Vocabulary Uptake and Retention from Reading a Graded Reader

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ABSTRACT

With the aim of investigating effective approaches to extensive reading in Thailand, this study examined the vocabulary uptake and retention rate from reading 350 headwords graded reader. To determine the effects of reading a graded reader on students' vocabulary knowledge and retention, 20 words within four bands of different frequencies of occurrences were selected as target words in the study. The spelling of each word was changed to ensure that students have never seen these words before. 35 intermediate level Thai students volunteered to participate in the study. Three tests, which were word-form recognition, meaning recognition, and translation, were administered immediately after reading, then after 10 days, and then after a two-month delay. The results demonstrate that words can be learned incidentally, as the majority of the words were not learned from reading one graded reader. Words with more frequency were more likely to be learned and more resistant to decay. The data indicate that, on average, the meaning of only three of the 20 words will be recalled two months later. This study implies that just a little amount of new vocabulary is remembered after reading one graded reader, and that substantial amounts of reading are required to increase students' vocabulary.

Keywords: a graded reader, extensive reading, vocabulary retention

Introduction

Reading is important for improving language skills (Nation, 2007), but many foreign language learners face difficulties. These difficulties can be caused by factors such as insufficient vocabulary, text complexity, poor instructional environment, and reading habits (Unchai & Thongsan, 2021). These difficulties can block and demotivate students from developing reading comprehension. If learners do not understand what they are reading, they will not enjoy it. This suggests that reading comprehension, vocabulary knowledge, and reading materials are strongly related.

Extensive reading is currently one of the most effective ways for improving non-native learners' reading skills. Extensive reading (ER) is the concept of reading a lot and regularly so that learners can improve their reading habits while still having fun (Day & Bamford, 1998; Nation & Waring 2020). They read books that are appropriate for their language levels without consulting dictionaries or other people. They may not know every single word if they read at the right level, but they will be able to comprehend what they are reading (Waring, 2011). Extensive reading results in gains in reading comprehension, reading fluency, and vocabulary knowledge. Since the basic concepts of ER are to encourage learners to read what they like as much as possible, learners have more chances to encounter vocabulary which naturally occurs in various contexts. Vocabulary learning from extensive reading happens as a result of repeated encounters with words, word families, and lexical phrases in context (Nation & Waring, 2020).

In an ER program, the reading materials could be graded readers or authentic texts. Graded readers are books written especially for people who are learning English as a second language or as a foreign language. They differ from other books in that they are created with vocabulary control and regard for other comprehensibility-affecting factors, such as grammatical difficulty, sentence complexity, illustration utilization, and storyline simplicity (Nation & Waring, 2020). This carefully controlled vocabulary and grammar criterion are critical because it enables graded readers to meet the most important requirements of extensive reading: reading at the appropriate level, reading with comprehension, reading a lot, and reading independently and silently. Often, graded readers are constructed as a series with different language levels, which students can then use as a stepping stone to proceed to the next level if they so want. They can be simplified and adapted from texts written in the first language, or they could be new texts written for people learning a second language (Day & Bamford, 1998). Graded readers promote students' reading proficiency by providing huge volumes of vocabulary at the appropriate level and reducing the density of unfamiliar words, thus facilitating guessing based on context.

Recently, Thailand has paid attention to promoting ER, and there is a great attempt to set up ER programs (ERPs) in English courses at all levels (Puripunyavanich, 2022). There are also few studies investigating how to select good quality reading materials for learners and studying factors hindering reading comprehension in extensive reading (Unchai & Thongsan, 2021). The current study aims to investigate the vocabulary uptake rate and retention from reading a graded reader in an extensive reading program. While previous research in Thailand has shown the positive effects of extensive reading on students' language proficiency and attitudes (Maipoka & Soontornwipast, 2021; Samitayothin & Tapinta, 2018), there is a gap in the literature regarding the specific impact of graded readers. Therefore, this study is significant in filling this research gap and providing valuable evidence for teachers and learners who plan to use graded readers in extensive reading programs.

