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Effects of Extensive Reading
on Japanese EFL High School Learners' Reading Abilities

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Abstract

Effects of Extensive Reading on Japanese EFL High School Learners' Reading Abilities

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The number of research publications on extensive reading (ER) in the English as a Foreign Language (EFL) context has increased yearly since the 1990s. Regarding EFL settings, most ER research has been conducted in Asian Pacific countries. Moreover, Japan has produced more articles than have the other countries, followed by Taiwan, Korea, and others (Jeon & Day, 2016). However, compared to the number of studies with university students as participants, very few have been conducted with high school and junior high school learners (Nakanishi, 2015). Moreover, English language exposure in the traditional government-authorized textbooks used in high schools is inadequate for improving learners' reading fluency skills. Therefore, the series of studies reported in this thesis explore effective ways to implement ER in high schools in Japan, especially in the initial stage of ER instruction. The study addresses how to provide students with as much comprehensible second language (L2) input as possible in the L2 classroom and what skills will be improved incidentally by reading comprehensible input. The present study attempts to address these questions through four experiments.

Researchers have investigated the effects ER instruction on *Kosen* students, who are considered equivalent to high school freshmen. Chapter 1 (Introduction) explains the purpose of research on ER, and Chapter 2 (Theoretical Framework) introduces the effects of ER and historical background of ER based on previous research. Subsequently, to demonstrate how effectively ER improves *Kosen* students' reading abilities, the research reported in this thesis included four studies based on previous research as follows: Chapter 3 investigates whether reading approximately 115,000 words for a year affects learners' linguistic knowledge and reading abilities. Chapter 4 examines whether it is possible for learners to learn grammatical rules incidentally through repeated encounters with the same grammar items. Chapter 5 analyzes whether different types of texts, namely expository and narrative texts, affect learners' reading comprehension, and Chapter 6 investigates the effects of reading while listening (RWL) and reading only (RO) modes on reading comprehension. The focus then shifts to a general discussion wherein the findings of each experimental study are generalized (Chapter 7). Finally, conclusions drawn from the series of studies we conducted for this thesis are provided (Chapter 8). Each experimental study is summarized below.

Chapter 3 investigates the effects of ER on developing the language knowledge and reading abilities of *Kosen* students over the course of one school year. Participants were divided into control (n=205) and experimental groups (n=200), with the former receiving regular grammar instruction and

the latter receiving ER instruction. Pre- and post-tests consisting of a grammar and vocabulary section as well as a reading section were conducted to test the effects of the ER program. The results showed that the ER group of students, who read approximately 115,000 words in an academic year, performed better than the grammar instruction group in terms of language knowledge and reading performance. In the study, participants were further divided into three proficiency groups. The results showed that the scores of the middle- and lower-proficiency groups increased dramatically compared to the higher-proficiency group. These findings suggest that participants activated the knowledge they had learned in junior high school in the one-year ER course, which improved their language knowledge and reading abilities.

Chapter 3 confirms the effects of ER instruction, namely improvements in the reading abilities and linguistic knowledge of *Kosen* students. Thus, Chapter 4 examines the effects of incidental learning of one specific grammatical feature through reading to see the gradual improvement regarding grammatical rules. In total, 157 *Kosen* students participated in this study. During the intervention, the experimental group (n=74) read five passages consisting of 40 sentences that included to-infinitives used as nouns. Participants in the control group (n=83) also read the same number of reading passages, but with only 10 sentences consisting of to-infinitives used as nouns. All participants took pre- and post-intervention grammar tests to measure the effectiveness of the treatment. The results showed that the experimental group incidentally noticed and learned about the use of to-infinitives as nouns through reading. The findings also indicated that learners pay attention to language forms even though their focus is on reading comprehension. Furthermore, the study shows that frequent exposure to target grammar items repeatedly helps learners notice a grammatical rule, which contributes positively to incidental grammar acquisition.

Since the main purpose of this study is to examine the effects of ER, which could be conducted in high schools in Japan, Chapters 5 and 6 explore how efficiently teachers can provide learners with as much comprehensible input as possible in the L2 classroom. Chapter 5 analyzes whether expository and narrative texts affect the reading comprehension of high school EFL learners. The participants (n=86) read four reading passages: two expository and two narrative texts. Learners performed well on the narrative texts, but scored significantly lower in the expository texts, although all the texts consisted of high-frequency words within their vocabulary levels. Text analysis was also performed to explore the factors that prevented them from understanding the selected passages. The results of the analysis show that the sentence length and number of word overlaps differed between the two text genres. The number of words per sentence in expository texts is greater than in narrative texts. In addition, the expository texts contained a small portion of word overlaps compared to the narrative texts. It is argued that learners might have required more cognitive demands on language processing while reading expository texts.

To reduce learners' cognitive burden on reading comprehension, Chapter 6 investigates the effects of RWL and RO modes on reading comprehension and learners' perceptions. In total, 157 *Kosen* students participated in this study. All participants read four passages: two in the RWL mode and two in the RO mode. Participants were also divided into three proficiency groups based on their vocabulary level test scores. Students in the high- and medium-proficiency groups scored high, regardless of whether they read with or without audio support. In contrast, the low-proficiency group scored higher in the RWL mode than in the RO mode. The response to a questionnaire related to learners' perceptions also supported the view that the low-proficiency group benefited from the RWL mode more than did the other two groups. These findings indicate that learners' vocabulary levels and two reading modes affected their reading performance differently. Based on these findings, simultaneous reading and listening modes may be effective, especially for low-proficiency learners, in developing their reading skills and motivation.

The number of ER research studies has gradually increased in Japan; however, ER research on high school learners is lacking. One reason for this is that it is extremely difficult for educators to conduct ER that allows learners to choose books according to their interests. However, the present thesis showed that whole-class ER training with a teacher's intervention is also possible, especially at the initial stage of ER instruction. Furthermore, as this thesis implies, reading one short passage together in a whole class within learners' linguistic abilities will still reinforce the language items they learned in their classroom. Based on the findings of the study reported in this thesis, we recommend implementing ER in high schools even within the limited hours of English classes. Persistent reading training within their linguistic abilities facilitates students' reading abilities and increases their confidence in L2 reading.

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Chapter 1

INTRODUCTION

An important consideration in contemporary English language education in Japan is the amount of English language input (Kanatani, 2008; Renandya, 2007; Takase, 2010). English language exposure in traditional government-authorized textbooks is inadequate for improving students' language proficiency. In fact, the number of English words students encounter in textbooks is limited. For example, junior high school textbooks only consist of approximately 5,000 words and high school textbooks only 20,000, meaning that students learning English in the Japanese public education system are exposed to only 25,000 words over 6 years (Kanatani, 2008; Sakai, 2008; Ushiro, 2013). According to Kanatani (2008) and Sakai (2008), if that number of words were printed as a paperback novel, only 70 to 80 pages would be filled. When all words used in government-authorized textbooks for seventh and eighth graders were recorded, it was found that they would fill only two sheets of A3 paper (Kanatani, 2008). These government textbooks are usually the only English language matter students are exposed to in school.

One possible explanation for why government-authorized textbooks contain insufficient English input is that fluent reading is not the main goal of English instruction. Rather, the primary goals of English education in Japan are language-focused learning through intensive reading and understanding of new grammar and vocabulary items through reading passages (Takase, 2010). The Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) (2013, 2018) also emphasizes the importance of enhancing students' communication skills. In reality, however, many English classes are allocated to intensive reading partly because of the structure of the government textbooks used in junior high schools and high schools. In general, most government textbooks consist of 10 to 15 chapters, each of which is divided into approximately 3 sections. Each section introduces a new reading passage in which new words and new grammar items are usually embedded. As such, it could be assumed that students are learning new words and grammar items by reading slowly and looking up unknown words to understand the passage. It is obvious from a text structure viewpoint that they do not receive sufficient

practice to ensure fluent reading. However, Nation (2013) suggests that the development of reading fluency should make up approximately one quarter of the reading class time through activities such as repeated reading, speed reading, and extensive reading (ER). Day and Bamford (1998) also recommend reading very easy materials at *the i minus 1* level (level below learners' linguistic abilities) to build learners' reading fluency skills. Exposure to a large amount of comprehensible input provides them with opportunities to recognize how much they can read within their linguistic abilities. This develops learners' reading fluency skills as well.

