significant effect of vocabulary size did occur (all  $P < .05$ ). Post hoc Wilcoxon tests revealed that scores produced by participants at the 1,000-1,900 word level were significantly lower than the scores produced by participants at the 2,000-2,900 word level. In addition, participants at the 3,000-3,900 word level scored significantly better than the participants at the 2,000-2,900 word level on both learning conditions and the four levels of mastery of form-meaning link (all  $P < .05$ ). This is evidence that a vocabulary size effect occurred in the process of acquiring word knowledge.

Table 8 presents the answers to the fourth question, which is to explore participants' attitudes towards the two learning conditions.

Table 8. Questionnaire (n=52)

Questions	Option	Percentage
1. Have you been exposed the target words outside the framework of the course?	Have not been exposed to none of them	100%
2. Did extensive reading-only help you remember the target words? (n=26)	1. Helped me very much	12%
	2. Helped me	20%
	3. Help me remember only a little amount of the words	68%
3. Did extensive reading plus vocabulary exercises help you remember the target words? (n=26)	1. Helped me very much	72%
	2. Helped me	20%
	3. Help me remember only a little amount of the words	8%
4. What other methods, in your opinion, would help you learn new words? (10 students answered)	1. To be engaged in writing original sentences with new words	1 student
	2. Focus on rehearsing previous vocabulary	4 students
	3. Meeting words repeatedly	4 students
	4. To have more quizzes which require new words	1 student

Table 8 shows that no students were exposed to the target words in the tests outside the classroom (question 1). It also shows the percentage rates of the students' responses regarding the two learning conditions (questions 2 and 3). These tapped participants' perceived value of the two learning conditions. Question 4 was concerned with other methods to enhance memorization of new words.

The answers to the second question of the questionnaire revealed that extensive reading-only were considered effective by only 32% of the students (including 'helped me very much' and 'help me'). According to the answers to the third question, extensive reading plus explicit vocabulary exercises were appreciated by 92% of the students (also including 'helped me very much' and 'help me'). The participants unanimously agreed in question 5 on the importance of frequently rehearsing newly-learnt words and encountering them repeatedly.

### **Pedagogical implications**

Pedagogical implications are based on comparing the advantage of reading plus explicit vocabulary exercises over reading only.

### ***Incidental word learning via extensive reading***

In the present study, through extensive reading, learners incidentally acquired some partial word knowledge (Table 4). However, incidental vocabulary learning in extensive reading does not seem to get them any deeper than word knowledge of meaning recognition. As Nation (2001) proposed, vocabulary acquisition cannot occur unless the learners understand the receptive form and the meaning as well as establish a form-meaning link in their minds. This requires a deeper level of vocabulary knowledge. Thus a new instructional mode should be adopted. In the present study, extensive reading plus explicit vocabulary exercises was proposed. Adding direct instruction of new words to

extensive reading helped students form a more engraved mapping of form and meaning (Table 5). As previous studies have suggested, adding explicit vocabulary learning could make the words more salient, and form a deeper level of semantic processing (e.g., Craik & Lockhart, 1972; Sonbul & Schmitt, 2010). Therefore, effective word learning has swung from explicit teaching to incidental learning, and now, commendably, back to the middle: incidental learning plus direct instruction of new words.

### ***The four levels of word knowledge***

Form and meaning are interrelated, albeit separable, issues. As shown in Tables 4 and 5, learners acquired some partial word knowledge. However, they were not able to recall word form sufficiently. Similar results were also found in previous studies (e.g., Barcroft, 2002; Schmitt, 2010). This is evidence that language teachers should focus more on the development of word form in vocabulary learning, as recalling word form is a dimension of knowledge that is least to be acquired.