Objective of the study

This study aimed to explore the effects of reading a graded reader on Thai students' vocabulary learning and retention.

Research Questions

The research questions are as follows:
1. What are the effects of reading a graded reader on students' vocabulary knowledge?
2. How many words of different occurrence rates do students learn from reading a graded reader and retained over time?

Extensive Reading (ER)

Extensive reading (ER) is the practice of reading a large number of texts at the appropriate level for students. ER is an idea that enhances students to read a lot and read regularly through the input of their language proficiency. (Jacob & Farrell, 2012; Nation, 2007). Nation & Waring (2020) states that extensive reading is when students read independently and silently which is believed to be faster than reading aloud. It is believed that learners may encounter more unknown words when reading independently, which brings opportunities to infer the unknown words in specific contexts and thus learn their meanings (Nation, 2007). With reading resources that are appropriate for their current language levels, learners may not understand every word they read. They will, however, be able to grasp the texts they read. They can comprehend what they are reading without the assistance of dictionaries or teachers.

A well-balanced language course, according to the notion of the four strands (Nation, 2007), should consist of four equal strands: meaning-focused input, meaning-focused output, language-focused learning, and fluency development. A course should allocate nearly equal amounts of time to each strand. Extensive reading is considered to be one part of meaning-focused input which is very useful when it is put into the curriculum (Nation & Waring, 2020). The time for extensive reading in meaning-focused input is when students read books with a few unfamiliar words and quickly read really simple materials to improve their reading speed. The four strands principle is primarily intended to provide a balance of learning, and extensive reading clearly contributes to more learning opportunities.

Most of the research on extensive reading has shown that ER affects students' abilities. In terms of vocabulary, it was found that students who participated in ER activity had upgraded their reading ability: reading comprehension, reading rate, and vocabulary acquisition (Endris, 2018; Suk, 2017). ER improves not only reading and vocabulary but also language knowledge, such as grammar. The findings of Aka (2019), discovered that ER enhanced knowledge of grammar. The findings suggested that following ER implementation, students gained an understanding of collocation and various types of sentence formation. Additionally, they recognized that they would need to acquire the English preposition because it did not correspond to their native language. Additionally, they had the opportunity to observe language flexibility used through the ER materials. Some studies have also shown the benefits of ER in terms of reading attitude. The participants, particularly those who struggled with English reading, had a favorable opinion toward ER. After completing ER exercises, most of them reported that they enjoyed reading in English and would intend to continue reading English books on their own in the future which is very important for building students' reading habits (Dickinson, 2017).

Graded Readers

As mentioned earlier, extensive reading is when each learner reads many books at their level individually and silently. A large number of books at the right level is very essential for extensive reading. Graded readers are easy-reading books that can facilitate the extensive reading approach to teaching English to non-native-speaking learners. They are written with careful vocabulary control and attention to other comprehensibility-affecting criteria, such as grammatical difficulty, sentence complexity, illustration utilization, and plot simplicity (Nation & Waring, 2020). The carefully controlled vocabulary and grammar criteria are extremely crucial because they enable

graded readers to achieve the most important requirements of extensive reading: reading at the appropriate level, reading with comprehension, reading a lot, and reading independently and silently (Nation & Waring, 2020).

In graded readers, learners become comfortable with new vocabulary and grammatical structures through repetition and recycling. Through the use of graded readings, students can enhance their reading skills and improve their vocabulary (Albay, 2017). Graded readers avoid problems that might stop learners from reading by using little but very useful vocabulary at a series of levels that can be matched to the learner's vocabulary size (Gillis-Furutaka, 2015). They also provide systematic scaffolding for the input, as words and language items are repeated before previous memories are forgotten, allowing the language to be solidified. Additionally, graded readers help reduce the density of unfamiliar words and thus support guessing from context and incidental learning which can improve learners' vocabulary learning.