Extensive reading (ER) is one approach promoted to solve the language exposure problem in Japan. It involves increasing the amount of second language (L2) exposure to enhance learners' English proficiency (Arakawa, 2012; Kanatani, Nagata, Kimura, & Minai, 1991; Nishizawa, Yoshioka, & Ito, 2010). Research has been conducted on the effects of ER from different perspectives including learners' motivation (Day & Bamford, 1998; Takase, 2010), reading comprehension and reading speed (Beglar & Hunt, 2014; Bell, 2001), sight vocabulary (Brown, Waring, & Donkaewbua, 2008; Pigada & Schmidt, 2006; Waring & Takaki, 2003; Webb & Chang, 2015), and grammatical knowledge (Song & Sardegna, 2014). Researchers and educators in Japan have been more interested in ER instruction since the 1990s (Kanatani et al., 1991; Kanatani et al., 1995; Fujimori, 2007; Fujita & Noro, 2009). As the effectiveness of ER has gradually been recognized, the number of research publications on ER has been increasing, especially in the English as a Foreign Language (EFL) context (Jeon & Day, 2016; Nakanishi, 2015; Yamashita, 2015). However, most participants have thus far been university students, and few studies have been conducted with high school and junior high school learners (Jeon & Day, 2016; Nakanishi, 2015). The scant ER research with high school learners may indicate the difficulties of ER practice in high schools.

It is difficult to implement ER in high schools for many reasons. One reason is that it is difficult for teachers to observe the benefits of ER in a relatively short period (Grabe & Stoller, 2002; Kanatani et al., 1991; Yamashita, 2008; Yoshii & Lavin, 2017). According to Kanatani et al. (1991), the effects of ER are transferred to high school learners' English proficiency after six months of ER training. Another reason is that teachers must follow curriculum guidelines set by MEXT. According to the curriculum guidelines (2018), high school students are required to become familiar with a variety of reading types

including e-mail messages, newspapers, advertising brochures, journals, narrative texts, expository texts, and so on. This means that the entrance exams would measure their reading abilities within the scope of these reading types. In general, ER instruction respects learners' autonomy, which allows them to choose any genre of books according to their interests. Considering that high school learners' motivation is to pass university entrance exams, teachers might consider it extremely risky to allow them to read whatever they wished to, as suggested by ER instruction. This motivational constraint may be one factor preventing teachers from conducting ER instruction in their English classes, even though they understand the importance of reading extensively in enhancing learners' reading abilities.

The present thesis proposes practicable ER instruction using a part of English classes in the EFL classroom. Specifically, the main purpose of ER instruction is to enhance *Kosen* students' reading abilities, especially at the initial stage of instruction. Since there are many forms of ER instruction depending on teachers and students' educational circumstances, the ER methods in this thesis will be adapted for *Kosen* students.

A *Kosen* is a specialized institution for early engineering education in Japan, with a five-year educational program equivalent to a combination of high school and junior college. This thesis employed first-year *Kosen* students, who are equivalent to first-year high school students. A significant difference between *Kosen* and high school students is whether they need to take an entrance exam or not. While most high school students take an entrance exam, *Kosen* students do not because of the five-year educational curriculum system. In general, Japanese high school learners' main motivation to learn English is to pass the entrance examination (Koizumi & Matsuo, 1993; Takase, 2007). As *Kosen* students are not required to take university entrance exams as other high school students must do, this can be a disincentive for them to realize the importance of learning English when they are in *the first year at Kosen*. However, as the grade increases, so does the number of specialized subjects where these learners are assigned to read expository materials both in Japanese and English. Therefore, they need to become familiar with a variety of reading materials through continuous reading practices.

With the characteristics of *Kosen* students in mind, the thesis is organized as follows: Chapter 2 introduces the historical background of ER and areas not covered in ER research, discussions of which will lead to the formation of the experimental designs described in this thesis. Subsequently, the thesis

examines four experiments from different perspectives to determine the effectiveness of ER instruction for *Kosen* students as follows:

Chapter 3 Reading performance of *Kosen* students following a one-year extensive reading program.

Chapter 4 Incidental learning of a grammatical feature from reading by *Kosen* students as a foreign language.

Chapter 5 Do different types of texts affect the reading comprehension of *Kosen* students?

Chapter 6 Effects of reading-while-listening and reading only on reading comprehension of *Kosen* students.

Chapter 7 includes a general discussion based on the experiments described in Chapters 3 to 6, provides the findings of the studies, and highlights pedagogical implications and the limitations of the overall study. Finally, conclusions derived from the findings of the study reported in this thesis are clarified in Chapter 8.

Chapter 2

Theoretical Framework

2.1 Chapter Overview

This section begins with what extensive reading (ER) is by touching on the effects of ER, ways to provide ER instruction, and features of ER that could be practicable for *Kosen* students, especially at the initial stage of instruction (subsection 2.1). Next, the chapter focuses on the historical background of ER based on previous research to clarify what research has thus far been conducted in the field of ER (subsection 2.2). Finally, the chapter concludes by providing an overview of the purpose and experiments conducted in the study reported in this thesis; in other words, it delineates what the research attempts to determine.

2.2 What is Extensive Reading (ER)?

As the name implies, in ER instruction, learners read a large volume of reading materials at the appropriate learning level (Day & Bamford, 1998; Nation & Waring, 2020; Richards & Schmidt, 2010; Yamashita, 2008). Implementation of ER varies depending on teachers' beliefs, learners' motivation to learn English, the school curriculum, and teachers and students' learning circumstances. However, the common points of ER instruction are as follows: (1) learners should read many comprehensible reading materials, (2) learners select books according to their interests, and (3) the long-term goal of ER is to establish a reading habit. These are the common characteristics of ER in the L2 setting. It has been recognized as one of the effective approaches to solving problems related to language exposure, and builds reading fluency skills while they enjoy reading by focusing on contents of books.

Fundamentally, in ER instruction, learners should read easy materials to focus more on the contents of the reading materials than on language items (Day & Bamford, 1998; Nation & Waring, 2020; Yamashita, 2008). Day and Bamford (1998) propose that "reading very easy materials, at the *i*

minus 1 level, builds confidence and makes it clear to students that this is a different kind of reading practice from what they are probably used to" (p.91). Nation and Waring (2020) also point out that if a text is too difficult for learners, they read in "study" mode because they focus on the language items rather than the content or story (p.5). These suggestions imply that comprehensible input is considered one vital factor that boosts the effects of ER. Reading within or below their linguistic abilities enables learners to repeatedly encounter already learned grammar items and partially known vocabulary, which develops their reading fluency skills in an incremental way. The empirical evidence also supports that reading simplified texts is more effective than reading more complex texts if the purpose of reading is to improve the reading rate (Beglar, Hunt, & Kite, 2012; Beglar & Hunt, 2014). According to Beglar et al. (2012), simplified texts can provide more repetition of high-frequency words that allow learners to increase the number of sight vocabularies and process words more rapidly. Reading faster is one component of reading fluency that promotes learners' confidence in L2 reading. For that reason, researchers respect learners' autonomy by giving them an opportunity to read within their linguistic abilities without teachers' support. Nuttall (2005) suggests that the successful experience of independent reading makes learners recognize how much they can read by themselves in the second language, which enhances their confidence.

As mentioned, comprehensible input is a necessary element of ER instruction; however; there is no consensus on how much reading is considered "extensive." Yamashita (2008) argued that the amount of reading should be more than in other reading programs, particularly intensive reading, whereas Nation and Wang (1999) encourage learners to read a book per week. Day and Bamford (1998) recommend that learners read as many books as possible. They also note the rewards of ER, proposing that these rewards will be determined by how much learners have read. When conducting ER, researchers respect learners' autonomy, allowing them to choose books according to their interests. However, these vague suggestions may be a hurdle in starting ER, especially when teachers are often bound by government course guidelines and limited instructional hours (Chang & Renandya, 2017; Macalister, 2010; Robb, 2002).

Regarding ER implementations in the L2 settings, Day and Bamford (1998, 2002) propose the following ten principles:

1. The reading material is easy.
2. A variety of reading material on a wide range of topics is included.
3. Learners choose what they want to read.
4. Learners read as much as possible.
5. The purpose of reading is usually related to pleasure, information and general understanding.
6. Reading is its own reward.
7. Reading speed is usually faster rather than slower.
8. Reading is individual and silent.
9. Teachers orient and guide their students.
10. The teacher is a role model of a reader.