### ***Vocabulary acquisition for students with different word levels***

The results showed that, although both the reading-only condition and the combination of reading and explicit instruction affected the learning of the four levels of word knowledge, vocabulary size is a key determinant in this process of learning. In other words, students with a higher word level scored much better in the four levels of mastery of word knowledge than those with a lower word level. This is disappointing in the context of teaching English as a foreign language, because, when an extensive reading program is arranged, it is expected that learners with differing word levels would benefit from reading. However, in some teaching, e.g., in the present study, although learners with a lower word level improved in the four levels of word knowledge, learners with a higher word level improved even more. This might be explained in that learners with a higher word level were more fluent in reading than learners with a lower word level. In addition, such learners might be keen to use a variety of strategies to probe more into the collocational and grammatical usage of the words, and might be more willing to explore the semantic relationships between new words and already-known words (Nassaji, 2006). However, the thorough vocabulary learning program that integrates extensive reading with direct and systematic vocabulary instruction in the current study was beneficial for learners in the early stage of EFL vocabulary acquisition.

### ***Rehearsal of newly-learnt words***

The final implication drawn from the current study was that learners need opportunities to rehearse newly learned words. According to the results of the present study, although participants in the extensive reading-plus condition did not suffer a significant loss in word knowledge gains over a two-week period compared to the participants in the extensive reading-only condition, rehearsal of newly-learnt words was still important for learners to maintain their initial form-meaning link. This is also reflected in participants' retrospective questionnaire, as most of the participants agreed on the importance of rehearsing newly-learnt words. Thus, to curb precipitous decays in word retention,

teachers should provide opportunities for learners to recycle the new lexical items frequently.

## Conclusion

Overall, based on the data analysis and discussion above, although incidental learning appears to produce significant results in the four levels of word knowledge, the experimental group supplemented with explicit vocabulary-enhancing activities led to a more substantial acquisition of word knowledge. This suggests that explicit vocabulary teaching after reading is worth the effort for EFL learners.

In addition, the students' vocabulary size played a decisive role in acquiring the four levels of mastery of word knowledge. A successful program of extensive reading should facilitate learners' capacity both in terms of those with a high or a low word level. In the present study, it is suggested that it might be worth combining direct and systematic vocabulary instruction and extensive reading, particularly for those in an early stage of vocabulary acquisition.

## Limitations and suggestions

There are some limitations in the present study. First, there were only 30 test items. If more target words were involved, the results would be more reliable. Second, as language proficiency is multifaceted, more research on how to improve learners with a low word level in incidental learning of word knowledge is necessary. Third, as Folse (2006) and Peters (2014) demonstrated, repetition can bring about a significant increase in explicit vocabulary learning. Including the issues of number of word retrievals will make the research in this line more inclusive. Finally, as Webb (2007) proposed, a dimensions approach of measuring word knowledge includes more than form and meaning. Further research on measuring more levels of word knowledge is necessary.

## References

- Barcroft, J. (2002). Semantic and structural elaboration in L2 lexical acquisition. *Language Learning, 52*(2), 323-363.
- Barcroft, J. (2009). Effects of synonym generation on incidental and intentional L2 vocabulary learning during reading. *TESOL Quarterly, 43*, 79-103.
- Beck, I. L., Perfetti, C. A., & McKeown, M. G. (1982). Effects of long-term vocabulary instruction on lexical access and reading comprehension. *Journal of Educational Psychology, 74*(4), 506-521.
- Beglar, D. (2010). A Rasch-based validation of the Vocabulary Size Test. *Language Testing, 27*(1), 101-118.
- Cobb, T. (n.d.). The Compleat Lexical Tutor [Computer Software]. Retrieved February 19, 2015, from <http://www.lextutor.ca/>.
- Craik, F.I.M., & Lockhart, R.S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior, 11*, 671-684.