However, there are some criticisms of graded readers. Some teachers might believe that graded readers are not authentic because they are specially constructed for learners. Using real English is suitable but it should not be too difficult to confuse students and demotivate them from learning. According to Grillis-Furataka (2015), students do not have a genuine reading experience when they read materials that are too tough for them to comprehend. Because there are too many unfamiliar terms and other obstacles, the effort becomes one of interpreting words and phrases, rather than reading in the usual sense.

Vocabulary Knowledge and Vocabulary Learning

Vocabulary knowledge refers to the knowledge of words and their meaning. However, knowing a word requires understanding not only its definition but also its place in the world. It is impossible to simply acquire a comprehensive vocabulary; rather, it grows and deepens across a lifetime. In language skill development, knowing the breadth and depth of each word is very important. It is often the case that a lack of vocabulary knowledge has a more significant impact on the clarity and fluency of spoken and written language than a lack of knowledge of grammar (Schmitt, 2010). Nation (2007) came up with ideas about what vocabulary knowledge is. He listed different kinds of knowledge that are needed to know a word as follows: knowing the spoken form, knowing the written form, knowing the parts of a word that have meaning, knowing how a particular form relates to meaning, knowing what ideas a word can have and what things it can refer to, knowing its collocation, and knowing how a word works in a sentence. To elaborate more on vocabulary knowledge by Nation (2007), this vocabulary knowledge is later separated into "receptive" knowledge and "productive" knowledge. Receptive vocabulary knowledge is the ability to understand how words are used and what they mean in different situations. Productive vocabulary knowledge refers to the ability to use words correctly and productively in a variety of situations. As a result, productive skills are used in speaking and writing, where students begin with the meaning of the language and progress to its form. Listening and reading are receptive skills because they require learners to acquire and comprehend information rather than produce language.

There are two fundamental strategies for vocabulary learning: incidental and intentional (Hulstijn, 2001). Incidental vocabulary learning refers to the acquisition of words while engaged in activities such as reading a book, listening to a conversation, or watching a movie. In contrast, intentional learning is an activity in which the primary goal is vocabulary acquisition. Intentional vocabulary development can happen through instruction or learner activities like word lists and dictation. However, Schmitt, 2010 suggested that both L1 and L2 learners acquire incidental vocabulary by reading, and extensive reading is considered a method to increase students' vocabulary knowledge. The reasons for the claims can be explained by previous studies that extensive reading encourages students to read a large number of texts which consist of known and unknown words. Those unknown words can be guessed from context and be added to the student's vocabulary knowledge in both depth and size. Moreover, by encountering words often,

students become more fluent in reading. It often begins with the acquisition of a word's form during the first few encounters, followed by the acquisition of the form-meaning relationship and collocations after a greater number of repetitions (Webb & Nation, 2017; Suk, 2017).

Vocabulary Retention

Vocabulary retention is the ability to remember words and phrases after some time has passed (Richards & Schmidt, 2013). The learner's memory has a lot to do with how well they remember words. Zhang (2002) says that memory is often split into two types based on how it is used: short-term memory, which is used to use language, and long-term memory, which is used to remember words. Zhang, on the other hand, divides memory into sensory memory, short-term memory, and long-term memory based on how long it stays in memory. Sensory memory is the shortest type of memory that people have. Information stored in this type of memory only lasts for a few milliseconds to a few seconds. Second, short-term memory is a type of memory that can hold onto information for longer than sensory memory, which only lasts a few seconds to a few minutes. Lastly, long-term memory is a type of memory that lets you remember things for a few hours or the rest of your life. Long-term memory also has an unlimited amount of storage space and can hold a huge amount of information. Teng (2020) says that the main goal of teaching vocabulary is to help people remember things for a long time. In this case, being exposed to a word many times in different kinds of reading and meaningful contexts is the best way to remember it (Stahl & Nagy, 2006). This explains why reading a lot can help you remember words better. It could be because students see the same words over and over again in meaningful situations, which can help them remember them.