These principles are well cited and known, as they respect learners' autonomy in improving their reading fluency skills. The principles are ideal if L2 learners are sufficiently intrinsically motivated to enhance their knowledge of foreign languages. It seems difficult for teachers to follow all the principles as the purpose of learning English differs depending on educational institute. In particular, in Japan, teachers need to adhere to the government curriculum guidelines by covering four areas of skills (reading, listening, speaking, and writing) in a balanced manner. Furthermore, most high school learners in Japan are learning English to pass entrance exams (Takase, 2007; Fujita & Noro, 2009). Therefore, it may be difficult to conduct ER by following the 5th and 6th principles. Even though they suggest that "reading is its own reward," teachers need to assess what learners have done to observe their achievement. According to the principles, student-centered reading activities are highly recommended to enhance learners' reading skills. However, teachers need to manage learners to some extent when implementing ER, especially in the initial stage of ER instruction. Day and Bamford (1998, 2002) advocate following the principles. However, as these are merely suggestions, teachers can conduct ER by only following some of them (Waring, 2014; Waring, 2015).

As mentioned, teachers can provide ER instruction in accordance with the circumstances of their teaching environment. According to Waring (2015), there are many types of ER programs with different aims in consideration of students' learning environment: (1) purist ER programs (self-selected reading at home with no assessment following the above-mentioned ten principles), (2) integrated ER programs (self-selected reading at home and in class with a follow-up exercise), (3) class reading (students read the same book and work through reading the book), (4) ER as literature (students read the same book and discuss it as if it were a work of literature), and (5) easy ER to build fluency (starts with simple stories). Some ER programs (i.e., purist ER, integrated ER, and easy ER) are more flexible than others, allowing learners to read individually with no assessment, while others (i.e., class reading and ER as literature) control learners through implementation in a whole-class reading setting. Waring (2015) points out there is no best type for all situations. As such, teachers do not need to strictly adhere to Day and Bamford's ten ER principles; rather, they can better implement ER by considering factors such as learners' age and proficiency, learners' learning circumstances, class hours, and aims of English learning.

Despite many ways in which to implement ER, it is still challenging for teachers to implement it within the scope of the English curriculum. This may be because the goal of ER is vague, especially when the effects of ER transfer to learners' English skills. Chang and Renandya (2017) conducted a questionnaire on teachers in Asian countries to explore their perceptions of ER. The findings show that most teachers believe that ER is an effective approach for enhancing learners' reading abilities; however, only a small proportion of teachers—13.40% of the respondents—implement ER as part of their curriculum (p.46). Respondents also reported that it is difficult to observe the benefits of ER in a short period; therefore, most are not able to implement ER as a part of the school curriculum. Other researchers mentioned that it takes time to see the effects of ER, as the process is said to be slow, fragile, and haphazard (Grabe, 2009; Nation, 2013; Pigada & Schmitt, 2006). Such factors also prevent teachers from implementing ER in EFL contexts (Chang & Renandya, 2017; Macalister, 2010; Robb, 2002).

In addition to the above-mentioned reasons ER has not been implemented in the EFL setting, Grabe (2009) provides the following five explanations for the non-popularity of ER in L2 settings:

1. Fluent reading is often not really the goal for a reading class or reading curriculum; rather, the goal is the development of language skills, vocabulary, grammar, translation, or study skills.
2. Extensive reading demands numerous resources and much class time.
3. The development of accurate, even if very slow, comprehension abilities is the real goal of many L2 reading curricula.
4. Teachers are not prepared to rethink how reading should be taught and learned, or that they do not have the language and reading skills to spontaneously respond to many types of questions when students need help in class.
5. Finally, many administrators and teachers are uncomfortable with teachers not teaching and students not preparing for high-stakes exams while in class (Grabe, 2009, p.312).

As Grabe (2009) points out, the development of fluent reading is not really the goal for a reading class or reading curriculum in Japan. Rather, the English language curriculum in Japan focuses on language-focused learning through intensive reading by following government-authorized textbooks. Learners need to prepare themselves for entrance exams. Therefore, most junior and high school learners in Japan are more likely to learn new grammatical structures and vocabulary through intensive reading while supported by teachers. This is the mainstream English class in Japan. Reading fluency training is an important skill for learners to develop, however, they do not receive sufficient practice to ensure reading fluency. Teaching grammar structures and vocabulary items through intensive reading is necessary for learners, but allocating more time to reading fluency training is also vital in English classes as part of the curriculum. For learners, a successful experience of independent reading within their linguistic abilities helps them realize how much they can read and acquire their reading fluency skills, and cultivates their self-confidence in learning English. This will also enable learners to become independent readers in the future.

Regardless of the many constraints teachers and students face, the number of research publications on ER has been increasing, especially in the EFL context (Jeon & Day, 2016; Nakanishi, 2014; Yamashita, 2015). A meta-analysis by Jeon and Day (2016) showed that in recent years, the number of publications on ER in the EFL setting surpassed that in the English as a Second Language

(ESL) context. Regarding EFL settings, most ER research has been conducted in Asian Pacific countries. Moreover, the number of articles in Japan far exceeds that from other countries, followed by Taiwan, Korea, and others (Jeon & Day, 2016). This trend indicates that researchers and teachers realize the limitations of insufficient input in a traditional intensive reading approach in improving learners' reading abilities. However, compared to the number of studies with university students as participants, few have been conducted with high school and junior high school learners. The constraints listed by Grabe (2009) might be factors preventing teachers from practicing ER in Japan.

Teachers need to carefully plan the implementation of ER in high schools in Japan, especially in the initial stage of ER instruction. One example of practicable ER in high schools is to conduct it in a whole-class setting under a teacher's guidance in the early stage of ER instruction. This will help teachers guide students to recognize what types of books are appropriate to read. Reading together also prevents learners from choosing reading materials high above their linguistic abilities. Learners' initial successful experiences in ER are extremely important, as these determine whether they will continue reading in a second language or not (Day & Bamford, 1998; Nation & Waring, 2020; Nuttall, 2005). In addition, if learners continue to read above their linguistic abilities with no understanding, they might read slowly, which may hinder them in building reading fluency skills. Nuttall (2005) explains that if learners continue to read books high above their linguistic abilities, their reading speed will slow down, and a vicious circle will ensue. Therefore, reading supported by a teacher is highly recommended for learners, especially in the initial stage of ER instruction.

Another example of ER that could be made available in high schools is the reading while listening (RWL) approach. RWL means that learners read passages while listening to audio recordings of the same passages. This approach is not categorized in purist ER or integrated ER instruction, but is claimed to facilitate learners' reading fluency skills while receiving a large quantity of L2 comprehensible input. For example, as learners can read a passage while depending on the audio, audio-assisted reading reportedly helps learners improve their bottom-up reading processing skills (Amer, 1997), acquire natural reading behaviors (Kadota, Noro, & Shiki, 2010), and motivates them to read in a foreign language (Chang, 2009). During simultaneous reading and listening, English intonations can deliver grammatical structure, emotions, and sequences of clauses and sentences (Cheetham, 2017). Noticing

them through simultaneous reading and listening also facilitates reading comprehension. Since audio-assisted reading supports learners in many ways, researchers have recommended the use of bimodal inputs for beginner readers (Chang, 2019; Wells, 2010). Furthermore, the RWL approach supports learners in increasing the amount of L2 comprehensible input, especially when conducting ER in a whole-class reading setting.

Based on previous research, this thesis provides features of feasible ER instruction for *Kosen* students as follows: Compared to intensive reading, extensive reading means learners read a lot within their linguistic abilities with and without a teacher's intervention. The purpose of this thesis is to examine practicable ER that enhances *Kosen* students' reading and linguistic abilities, especially in the initial stage of ER instruction. As mentioned, there are many constraints in implementing ER in the L2 classroom (e.g., limited hours of English classes, budget issues, and government curriculum guidelines). It may be difficult for teachers to conduct ER instruction that only allows learners to choose books according to their interests while following the curriculum guidelines. Therefore, the thesis conducts a series of experiments considering such constraints in the L2 classroom.

To clarify the characteristics of ER instruction in this study, Table 2-1 provides supplementary explanations of the features of ER by dividing each feature into three related components: (1) read a lot, (2) read within learners' linguistic abilities, (3) read with or without a teacher's interventions. As Table 2-1 shows, two components, (1) read a lot and (2) read within learners' linguistic abilities, are similar to the characteristics of ER instruction. These two components are vital when implementing ER as they boost its effects on learners' reading abilities. Reading extensively within their linguistic abilities provides them with opportunities to encounter already-learned grammar items and vocabularies. Such reading helps them increase their sight vocabulary and recognize how much they can read within their linguistic abilities.