- Day, R. R., & Bamford, J. (1998). *Extensive reading in the second language classroom*. Cambridge: Cambridge University Press.
- Dole, J. A., Sloan, C., & Trathen, W. (1995). Teaching vocabulary within the context of literature. *Journal of Reading*, 38(6), 452-460.
- Elley, W. B., & Mangubhai, F. (1981). *The impact of a book flood in Fiji primary schools*. Wellington, New Zealand: New Zealand Council for Educational Research.
- Folse, K.S. (2006). The effect of type of written exercise on L2 vocabulary retention. *TESOL Quarterly*, 40, 273-293.
- Grabe, W., & Stroller, F. L. (2002). *Teaching and researching reading*. Harlow, UK: Longman.
- Heatley, A., Nation, I.S.P., & Coxhead, A. (2002). RANGE and FREQUENCY programs. Retrieved March 10, 2015, from [http://www.vuw.ac.nz/lals/staff/Paul\\_Nation](http://www.vuw.ac.nz/lals/staff/Paul_Nation)
- Henriksen, B. (2008). Declarative lexical knowledge. In D. Albrechtsen, K. Haastrup, & B. Henriksen (Eds.), *Vocabulary and writing in a first and second language* (pp. 22-66). Basingstoke, England: Palgrave Macmillan.
- Hill, M., & Laufer, B. (2003). Type of task, time on task and electronic dictionaries in incidental vocabulary acquisition. *IRAL*, 41(2), 87-106.
- Krashen, S. (1993). *The power of reading: Insights from the research*. Englewood, CO: Libraries Unlimited.
- Krashen, S. (2004). *The power of reading* (2<sup>nd</sup> ed.). Englewood, CO: Libraries Unlimited.
- Laufer, B. (2009). Second language vocabulary acquisition from language input and from form-focused activities. *Language Teaching*, 42(3), 341-354.
- Lessard-Clouston, M. (2013). *Teaching vocabulary*. Alexandria, VA: TESOL International Association.
- McKeown, M. G., Beck, I. L., Omanson, R. C., & Perfetti, C. A. (1983). The effects of long-term vocabulary instruction on reading comprehension: A replication. *Journal of Reading Behavior*, 15(1), 3-18.
- Nagy, W. E., Herman, P. A., & Anderson, R. C. (1985). Learning words from context. *Reading Research Quarterly*, 20, 233-253.
- Nassaji, H. (2006). The relationship between depth of vocabulary knowledge and L2 learners' lexical inferencing strategy use and success. *The Modern Language Journal*, 90(3), 387-401.
- Nation, I. S. P. (1990). *Teaching and learning vocabulary*. New York, NY: Newbury House.
- Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge, England: Cambridge University Press.
- Nation, I. S. P. (2008). *Teaching vocabulary: Strategies and techniques*. Boston, MA: Heinle.
- Nation, I. S. P. (2009). *Teaching ESL/EFL reading and writing*. New York, NY: Routledge.
- Nation, I.S.P., & Beglar, D. (2007). A vocabulary size test. *The Language Teacher*, 31(7), 9-13.
- Paribakht, T. S., & Wesche, M. (1997). Vocabulary enhancement activities and reading for meaning in second language vocabulary development. In J. Coady and T.