To examine the long-term influence of reading on vocabulary retention, Waring and Takaki (2003) conducted a classroom-based study to determine the rate at which words were learned from reading a graded reader. Fifteen female Japanese volunteers were asked to recollect 25 alternative words after reading, 1 week later, and 3 months later. These 25 substitute words appeared 1 to 18 times. Students remembered some words after reading the graded reader, but not many. Only one of 25 items will be recalled after 3 months, and none of those met fewer than 8 times will be remembered. They found that reading one graded reader improved already-known vocabulary more than new vocabulary acquisition and retention.

In terms of the effect of reading conditions, Teng (2020) investigated the approach of enhancing incidental vocabulary learning and retention. Reading only, reading with first-language marginal glosses, word encounters, and combinations of these two variables on new word retention were examined. This study investigated six pairings. Six groups of Chinese EFL learners were allocated 15 lexical items. Five weeks passed between treatments. One delayed test with four vocabulary variables measured students' memory of unknown words. Reading groups with first-language (L1) glosses did better than reading-only groups. It was found that reading using L1 marginal glosses increased the efficiency of regularly encountering target lexical items. Combining L1 marginal glosses and seven encounters improved lexical memory. This study emphasized that repeatedly meeting target words and using L1 marginal glosses helped readers retain new terms.

Method

This study employed a quantitative approach. The tests were used to collect the data and then the scores were analyzed to answer the research questions.

Research Participants

This study was conducted at a university in Thailand during the first academic year of 2021. The participants were 35 first-year business English students. All of them volunteered to take part in the study. The participants' age ranged from 18 to 21 years old with 9 to 12 years of English learning in school. Their level of English proficiency was intermediate. This was determined by the students' English entrance scores. Before the study began, the samples were trained to read and use graded readers.

Research Instruments

Graded Readers and Target Words

Solely a large amount of text does not help students to gain more vocabulary knowledge, there are other factors to be considered when selecting a graded reader for students. Materials used should not be too difficult or too easy for vocabulary growth. There should be a balance of known and unknown words and the text coverage should be at 96-99%. To look at a single vocabulary acquisition, Waring & Takaki (2003) proposed a framework that aims to prevent students from more unknown words in context. The method is to use a graded reader at a very easy level for the students. For example, if the students are at an intermediate level, a 300-400 headword graded reader can be used as it should be easy for intermediate learners. This can guarantee that the students will not have any significant lexical problems. Moreover, reading speed is important in order to make sure that the students are fluent and comprehend enough to understand the text. They should be able to read it at their natural pace which is at least 100 words per minute (Nation & Waring, 2020).

Ten graded readers were selected as a candidate list for the current study. Each graded reader has a range of headwords from 300-400 which is considered easy for students at the intermediate level (Extensive Reading Foundation). The titles were listed and all students made an agreement on which one they would like to read. "The Golden Monkey" was selected as a target reading material. The Golden Monkey is one of the Cengage Foundations Reading Library Level 7 graded readers, and has 2,852 words with 350 different headwords.

According to Nation (2007), nouns and adjectives are typically easier to guess than verbs and adverbs. Regarding the determination of word selection, the frequency of words in The Golden Monkey was considered. The occurrences of words in the text were categorized into six groups: 1 occurrence, 2-3 occurrences, 4-6 occurrences, 7-8 occurrences, 9-10 occurrences, and over 10 occurrences. With these, there were a total of 503 different noun and adjective tokens that students had to learn. However, this made for only 82.4% coverage as the total number of words in The Golden Money was 2,852. This would be somehow difficult for students and it would not meet the criteria of extensive reading which supported students to read at the coverage of 96-99% for successful guessing from context (Nation, 2013). As a result, groups of words occurring 1 or more than 10 times were eliminated, leaving 4 groups with a total of 114 occurrences and a known word coverage of 96.1%. Finally, 5 words from each different occurrence frequency were selected as target words and 20 words in total for the current study.

Vocabulary Tests

The current study adopted the test design from Waring & Takaki (2003) which is believed to be very systematic and carefully controlled (Nation & Waring, 2020). There were three tests: 1) a word-form recognition test; 2) a meaning recognition test; and 3) a translation test. There is no perfect test, and each test has its objective, benefits, and drawbacks. The problem with past research that attempts to evaluate students' reading comprehension or vocabulary gain is the type of test used. The test's level of difficulty can influence how students demonstrate their abilities

(Nation 2007; Waring, 2011). When doing this type of research, it is appropriate to use several tests to determine the different types of word knowledge obtained by reading (Nation & Waring, 2020; Suk, 2017).