In the ER program, learners are encouraged to read many comprehensible reading materials. Reading materials should be at the right level for them to read a lot, which will improve their reading abilities. While students need to read a lot, there is no consensus on how much reading is considered "extensive." In the study, we set 100,000 words as a quantity of input through an academic year in and out of English classes. As a government-authorized textbook used in high schools in Japan usually

contains around 5,000 words, the number is equivalent to approximately 20 high school textbooks. Researchers differ in their view of the effects of ER transfer on learners' language development or reading ability. For instance, some researchers suggest 1,000,000 words (Sakai, 2008; Sakai & Kanda, 2005), while others regard 300,000 words as a threshold of ER that improves learners' knowledge of a foreign language (Nishizawa, Yoshioka, & Itoh, 2010). However, it may be unattainable considering the *Kosen* students' levels and length of the program, as they also take other classes and participate in after-school club activities. Considering their learning circumstances, 100,000 words per year were set in an academic year.

The last feature of ER, (3) read with or without a teacher's intervention, is different from other ER procedures suggested by other researchers and teachers. This component was included because it was the first time most of the *Kosen* students read extensively through ER instruction. Supporting them, especially in the initial stages of the ER classes, may accelerate their reading abilities and reading fluency skills. One example of a teacher's intervention is a whole-class reading. It may be helpful for learners because reading together in class guides them toward determining what kind of reading materials they should read to improve their reading fluency skills. Another example of a teacher's intervention is a RWL approach that may facilitate learners' reading fluency skills, especially for those struggling to read fluently. Other forms of ER training are also possible in a whole-class setting, such as narrow reading, repeated reading, and timed reading. However, as the RWL approach provides learners with audio support while reading, we believe that learners might understand better while enjoying listening to the audio recordings. Since the purpose of ER instruction is to enhance *Kosen* students' reading abilities, where the amount of input and class hours are limited, a teacher's intervention may to some extent result in satisfactory outcomes in the initial stages of ER instruction. The last component does not comply with previous ER instruction, but may help especially beginner learners become fluent readers.

Table 2-1

Defining Features of Extensive Reading (ER) in the Present Thesis

The features of ER in this thesis: Compared to intensive reading, extensive reading means learners read a lot within their linguistic abilities with and without a teacher's interventions.	
Each part of the features	Supplementary explanations about a practicable ER in this thesis
(1) Read a lot	Quantity of English input should be more than the amount of a high school government textbook used in Japan. A typical textbook contains approximately around 5,000 words. Therefore, we set the amount of ER that learners need to read is more than 100,000 words which is equivalent to 20 government-authorized textbooks in a year.
(2) Read within learners' linguistic abilities	Learners are assigned or encouraged to read books or texts consisting of known words mostly from junior high school to focus on the contents.
(3) Read with or without a teacher's interventions	A teacher intervenes in some forms, especially for beginner learners struggling with their reading. Assisting them will help them become fluent readers who do not need a teacher's interventions.

2.3 A Historical Background of Extensive Reading Research

This section concentrates on the historical background of ER research in the L2 setting to reveal (1) trends in ER research, (2) areas of ER research conducted thus far, and (3) learning from previous ER research on vocabulary learning. Thereafter, the focus shifts to research on vocabulary acquisition, since it may provide hints regarding how to design the experimental studies reported in this thesis.

2.3.1 Analyzing Previous Research from *Reading in a Foreign Language*

This subsection looks at the history of ER research in the journal *Reading in a Foreign Language (RFL)* to analyze areas of research interest and unresolved issues in studies conducted thus far. Nakanishi (2015) points out that ER research began around the 1990s; therefore, it is deemed appropriate to analyze the data since the 1980s. Articles published in RFL since 1983 were analyzed in this study. The main reason for choosing *RFL* is that it accepts topics related to only the areas of foreign or second language reading. Journals such as *Reading Research Quarterly*, *System*, *Annual Review of English*

Language Education (ARELE), *and Japan Association of College English Teachers (JACET)* were also available for the analysis. However, some journals included other areas of language acquisition research, and others included research on first language (L1) reading or other topic areas in language learning and teaching. In addition, if a small number of reading articles were available, it was difficult to determine ER-related research trends. For example, the journal *ARELE* deals with English education in Japan from elementary school to university. However, of the 589 articles available, only 6 focused on ER from 1990 to 2019 (i.e., Fujimori, 2007; Fujita & Noro, 2009; Imamura, 2008; Matsui & Noro, 2010; Mikami & Mikami, 2015, Shimizu & Hoshino, 2019). This is because *ARELE* covers a variety of topics in English education, which reduces the number of ER studies in the journal. Analyzing the historical background of ER research based on only six articles seems invalid. However, compared to the number of ER articles in *ARELE*, more papers were found in *RFL*. Therefore, *RFL* was determined to be a suitable journal for the analysis.

First, the proportion of ER research in reading studies was investigated by comparing the number of ER articles and number of reading articles in RFL (Table 2-2). As RFL started publishing articles in 1983, counting began in that year. We defined the rule for counting ER research as follows: If the terms related to ER *such as extensive reading*, *pleasure reading*, *free voluntary reading*, or *sustained silent reading* are included in the title, abstract, or keywords, the article was considered ER research. Articles from 1983 to 2019 were categorized according to periods of ten years (Table 2-2). As shown in Table 2-2 and Figure 2-1, the number of ER studies has gradually increased in each decade. Only 6 (12.50%) ER studies were conducted in the 1980s, 9 (17.31%) in the 1990s, 17 (29.85%) in the 2000s, and 35 (36.30%) in the 2010s. Approximately one-third of the reading studies consisted of ER research in the 2000s and the 2010s, although less than 20% of reading studies were on ER in the 1980s and 1990s. The number of ER articles peaked in 2010. This continuous growth of ER research indicates that L2 reading researchers have paid attention to the effects of ER since around 2000.

Table 2-2

Number of ER Research Articles and Other Reading Articles from Reading in a Foreign Language

Year	No. of ER studies (%)	No. of reading studies
1980s	6 (12.50)	48
1990s	9 (17.31)	52
2000s	17 (29.85)	64
2010s	35 (36.30)	114
1983-2019 (Total)	67 (24.10)	278

Note. No. of reading research includes the number of ER studies.

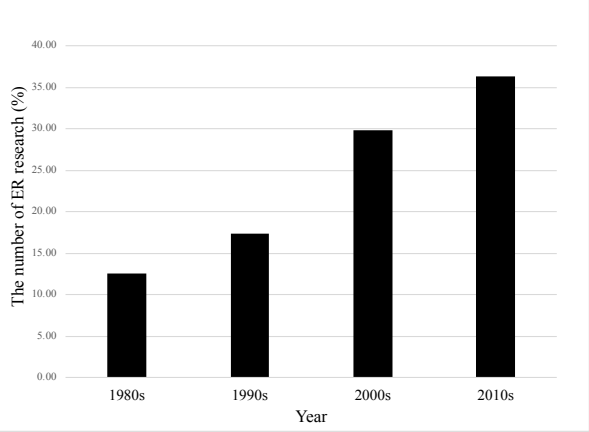

Figure 2-1. ER research from the 1980s to 2010s.

In the next step, we examined the trend of research every decade from 1983 to 2019 to identify the areas of the research conducted in each decade. The areas of ER research were classified into 13 sections by checking all the titles, abstracts, and keywords: vocabulary, reading comprehension (Comprehension), reading rate (Rate), reading habits, motivation, graded readers, general English proficiency (English), reading strategy, bibliography, grammar, meta-analysis, assessment, and how to conduct ER (How to). Note that if the authors published a study on improving both learners' reading comprehension and reading speed in one article, then the article is counted under both the Rate and Comprehension sections. As such, the number of articles described in Table 2-2 differs from the total number of investigated areas of ER research in Table 2-3.

As presented in Table 2-3 and Figure 2-2, the variations in ER studies expanded from 1983 to 2019. Despite that there were only 4 areas of ER research (i.e., vocabulary, reading comprehension, reading rate, and graded readers) in the 1980s, this increased to five in the 1990s and 12 in the 2000s and the 2010s, respectively. Figure 2-2 indicates that researchers began showing interest in the effects of ER

since around the 2000s, exploring what areas of skills ER instruction can improve. Among these areas of ER studies, vocabulary acquisition was the most investigated area of ER research from 1983 to 2019, followed by improvement in reading comprehension, reading rate, and learners' reading habits. From 1983 to 2019, researchers have investigated whether it is possible to acquire vocabulary through ER. Even when looking at each decade, the number of studies on vocabulary acquisition through ER is larger than that in other areas of research.