- Huckin (Eds.), *Second Language Vocabulary Acquisition* (pp. 174-199). Cambridge, England: Cambridge University Press.
- Pellicer-Sanchez, A., & Schmitt, N. (2010). Incidental vocabulary acquisition from an authentic novel: Do things fall apart? *Reading in a Foreign Language*, 22(1), 31-55.
- Peters, E. (2014). The effects of repetition and time of post-test administration on EFL learners' from recall of single words and collocation. *Language Teaching Research*, 18(1), 75-94.
- Pigada, M., & Schmitt, N. (2006). Vocabulary acquisition from extensive reading: A case study. *Reading in a Foreign Language*, 18(1), 1-28.
- Renandya, W.A. (2007). The power of extensive reading. *RELC*, 38(2), 139-149.
- Rott, S., Williams, J., & Cameron, R. (2002). The effect of multiple-choice L1 glosses and input-output cycles on lexical acquisition and retention. *Language Teaching Research*, 6(3), 183-222.
- Saragi, T., Nation, I. S. P., & Meister, A. (1978). Vocabulary learning and reading. *System*, 6, 70-78.
- Schmitt, N. (2010). *Researching vocabulary: A vocabulary research manual*. Basingstoke, England: Palgrave Macmillan.
- Sonbul, S., & Schmitt, N. (2010). Direct teaching of vocabulary after reading: Is it worth the effect? *ELT Journal*, 64(3), 253-260.
- Stahl, S. A., & Fairbanks, M. M. (1986). The effects of vocabulary instruction: A model-based meta-analysis. *Review of Educational Research*, 56(1), 72-110.
- Teng, F. (2014a). Incidental vocabulary learning by assessing frequency of word occurrence in a graded reader: Love or Money. *LEARN Journal*, 7(2), 36-50.
- Teng, F. (2014b). Vocabulary growth for low-proficiency students through reading graded readers. Paper presented at the 1st TRI-ELE International Conference, Bangkok, Thailand.
- Teng, F. (2015, January). The effectiveness of extensive reading on EFL learners' vocabulary learning. Paper presented at the 3rd English Language Teaching International Conference, Macau S.A.R., P.R. China.
- Teng, F., & He, F. (2015). Towards effective reading instruction for Chinese EFL students: Perceptions and practices of lexical inferencing. *The English Teacher*, 44(2), 56-73.
- Van Zealand, H., & Schmitt, N. (2012). Lexical coverage in L1 and L2 listening comprehension: the same or different from reading comprehension. *Applied Linguistics*, 34(4), 457-479.
- Waring, R., & Nation, I. S. P. (2004). Second language reading and incidental vocabulary learning. *Angles on the English-Speaking World*, 4, 11-23.
- Waring, R., & Takaki, M. (2003). At what rate do learners learn and retain new vocabulary from reading a graded reader? *Reading in a Foreign Language*, 15(2), 130-163.
- Webb, S. (2007). The effects of repetition on vocabulary knowledge. *Applied Linguistics*, 28, 46-65.
- Zimmerman, C. B. (1997). Do reading and interactive vocabulary instruction make a difference? An empirical study. *TESOL Quarterly*, 31(1), 121-140.

**APPENDIX I**

## Original Words and New Words with a Similar Meaning

Original words	New words
quickly	expeditiously
weak	vulnerable
important	momentous
quiet	tranquil
rude	impertinent
dark	tenebrous
painful	torturous
unpleasant	disgruntled
pretty	gorgeous
friendly	amicable
surprise	astonishment
excellent	unexceptionable
serious	solemn
kind	cordial
sob	snivel
trust	credence
sadness	grievance
well-known	prominent
enough	ample
disappointing	despondent
angry	irritated
despair	desperation
bitterly	excruciatingly
lonely	solitary
cruel	ruthless
harmful	detrimental
waste	squander
happily	blithely
careful	discreet
lovely	endearing

**APPENDIX II**

Examples of the Four Dependent Measures (3 items out of 30).

***Form Recall Test***

Directions: Please write the item in 10 seconds after hearing what you have heard.

***Form Recognition Test***

Directions: Please choose the correct spelling from three distracters. If you are not sure, please choose the *I don't know* option.

1. A. wulnerable B. vulnerable C. vulnelable D. vulnerable E. I don't know
2. A. momentous B. momantous C. momentus D. momenters E. I don't know
3. A. tranquir B. tranqueal C. tranquil D. tranqueel E. I don't know

***Meaning Recall Test***

Directions: Please write down the meaning of the italic word.

1. Someone is *vulnerable* means s/he is \_\_\_\_\_
2. If you refer to a decision, event as *momentous*, it means that it is \_\_\_\_\_
3. Something that is *tranquil* is \_\_\_\_\_

***Meaning Recognition Test***

Directions: Please choose the correct meaning from three distracters, and an *I don't know* option.

1. Someone is *vulnerable* means s/he is  
A. strong B. weak C. happy D. tired E. I don't know
2. If you refer to a decision, event as *momentous*, it means that it is \_\_\_\_\_  
A. important B. cogent C. delighted D. necessary E. I don't know
3. Something that is *tranquil* is \_\_\_\_\_  
A. secret B. safe C. calm D. friendly E. I don't know