A Word-Form Recognition Test

Most word-form recognition tests are either multiple-choice or have a list of words that students can choose from (Milton, 2009). Unfortunately, there were three main problems with all of these formats. First, the word may already be known or have been learned. Second, some words do not have any words that mean the same thing. Third, when synonyms are used in sentences, sometimes collocational and colligational changes are needed to make the meaning clear. So, the word-form recognition part of this study was made to test students' passive recognition based on Waring and Takaki's framework (2003). They suggested that the test questions should be spelled differently. These words are then called substitute words. The substitute words were made to look like they could be English words and to follow English spelling rules. For example, the word "museum" to "plamter" "long" to "wid," "idea" to "norrow," and so on. These words were checked by native speakers to see if these words made sense. Using different words for the target words won't change how much students learn. Students learn that a word is a symbol of its meaning, so using different words will not change the original meaning. So, when they read, they will remember a word form and know how it fits into the story. The substitute words were used not only to make sure that the words would not even be known before reading but also to make sure that they would not be met after reading or in their normal study. The students were told to choose any words they knew from what they had read. There were 20 target words and 20 distractors contained in the test. A correct answer was counted as 1 point.

A Meaning Recognition Test

It is agreed that the fundamental concept of vocabulary knowledge is the ability to connect a word's meaning to its spoken or written form (Laufer & Aviad-Levitzky, 2017; Nation, 2013; Schmitt, 2010). The meaning recognition test was used to assess the receptive capacity of the children. The multiple-choice recognition exam was designed with one correct response and three incorrect responses. To ensure that the students' semantic knowledge was not confused, the selections for the distractor were all from the same part of speech. Only corrected scores were counted.

A Translation Test

Translation test is claimed to be used to measure students' receptive vocabulary knowledge (Milton, 2009; Nation, 2013). In the current study, 20 target words were presented in the translation test. The aim of using the test was to measure if students could link form to meaning, especially in L1 meaning. The students were asked to write down the meaning of the target words in Thai. Students could add some explanation to their answers. The purpose of the test was to determine whether or not students could relate form to meaning, particularly L1 meaning. The students were asked to write the Thai definitions of the target words. The correct answers were given one point and a similar meaning was given half a point.

All tests were given to the students in order. The word-form recognition was given first to check if students remember the word, and it was not difficult. The second order was the translation test since they might remember the meaning of the target word from the meaning recognition which was multiple choices. The last test was the meaning recognition test which allowed them to select the best answer.

Procedures

The Golden Monkey with substitute words was printed for each participant. The samples were told to read at their normal rate. The researcher explained the tests but did not inform the samples about the substitute words in the text. Each of them was told to pick up the test after he/she finished reading, and he/she was required to take the test in order as mentioned earlier. The researcher was there and checked to make sure that the participant did not look at the text when they took the test. The participants were not allowed to use a dictionary.

To measure the students' vocabulary retention, ten days later, the participants were asked to take the first delay test. Around two months after the reading, the participants were asked to take the tests again. The participants retook the exams without reading the story again, and they never encountered the target words outside the classroom because they were substituted for the text only.

Ethical Approval

This current research has been approved by the university's Research Ethics Review Committee for Research Involving Human Subjects.