The next most investigated area of ER is the improvement of reading comprehension. Only two studies focused on reading comprehension in the 1980s and 1990s (Robb & Susser, 1989; Tweissi, 1998); however, the number of reading comprehension studies has increased to nine articles since 2000 (four articles in the 2000s and five in the 2010s). Regarding each decade, few studies were conducted on reading comprehension in the 1980s and 1990s. Contrary to vocabulary research, the number has increased since the 2000s. Moreover, most articles investigated the improvement of learners' reading comprehension and reading rate simultaneously (Taguchi, 2002; Taguchi, Takayasu, & Gorsuch, 2004; Uden, Schmitt, & Schmitt, 2014). Specifically, these studies investigated whether an improved reading speed transfers to learners' reading comprehension. In other words, it is believed that these articles try to observe the process leading to reading comprehension through extensive reading.

The least-researched area, on the other hand, is research on grammar acquisition through ER. The RFL includes only one such study. Nakanishi (2015) performed a meta-analysis, reporting that grammar acquisition is the least researched area in other journals as well. While some research in other journals showed improvement in overall grammatical competence through ER (Elley & Mangubhai, 1983), almost none of the studies focused on the acquisition process of one specific grammatical feature through ER. As far as this author knows, only one study examines the effects of incidental grammar acquisition with a specific focus—the use of an English preposition (Song & Sardegna, 2014). There is more research on incidental vocabulary acquisition than on incidental grammar acquisition. Considering that learners' knowledge of grammar is as important as vocabulary knowledge in understanding reading materials, whether incidental grammar learning takes place during reading should also be examined, with specific focus on one grammatical feature.

Table 2-3

Categories of Research Topics on ER from 1983 to 2019

Year Areas of Interest	1980s	1990s	2000s	2010s	1983-2019 (Total)
1. Vocabulary	2	3	5	12	22
2. Comprehension	1	1	4	5	11
3. Rate	1	0	3	6	10
4. Reading habit	0	2	2	6	10
5. Motivation	0	1	2	5	8
6. Graded readers	3	0	1	2	6
7. Strategy	0	0	1	1	2
8. English	0	0	1	1	2
9. Bibliography	0	1	1	0	2
10. Meta-Analysis	0	0	1	1	2
11. Assessment	0	0	1	1	2
12. How to	0	0	1	0	1
13. Grammar	0	0	0	1	1
Total	7	8	23	41	79

Note. English=General English proficiency, How to=How to conduct ER

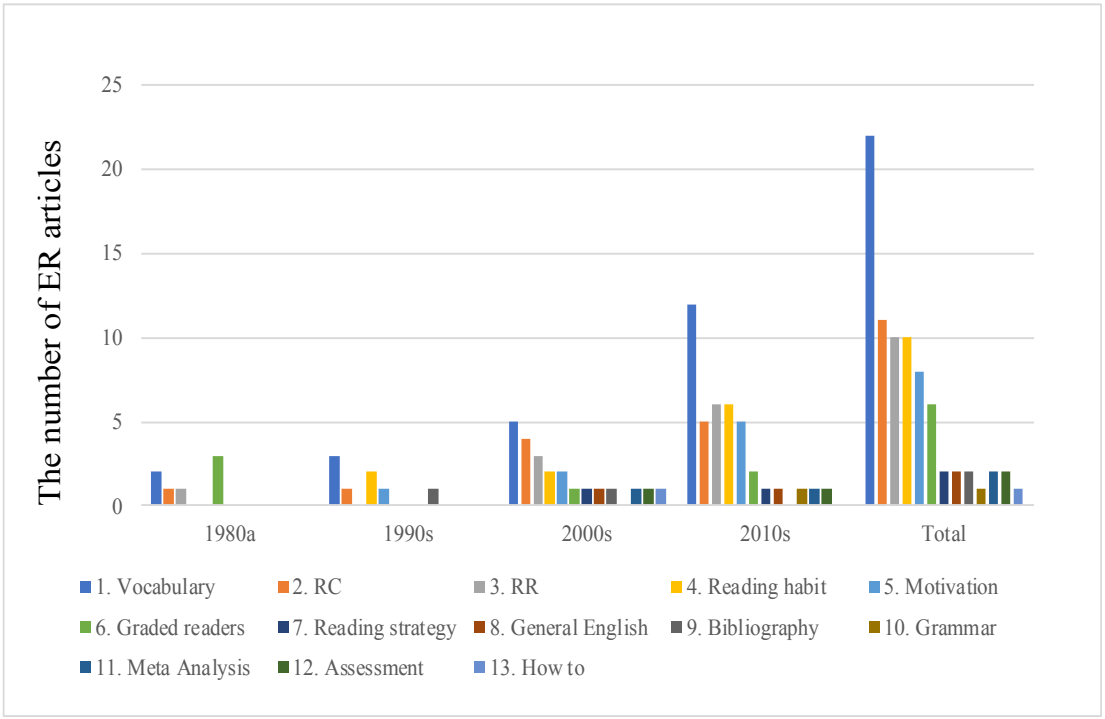

Figure 2-2. Categories of research variations on ER from 1983 to 2019.

2.3.2 Learning from Research on Vocabulary Acquisition through Extensive Reading

This subsection introduces the historical background of research on vocabulary acquisition through ER. As mentioned, ER research has been conducted from different viewpoints and the areas of study have been expanding since the 1990s. Among these areas, vocabulary acquisition is the most investigated area in ER research and has been continuously examined since studies in this field began. Thus, examining the historical background of research on vocabulary acquisition through ER will provide hints regarding how to design research methods for other areas of ER research. Furthermore, analyzing the historical background of research on vocabulary acquisition through ER will also help to conceptualize research questions to address in this study. First, this subsection introduces L1 reading research because it influences ER research in the L2 setting.

The concept of ER in the L2 setting originated from L1 reading research. As the benefits of ER have been supported by L1 reading research (Anderson, Wilson, & Fielding, 1988; Miller, 1941; Nagy, Herman, & Anderson, 1985), researchers began to investigate whether ER works as effectively as indicated in the findings of L1 reading studies (Day, Omura, & Hiramatsu, 1991; Hulstijn, 1992; Krashen, 1989; Pitts & Krashen, 1989; Robb & Susser, 1989). It has been reported that young children learn several thousand words per year incidentally by reading and listening (Goulden, Nation, & Read, 1990; Nagy, Anderson, & Herman, 1987; Nagy, Herman, & Anderson, 1985). Nagy et al. (1987) investigated how many new words can be acquired by reading. The findings of their study showed that learners picked up 5–20% of the new words with only one exposure through reading. They also estimated a vocabulary growth rate by reading per year, demonstrating that children can acquire approximately 1,000 words per year if they read about 1 million words.

Saragi, Nation, and Meister (1978) also conducted a vocabulary acquisition research by reading. In their study, adult native speakers of English were asked to read a novel *A Clockwork Orange* (Table 2-4). The novel consists of 60,000 English words with 241 Russian slang words, which were assumed to be unknown to the participants and repeated an average of 15 times (the range of the repetitions is from one to 209). Their study demonstrated that substantial repeated words had been learned incidentally by reading. The result of the vocabulary test showed that the lowest score was 50.00%

correct, while the highest score was 96.00% correct with an average of 76.00% correct. This also means that pick up rate is about three out of every four words. From this perspective, the context around target words helped the participants guess the meaning of them correctly, therefore, high pick up rate was reported by the research. Saragi et al. (1978) also noted that learners need to meet around ten times to acquire a single word. In addition, a vocabulary growth rate partly depends on frequency of occurrence. From these above L1 reading studies, three quarters of the new words can be learned incidentally through repeated exposures whereas some words are learned with only a few exposures.

Since experimental L1 reading research has shown the positive effects of ER, L2 reading researchers began to investigate whether the L1 results would apply to L2 reading (Day, Omura, & Hiramatsu, 1991; Hulstijn, 1992; Krashen, 1989; Pitts & Krashen, 1989; Robb & Susser, 1989). For instance, Pitts and Krashen (1989) conducted a replication using the same experimental material, *A Clockwork Orange*, to explore whether L2 learners could acquire vocabulary incidentally by reading (Tables 2-4). Two groups of participants learning ESL read the first two chapters of the novel, which contained approximately 6,700 words including 123 Russian slang words (repetitions ranged from 1 to 27). They were tested for their acquisition of the target words. The findings showed that one experimental group scored 6.46% of the target words (1.81 words of the 28), and the other scored 8.07% of the target words (2.42 words of the 30). The results imply that L2 learners can also acquire vocabulary incidentally from reading. However, this figure differs from that in the research by Saragi et al. (1978), which indicated that 76% of the words were learned incidentally. One probable explanation for this is that the amount of reading done by each group of participants is different: the participants in Saragi et al. (1978) read 60,000 words, and those in Pitts and Krashen (1989) read only 6,700 words. This means that the number of repetitions may not be enough for L2 participants to pay attention to. Another explanation is that the words around target words could not help them guess the meaning of the target words. Last, the target words may not have been salient enough to capture learners' attention. Therefore, incidental learning did not take place during reading, and research on L2 reading reported a low pick-up rate.

As Table 2-4 shows, other researchers also conducted similar studies on vocabulary acquisition through reading, some using different proficiency groups in the same experiment (Day, Omura, &

Hiramatsu, 1991; Hulstijn, 1992). L2 learners in Day et al. (1991) tested 17 English words after reading a passage consisting of 1,032 words. The results demonstrated that junior high school learners acquired 6.47% of the target words (1.10 words) through reading, whereas high school learners picked up 18.00% of the target words (3.06 words) using the same reading materials. They did not mention learners' English proficiency levels, but it is obvious that the English level of high school learners was higher than that of junior high school learners. From this perspective, it can be concluded that the higher the learners' English proficiency is, the easier it is for incidental learning to occur. Thus, the pick-up rate for high school learners is larger than that for junior high school learners. The findings indicate that incidental learning occurs more easily when learners' language proficiency skills improve.

Subsequently, Horst, Cobb, and Meara (1998) measured the incidental pick-up rate from reading. The number of words learned was approximately 10.00% (10.27% and 9.85%, respectively). A marked difference between their study and others is their longer passage length (Table 2-4). As the passage length was longer than in other studies, they could examine whether the frequency of occurrences affects the pick-up rate. Their findings showed that incidental learning does not occur with fewer than eight repetitions. The correlation between the number of words learned and number of times each word appeared in the text was .49. Based on this finding, Horst et al. (1998) argued that the frequency of occurrences in reading passages partially influences L2 acquisition, but factors other than frequency also affect vocabulary acquisition through reading.

Table 2-4

The Number of Words Learned Incidentally by Reading

	Participants	Length	No. of test items	No. of words learned (%)	Test type
Saragi et al. (1978)	NS (Adults)	60,000	90	68.40 (76.00%)	MC
Pitts et al. (1989)	NNS (Adults)	6,700	28 30	1.81 (6.46%) 2.42 (8.07%)	MC
Day et al. (1991)	NNS* (JHS)	1,032	17	1.10 (6.47%)	MC
Day et al. (1991)	NNS* (HS)	1,032	17	3.06 (18.00%)	MC
Horst et al. (1998)	NNS (Adults)	21,232	45 13	R=4.62 (10.27%) WA=1.28 (9.85%)	MC

Note. NS=Native speaker, NNS=Non-native speaker, R=Recognition test, WA=Word awareness test, JHS=Junior high school, HS=High school

In sum, incidental vocabulary learning takes place during L2 reading. Findings from research on L1 reading by Saragi et al. (1978) demonstrated that about 76.00% of the new words were learned incidentally by reading, while some of the new words among these were learned with only a few encounters. However, compared to the results for L1 reading research, the number of words learners pick up through reading is limited to between 6.46% and 18.00% in the L2 setting. Regarding L2 reading research, incidental learning occurs more frequently as learners' proficiency improves. Furthermore, repetition influences learners' vocabulary acquisition, although Horst et al. (1998) argue that less than eight encounters were not enough to acquire target words. Krashen (1989) claims that L2 learners acquire a foreign language in fundamentally the same way as L1 learners. He continues that a large amount of comprehensible input will result in L2 acquisition. However, it should be noted that the learning gain is very small compared to the results for L1 reading research.

While admitting that it takes time to observe the effects of ER on vocabulary acquisition in the L2 setting (Horst et al., 1998; Nation, 2013), researchers have noted that a large number of words cannot be learned only through explicit vocabulary instruction. Instead, most words are learned in an incremental way through repeated exposure during ER (Hulstijn, 2001; Krashen, 1989; Rott, 1999). From this perspective, it was considered necessary in this study to create a test that could measure learners' gradual

learning process, as the effects of ER occur slowly compared to those for L1 reading research. This will enable us to determine whether learners are on the way to acquisition, even though the learning process is slow. This subsection focused on only research on vocabulary acquisition through ER. However, the findings reported here should be considered when proposing research methods in other areas of ER research as well.

2.4 Overview of the Experiments in the Present Thesis

The purpose of this study is to explore practicable ER that enhances *Kosen* students' reading abilities in the initial stage of ER instruction. Four experiments were conducted (Chapters 3, 4, 5, and 6) based on practicable ER instruction as follows: Compared to intensive reading, extensive reading means learners read a lot within their linguistic abilities with and without a teacher's intervention. This study pays careful attention to the experimental designs to observe the effects of ER on *Kosen* students. An overview of each chapter is provided next.

Chapter 3 investigates whether ER instruction is effective in developing the language knowledge and reading abilities of EFL high school learners over the course of a school year. Specifically, the study examines whether reading 100,000 words affects learners' language knowledge and reading abilities. In the study, participants were divided into three proficiency groups to observe if all groups benefitted from ER instruction. In other words, classifying participants into different proficiency groups will enable us to see the development of the learning process. While previous research showed the effects of ER, only 40% of these studies were conducted with a control group (Nakanishi, 2015). Furthermore, it remains unclear whether ER is effective in developing EFL high school learners' reading comprehension and linguistic abilities, because research on high school students is lacking (Jeon & Day, 2016; Nakanishi, 2015). The empirical research reported in this chapter controls the above two factors, which may fill the gap in as yet uncovered areas of ER.

Chapter 4 pays attention to the gradual acquisition process of one specific grammar item through ER. As previous research revealed, only one study examined the effects of incidental grammar acquisition with a specific focus (Song & Sardegna, 2014). Furthermore, most grammar acquisition

studies through ER focus on improving overall grammatical competence. Considering that the effects of ER appear slowly, it was better to observe the process of acquisition by focusing on one grammatical feature. This will reveal a more accurate learning process in terms of whether learners are able to learn a grammar rule incidentally by reading. Moreover, it will provide information on how many encounters are needed to affect the development of learners' grammatical knowledge. Therefore, the study reported in Chapter 4 investigates whether learners can learn one grammatical feature incidentally through repeated encounters of the same target grammar structure in reading passages by focusing on a target grammar item.

Chapter 5 explores whether different types of texts, namely expository and narrative texts, affect learners' reading comprehension even though they consist of the same vocabulary levels. According to the curriculum guidelines set by MEXT (2018), high school students need to become accustomed to a wide range of reading texts including advertisements, e-mail messages, newspapers, journals, narrative texts, and expository texts. *Kosen* students need to become familiar with expository materials. As the grade increases, so does the number of specialized subjects where these learners are assigned to read expository materials both in Japanese and English. Therefore, this chapter focuses on the nature of expository and narrative texts and analyzes whether learners' reading comprehension scores of the two types of texts differ. If the results showed differences, further text analysis was performed to explore the factors that may prevent them from understanding the passages. Knowing the factors that affect learners' reading comprehension is important information for teachers, as analyzing them may unveil what difficulties learners face during reading.

Chapter 6 examines the effects of RWL and RO modes on reading comprehension and learners' perception of the two modes. During simultaneous reading and listening, learners can listen to audio recordings while reading. Therefore, the RWL approach is reportedly beneficial, especially for beginner readers, as it also supports them in improving bottom-up reading processing skills. Since they can rely on an audio recording, they can pay more attention to the contents of the reading materials. This reading fluency activity could be conducted in a whole-class reading setting. It is not categorized as purist ER instruction, but is more likely to be controlled ER. Nevertheless, it can provide learners with a large

amount of comprehensible input, and can be conducted in a whole-class setting if learners struggle to read fluently by themselves.

The experiments described above are conducted to examine the effects of ER on first-year *Kosen* students, who are considered equivalent to high school freshmen. As the learning process of ER is said to be slow, unpredictable, and fragile, these experiments will be conducted with careful attention to the experimental design, for instance, by including a control group and analyzing different proficiency groups to observe a gradual learning process. The controls in each experiment provide a clearer description of the effects of ER instruction that is feasible in the L2 classroom. In addition to the experimental design, as mentioned earlier, *Kosen* students differ from other high school students in terms of their motivation to learn the English language. They are seldom motivated to learn English; rather, they are good at mathematics and science. From this perspective, the results of the findings could provide pedagogical implications for high school students, especially those who are not motivated to study English.