Results

The results of the current study are presented in this section. To examine the overall results, the mean scores by test type for the three tests administered to 35 subjects were collected and presented in the table below.
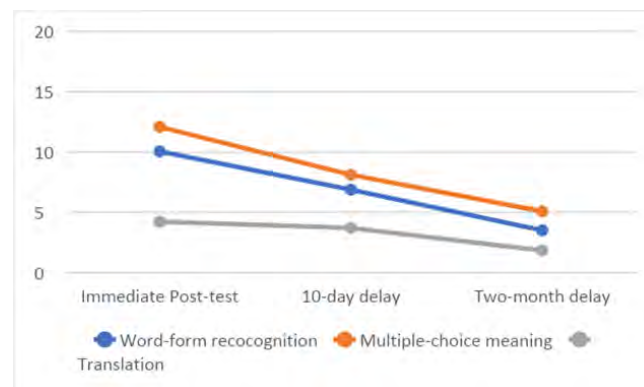
Table 1

The results of test type for three tests administration (Max = 20, n = 35)

	Administration 1 Immediate post-test		Administration 2 10 days delay		Administration 3 Two months delay	
	mean	S.D.	mean	S.D.	mean	S.D.
Word-form recognition test	10.05	1.84	6.88	1.90	3.51	2.12
Multiple-choice recognition test	12.08	2.03	8.11	1.84	5.08	1.40
translation test	4.23	1.62	3.71	1.28	1.84	0.86

Figure 1

Mean scores by tests over the three tests administration (Max = 20, n = 35)

Word-form recognition test

The word-form recognition test aims to assess students' ability to recognize the word from before. Table 1 and Figure 1 displayed the mean score of the word-form recognition test at different administration times. Out of 20 items, the mean score of the immediate post-test was 10.05 (S.D.=1.84). The mean score of the 10-day delay test was 6.88 (S.D.=1.90) and decreased to 3.51 (S.D. = 2.12) after two months. This was translated into a decay rate of over 65% over two months. The standard deviation of each test administration was larger over time, which showed the variance of students' answers and also showed that students lost their knowledge and confidence after time passed. The mean scores classified by occurrence rate of the three test times were shown in Table 2.

Table 2

The Mean Test Scores by Occurrence Rate for the Three Test Administrations on the Word-Form Recognition Test (Max = 5, n = 35)

	2 to 3	4 to 6	7 to 8	9 to 10
Immediate post-test	1.08	2.14	2.88	3.94
10-day delay test	0.47	1.37	1.74	2.82
Two months	0.48	0.71	0.77	1.54

Table 2 showed that the mean scores of the most frequent words decreased the most over time. On the other hand, the less frequent words did not yield significant changes, especially on the 10-day and two-month tests. This can be interpreted to say that students could recognize more highly frequent words than less frequent words even after long periods of time.

Multiple-Choice Meaning Recognition Test

Results from the tests showed that students performed best in meaning recognition. The data from the multiple-choice recognition test were presented in Table 1 and Table 3. They showed a constant decline in mean scores from the immediate post-test at 12.08 to 2.03, 8.11 after 10 days, and 5.08 after two months. Students could remember around 60% of the target words at the immediate posttest, 40% at the 10-day delay posttest, and declined to 25% after two months. To put it another way, students learned 12 words their first time, 8 words were remembered after 10 days, and 5 words were retained after two months which showed a decay rate of almost 60%. Moreover, the results displayed that words with a higher occurrence rate were recognized over less frequent words, but after two months every group of words dropped over 50%. The other two test administrations were similar. The data were displayed in Table 3.

Table 3

The Mean Test Scores by Occurrence Rate for the Three Test Administrations on the Meaning Recognition Test (Max = 5, n = 35)

	2 to 3	4 to 6	7 to 8	9 to 10
Immediate post-test	1.66	2.41	3.44	4.32
10-day delay test	1.05	1.60	2.25	3.20
Two months	0.42	0.88	1.40	2.20

The Translation Test Data

The translation test aimed to measure students' meaning recognition which clearly showed the significance of students' scores. The mean scores of the translation test data were also shown in Table 1. The decline in mean scores could be observed from time to time 4.23 for the immediate posttest, 3.81 after 10 days, and 1.84 after two months. The decay rate from the immediate posttest to the two-month delay test was 56.50%. The data by occurrence rate from each test administration were also shown in Table 4. On the immediate post-test, the mean score of 9-10 times occurrence words was 1.98 and 7-8/4-6/2-3 was 1.21, 0.82, 0.24 respectively. As shown in Table 4, words with less occurrence seemed to register zero or near zero on all tests. This illustrated that words with the least occurrence had very little chance of being learned in terms of productive vocabulary knowledge.