Chapter 3

Reading Performance of *Kosen* Students Following a one-year Extensive Reading Program

3.1 Introduction

An important consideration in contemporary English language education is the amount of English language input (Aka, 2015; Kanatani, 2008; Renandya, 2007; Takase, 2010). Although the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) (2013) emphasizes the importance of enhancing students' communication skills, English language exposure within traditional government-authorized textbooks seems inadequate for improving students' language proficiency. In fact, the number of English words students encounter in textbooks is limited; for example, junior high school textbooks consist of only approximately 5,000 words and high school textbooks only 20,000, meaning that students learning English in the Japanese public education are exposed to only 25,000 words over six years (Kanatani, 2008; Sakai, 2008; Ushiro, 2013). According to Kanatani (2008) and Sakai (2008), if that number of words were printed as a paperback novel, only 70 to 80 pages would be filled. When all the words used in the government-authorized textbooks for seventh and eighth graders were recorded, it was found that they would fill only two sheets of A3 paper (Kanatani, 2008). These government textbooks are usually the only English language matter that students are exposed to in school, although they may be exposed to other forms of English outside of school.

ER is one approach promoted to solving the language exposure problem in Japan, by increasing the amount of second language (L2) exposure and thereby enhancing learners' English proficiency (Arakawa, 2012; Kanatani, Nagata, Kimura, & Minai, 1991; Nishizawa, Yoshioka, & Ito, 2010). However, researchers have pointed out that it is difficult to observe the benefits of ER in a relatively short period of time (Grabe & Stoller, 2002; Kanatani et al., 1991; Yamashita, 2008; Yoshii & Lavin, 2017), although several studies on ER have been implemented using more rigorous experimental

approaches, including control groups (Grabe, 2007; Nakanishi, 2015). Additionally, most participants have been university students, whereas few studies have been conducted with high school and junior high school learners (Jeon & Day, 2016; Nakanishi, 2015).

Furthermore, the existing studies are not without limitations. One limitation involves the difficulty of creating a control group with many participants in an authentic educational situation due to ethical issues (i.e., one group receives the educational input whereas others do not). Therefore, the main goal of the present study is to investigate the effects of ER on the increase of high school learners' language development and reading comprehension through the use of a control group. Recent curriculum changes in the school selected for this study also enabled the implementation of a one-year longitudinal study with a large sample of high school participants.

3.2 Literature Review

In ER instruction, learners receive a large amount of input through reading within their linguistic abilities, but there is no consensus on how much reading should be regarded as ER. However, Nation and Wang (1999) have recommended that learners practice reading at the rate of one book per week. Previous research has shown that learners who are continuously exposed to large amounts of English show improved reading skills, reading speed, comprehension, and motivation (Beglar & Hunt, 2014; McLean & Rouault, 2017), as well as improved sight vocabulary (Pigada & Schmitt, 2006; Waring & Takaki, 2003), general English abilities (Arakawa, 2012; Kanatani et al., 1991; Nishizawa, Yoshioka, & Ito, 2010), and good reading habits (Day & Bamford, 1998; Takase, 2010). For example, Beglar and Hunt (2014) found that a group of participants who read easy materials improved their reading speed and comprehension more than a group of participants who read difficult materials, even though the two groups of participants received almost the same amount of English input. This finding indicates that reading extensively—regardless of whether or not the materials are easy—improves learners' reading speed and comprehension, but that exposure to reading materials within their reading capacity tends to be more effective than reading difficult materials in terms of improving reading skills. Nuttall (2005) has also highlighted that readers read faster and develop interest in what they read if the materials are

slightly below their proficiency level. Examining vocabulary acquisition through ER, Pigada and Schmitt (2006) showed that, although learning vocabulary incidentally is more difficult than learning vocabulary intentionally, the number of partially known words increases in incremental steps through encountering the same words several times. This indicates that incidental learning takes time; however, learners can progress by increasing their knowledge of sight vocabulary through ER.

As indicated, there are limitations in the literature on ER. Nakanishi (2015) performed a meta-analysis using the key words *ER*, *pleasure reading*, and *graded readers* to investigate how many and what kind of studies had been implemented in the areas of ER research, and then quantified and summarized the data. Nakanishi found that approximately 40% of the studies compared pre- and posttest results without control groups to conclude that ER is effective in increasing participants' English proficiency levels. However, without a control group, it is difficult to determine whether these results were exclusively due to the effects of ER instruction, even in cases where there were pre- and posttest statistical differences. Therefore, studies should include control groups. Second, even though researchers recognize that it takes a relatively long period of time to determine the effects of ER, especially on the improvement of learners' English proficiency, 47% of the studies were short term; that is, less than three months, and 63% lasted less than six months, according to Nakanishi (2015). Only 15 studies had been conducted for a period between six months and one year. Because it takes time for students to experience the enjoyment of reading or to realize how well they can read, a period of less than three months seems unlikely to be sufficient to improve English proficiency or develop a love for reading. Therefore, more longitudinal research is required to better understand the effects of ER on general English learning abilities. Third, while 56% of the studies employed university-level students, only 22% of the studies examined the effects of ER on high school-level participants. However, if learners experience the joys of reading through ER at an earlier stage of language learning, they might be motivated to study English, further contributing to improving their English proficiency. Therefore, more studies with junior high school or high school participants are necessary. In a similar manner, Jeon and Day (2016) also performed a meta-analysis to obtain a better understanding of the effects of ER. They selected sample studies based solely on the definitions of ER as suggested by Day and Bamford (1998), focusing in particular, on the self-selection of books. This is a major difference between the two studies,

Nakanishi (2015) and Jeon and Day (2016). The findings showed that a greater number of studies dealt with adults while the number of studies addressing adolescents was very small, and thus, the result was the same as that of the study by Nakanishi (2015). Moreover, no statistical difference was found between the duration of the programs, meaning that ER can be effective regardless of the duration. According to Jeon and Day (2016), however, since the number of long-term studies was smaller than the number of short-term studies and the long-term studies were conducted using smaller sample sizes, we need more research on long-term studies involving a larger number of participants, especially adolescents, in order to investigate the effects of a long-term ER program.

A study by Kanatani et al. (1991) is one of the few studies involving high school learners that investigated English proficiency development using a control group ($n = 34$) and an experimental group ($n = 34$), during a six-month after-school ER program. Japanese EFL learners in their first year of high school participated in the study as an after-school program. There were no statistical differences between the control and experimental groups in terms of English proficiency test scores prior to the program. However, the posttest results showed statistical differences between the two groups after six months, especially on the reading section component. Kanatani et al. (1991) concluded that it is difficult to see the effects of ER initially, but these gradually appear after several months have been devoted to ER. However, since the ER occurred in an after-school program, the participants might have had higher motivation levels than non-participants. For these reasons, it is not clear that the same conclusions from their study would apply to high school learners in regular courses, which reinforces the value of studying ER programs among high school-level participants in general classes.

Nishizawa et al. (2010) conducted a study over a five-year period with engineering students, aged 17 to 22, to investigate the relationship between the number of running words the participants read and their score on the Test of English for International Communication (TOEIC). Thirty English as foreign language (EFL) engineering students participated in the study. The average TOEIC score for the participants was 518, which was above the mean of 497 for university students in Japan (Nishizawa et al, 2010). Compared to the mean of university-level participants, the mean of the engineering students engaging in ER was also higher. Nishizawa et al. (2010) further divided the participants into three groups based on the number of words they encountered over five years: groups A ($n = 9$), B ($n = 13$),

and C (n = 8) read approximately 310,000, 660,000, and 1,810,000 words, respectively, over four years, earning mean scores of 435, 498, and 604 points. The study showed that the more the students read, the higher their TOEIC scores were, suggesting a strong correlation between the amount of reading undertaken and language proficiency. However, there were no data on the TOEIC test scores of the participants before the study; therefore, the extent to which the participants improved their English proficiency through ER is unclear. The study also divided the participants into three groups based on how much they read. However, the groups were small, which makes generalizing the results more difficult. Moreover, as there was no control group, it is uncertain to what extent the results were due to ER. For these reasons, it is difficult to interpret the correlation between the number of words the students read and their TOEIC scores as an effect of ER.

The present study investigates whether ER is beneficial in enhancing learners' language abilities and reading comprehension while paying careful attention to the experimental design. First, both the control and experimental groups comprised a large number of participants. This large participant sample allows us to generalize the results to high school-level students. Furthermore, a larger sample made it possible to divide the participants into three different proficiency groups based on pre-test scores to identify which group showed the largest scoring gain between the pre- and posttests. This step was necessary to determine whether test scores at different proficiency levels increased. Since it was expected that an extended period would be required to see the effects of ER (Jeon & Day, 2016; Nakanishi, 2015), this study was conducted over a period of one school year. Considering that few studies on ER have been conducted with high school students as participants (Jeon & Day, 2016; Nakanishi, 2015), a longitudinal study with many high school participants provides helpful data. Moreover, the features of the experimental design—namely, the number of participants, inclusion of a control group, and group divisions—distinguishes the present study from prior studies on ER (Arakawa, 2012; Kanatani et al., 1991; Nishizawa et al., 2010). Therefore, the results of the present study are likely to contribute to the literature on ER and second language acquisition (SLA).