Table 4

The Mean Test Scores by Occurrence Rate for the Three Test Administrations on the Translation Test (Max = 5, n = 35)

	2 to 3	4 to 6	7 to 8	9 to 10
Immediate post test	0.24	0.82	1.21	1.98
10-day delay test	0.10	0.45	1.21	1.90
Two months	0.00	0.01	0.64	1.18

Overall, the subjects were able to learn some new words from their reading, but the vast majority of the new words were not learned. Furthermore, most words they read and learned were forgotten after ten days and two months. On average, the subjects learned three new words from one hour of reading (the average of three-month retention of all tests). This can be considered a rather poor rate of return for the effort expended in terms of learning new words.

Discussion and Conclusion

This study investigates the effects of reading a graded reader on students' vocabulary knowledge and vocabulary retention. The subjects were 35 first-year business English students who took their time to read one graded reader. Twenty target words were selected from a different occurrence. The students were administered three tests: an immediate test, 10 day-delay test, and a two-month delay test. The results of this study indicated that extensive reading affects students' vocabulary knowledge and retention. The overall results of three tests administration have significantly shown that students could learn some new words from their reading, but most of the words were forgotten as time passed by. The study found that repetition is essential for vocabulary retention, and that extensive reading alone may not provide sufficient opportunities for students to repeat and reinforce previously learned vocabulary.

In this study, the effect of reading a graded reader on students' vocabulary knowledge was indicated by students' scores in each test type. As evidenced by the students' scores, the students gain the highest average score on the multiple meaning recognition test, followed by the word recognition and translation test with the lowest scores. Vocabulary learning can be broadly divided into two stages; the form and meaning stage where learners recognize word form and meaning, and the second stage when learners can indicate its usage (Webb & Nation, 2017). The current study agreed with Nation & Waring (2020) that reading graded readers and increasing the numbers of words met can effectively promote the first stage of vocabulary learning, as can be seen in the multiple meaning recognition test and word recognition test scores. However, the score of the translation test was the lowest among the three different tests. To learn vocabulary, students must be able to recognize words without assistance or a definition prepared. Students have learned a

new word when they can connect the word's spelling and meaning. Therefore, the results of the meaning (translation) test are the only way to confirm learning in terms of spontaneous meaning recognition, which most closely matches the knowledge needed for natural reading. Numerous studies have shown that reading graded readers as part of extensive reading increases vocabulary learning in different aspects of word knowledge (Aka, 2019; Brown et al., 2008; Suk, 2017). However, it has been argued that extensive reading is not as successful as decontextualized vocabulary through deliberate vocabulary learning when it comes to vocabulary learning (Webb & Nation, 2017). The reasons could be that students tend to focus more on the plot of the story, and extensive reading requires a large amount of reading to get the amount of repetition required for learning, and learning vocabulary through deliberate attention sometimes works faster (Barcrof, 2015; Nation, 2007). These could seem to be criticisms of extensive reading, but studies measuring vocabulary gains from intensive study directly measure words learned. Extensive reading, on the other hand, is primarily used to improve fluency, language sense, and reading speed. As a result, extensive reading should be regarded as a supplement to vocabulary learning and an essential component of a well-rounded learning program.

To the aspects of different occurrence rates and retention, the results of the numbers of words learned and retained through three different test administrations were studied. Overall, the results also showed that a word has a higher possibility of being learned if it is seen more frequently. Words encountered less than five times have a small chance of being retained after learning. After two months, approximately half of the word knowledge gained from reading was lost. According to the findings of this study, students have to encounter a word at least seven to eight times to have a 50% probability of retaining its form two months later. The results were comparable to those of Waring and Takaki (2003), Waring (2011), and Brown, Waring, and Donkaewbua (2008), who found that a sufficient number for long-term retention is likely to be significantly greater than seven to nine exposures. However, the results of the current study were slightly different from the previous works which mentioned that form-meaning recognition had a chance of being remembered after up to two months if the word was met fewer than five times (Waring & Takaki, 2003). The current study revealed that the decay rate of the form-meaning recognition score at two months was higher than the word recognition and translation test. This may be attributable to the disadvantages of multiple-choice tests. Vocabulary gain scores might be affected by random guessing and participants' receptive vocabulary is normally bigger than their productive vocabulary (Coxhead, 2018). As a result, they may do better in the multiple-choice section than in the written section.

Implications of the study

Even though extensive reading is becoming more popular in some ESL/EFL settings, it is not widely used in L2 contexts, especially EFL settings. This is because of a lack of research about the benefits of learning vocabulary as well as unsuitable reading materials being used. In the current study, a sample of the graded reader was used to determine the effects of the graded reader on vocabulary learning and retention. This study proposes three key instructional implications that may be considered to successfully implement extensive reading in L2 reading classes.

Graded readers should be used continuously to enhance students' vocabulary learning and retention. This study has shown that graded readers can help learn words, as can be seen from the results of reading only one graded reader in one hour. As suggested by Nation & Waring (2020), graded readers can assist students in strengthening the connections between words previously stored in their memory systems and their functions, which could lead to the development of effective vocabulary knowledge. For language learners, especially those who are at the beginning and intermediate levels of language competency, graded readers are a very helpful tool. They assist and contribute to the development of fluency and allow learners to learn from meaning-focused input. Additionally, they give students the chance to practice authentic reading, experience the pleasure of completing well-written, interesting books, and feel the satisfaction of language proficiency development.

Inferring reading from context should be taught for foreign-language learners. Even though the results of some previous research show that deliberate vocabulary teaching was somehow better than incidental vocabulary teaching (Wesche & Paribakht, 2010), in real life, students are exposed to new vocabulary in rich contexts to enjoy or comprehend their reading. According to Nation (2007), "inferring vocabulary meaning from context...is an important strategy for developing reading comprehension and promoting lexical acquisition" (p. 240). If we want to promote students' reading comprehension and reading pleasure, inferring the meanings of unknown words from context is a critical strategy to teach for both coping with and learning unfamiliar words.

Consider recycling vocabulary for graded readers series is very important. This implication may offer some useful points to design graded readers. The data in this study found that words which occur at least seven times would be retained longer. Aside from making the story interesting, it is also important to ensure that all headwords for each graded reader level can be recycled throughout the text. Words with higher occurrences were retained longer than words with fewer occurrences; so, repeated exposure to graded readers for learning words should be required.

Limitations of the study

The study is limited in several ways. First of all, a considerably higher number of target words is preferred to more clearly demonstrate the impact of frequency of occurrence rates instead of just the five items evaluated in each group in the current study. Secondly, only 2,852 words were read, and to gather more data on the effectiveness of learning vocabulary from reading in a foreign language it would be best to conduct the same study over a number of texts or with a much longer text. Thirdly, texts that have a good variety of words of various occurrence rates would be needed so that all words are comparatively easy to guess and words such as "yes" and "years" need not be selected. Finally, the study used a graded reader with 350 headwords would not be significantly efficient. The low rates of learning and retention may have been caused by the fact that this was not accurately determined beforehand.

Acknowledgements

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Appendix A

The list of English words and their substitute word equivalent and
the number of occurrences in the text

English word	Substitute word	Number of occurrences in the text	Test word group
museum	plamer	9	9-10
grandfather	sadle	9	9-10
key	yase	9	9-10
old	pring	9	9-10
strange	roden	10	9-10
angry	tortin	7	7-8
lemon	rinnle	7	7-8
original	cercel	7	7-8
picture	conter	7	7-8
long	wid	8	7-8
secret	sallen	4	4-6
year	yill	4	4-6
letter	thim	4	4-6
people	witdle	4	4-6
big	rort	5	4-6
school	smorty	2	2-3
library	monicle	2	2-3
good	jick	2	2-3
beautiful	freal	2	2-3
idea	norrow	3	2-3