The main purpose of this study is to examine the effects of ER over the course of one year on student language knowledge and reading ability compared to a control group receiving grammatical instruction. To investigate the effects of ER on high school students, the present study poses the

following research questions:

Research Question 1 (RQ1): Will a one-year ER instruction program improve learners' language knowledge (grammar and vocabulary) and reading abilities?

Research Question 2 (RQ2): Are there statistically significant differences between pre- and posttest scores within groups of different starting proficiency?

3.3 Method

3.3.1 *Participants*

A total of 405 *Kosen* students aged fifteen to sixteen participated in this study in 2014 and 2015. A *Kosen* is a specialized institution for early engineering education in Japan, with a five-year educational program that is equivalent to a combination of high school and junior college. The participants in this study were all first-year students at a *Kosen*, equivalent to freshmen in high school, and were from five different majors: mechanics, electronics, information technology, chemistry, and architecture. These types of students are seldom very motivated to learn English; rather, they tend to be more focused on mathematics and science. The *Kosen* students do not have to take university entrance exams like other high school students, because the *Kosen* curriculum provides a five-year educational program. Since they do not take these exams, this can mean a further disincentive to learning English. *Kosen* students tend therefore to differ from most other high school students in terms of their English language learning motivation. As the 2014 group did not participate in an ER program, it served as the control group, and as the 2015 learners took the ER program, they served as the experimental group. Creating a control group is one of the challenges faced when conducting a study in an authentic classroom setting due to the ethical issue of providing students with different instructional contents. However, the present study could use a control group without encountering any ethical issues because of curriculum changes in 2015, which enabled an experimental design with large control and experimental groups.

In 2014, the control group (n = 205) had six English classes a week, three hours of intensive reading classes, two hours of grammar classes, and one hour of listening class while in 2015, an ER program was introduced in place of grammar classes. The experimental group (n = 200) took the same number of hours of English classes, but the instruction consisted of three hours of intensive reading classes, two hours of ER classes, and one hour of listening class. That is, the two groups differed solely according to whether they had 60 hours of grammar instruction or ER instruction over the course of one year. The participants in the control group learned one specific grammar item each week. They learned grammatical rules and did grammar translation exercises, either from English to Japanese or from Japanese to English, during the class using a textbook called *Harvest English Grammar, Green Course* (Kirihara Editorial Department, 2009). The participants in the experimental group, on the other hand, were encouraged to choose reading materials according to their interests. They were also told to select books that were lower than their English proficiency level, that is, at the *i minus 1* level suggested by Day and Bamford (1998), from the school library. Approximately 3000 graded readers and leveled readers are available in the *Kosen* library. The participants read the following series of books: *Oxford Reading Tree*, *I Can Read, Foundation Reading Library*, *Cambridge English Readers*, *Cambridge Storybooks*, *Step into Reading*, *Macmillan Readers*, *Oxford Bookworms Library*, *Penguin Reading*, *Penguin Young Readers*, and *Penguin Active Readers*, among others.

3.3.2 *English Proficiency Testing*

In the present study, the Basic Assessment of Communicative English test (BACE test) was adopted to measure the participants' linguistic abilities and reading comprehension abilities. This test, developed by the English Language Proficiency Assessment (ELPA) institute, is a general English achievement test. The test consists of the following three sections: a listening section (12 items), a grammar and vocabulary section (16 items), and a reading section (12 items in eight passages). The BACE test uses a measurement method based on item response theory to estimate learners' English proficiency levels. Each item has a weighted score that differs from question to question. The score of each section is converted into 100 points. The present study used the grammar and vocabulary (G&V) and reading

sections of the BACE test, excluding the listening section, as the latter was not relevant to whether the students received grammar (control group) or ER instruction (experimental group) throughout the year. In addition, the primary concern in the present study was to see if reading skills would improve through ER, rather than listening skills.

This study adopted the BACE test for the following reasons. In ER instruction, learners are instructed to read books that are below their English proficiency level. As it might have been unsuitable to check the effects of ER for learners who had just graduated from junior high school using tests such as the Test of English as a Foreign Language (TOEFL) or TOEIC since the participants were studying in their first year of high school, the BACE test was deemed an appropriate measure of the students' English proficiency because the question items are all related to the junior high school level. Additionally, it takes only 50 minutes to complete, which reduces the mental burden on students. Although the participants took different versions of the BACE test twice, before and after the treatment (in April and February), the item difficulty in the tests was controlled at the same level according to the ELPA guidelines (for more information, refer to ELPA's website (http://npo-elpa.org/bace/)). In addition to the test quality, the cost of the BACE test is 900 yen, approximately US$10 per person, which makes it more economically feasible than more expensive alternatives. This factor enabled us to obtain a larger participant sample.

3.3.3 *Analyses*

To investigate the effects of the one-year ER program, a *t* test was used to compare the BACE test scores of the experimental and control groups, as well as the pre- and posttest results of each group. In order to examine whether all participants benefitted from the ER program, the experimental group was further divided into three groups (i.e., high-, medium-, and low proficiency groups) based on their scores of each test section (i.e., G&V and reading), and not the number of participants. Grouping was done using the following formula: mean score ± 0.5 × standard deviation. Using this formula not only produced statistically different proficiency groups, but also measured the pre- and posttests within participants more accurately than simply dividing by the number of participants. A paired *t*-test between

the pre- and posttests of the three groups was conducted to see in which section the participants showed greater improvement (i.e., in G&V or reading), and which group (i.e., the high-, medium-, or low-proficiency group) benefited the most from the ER program.

3.4 Results

3.4.1 *Research Question 1*

To answer the first research question, we collected and analyzed pre- and posttest data for the G&V and reading sections to measure increases in the scores of the participants in both groups under instruction. Table 3-1 shows the results of the pre-test scores for the G&V and reading sections, including the means and standard deviations (*SD*) for the control and experimental groups. The mean for the G&V section for the control group was 55.38, while the mean for the experimental group was 56.75. For the reading section, the mean of the control group was 50.71 and the mean of the experimental group was 50.81. The mean difference between the two groups on the G&V section was 1.37 versus 0.10 for the reading section. There were no statistically significant differences between the two groups for the G&V section (t (403) = 1.24, p < .21) or the reading section (t (403) = .08, p < .94), implying that the two groups had the same proficiency level before the teaching programs began. As shown in Table 3-1, the effect sizes, indicated by Cohen's d for the differences between the two groups, were very small (G&V, d = .12; reading, d = .01).

Table 3-1

Results of the t-test on the Pretest Scores of the Control and Experimental Groups

	Control Group (n = 205)		Experimental Group (n = 200)		t	p	*Cohen's d*
	M	*SD*	*M*	*SD*			
G&V	55.38	11.30	56.75	10.85	1.24	.21	.12
Reading	50.71	12.66	50.81	11.71	.08	.94	.01

Note. For Cohen's *d*, an effect size of 0.2 to 0.3 is considered a small effect, around 0.5 a medium effect, and 0.8 and above a large effect.

Table 3-2 shows the results of the posttest scores for the G&V and reading sections, including the mean scores and standard deviations (*SD*s) for the control and experimental groups. The mean for the G&V section of the control group was 54.72, while that of the experimental group was 63.85. For the reading section, the mean of the control group was 52.29 and the mean of the experimental group was 61.78. Thus, the mean differences between the two groups were 9.13 and 9.49 on the G&V and reading sections, respectively. The scores of the experimental group in both sections were significantly higher than the scores of the control group. Furthermore, the learning gains for both sections were larger than in the pre-test: the control and experimental groups scored significantly differently on the G&V, $t(403) = 6.89$, $p < .001$, and reading sections, $t(403) = 6.08$, $p < .001$.

Table 3-2

Results of the t-test on the Posttest Scores of the Control and Experimental Groups

	Control Group ($n = 205$)		Experimental Group ($n = 200$)		*t*	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
G&V	54.72	12.63	63.85	14.01	6.89	<.001	.68
Reading	52.29	15.11	61.78	16.28	6.08	<.001	.60

Note. For Cohen's *d*, an effect size of 0.2 to 0.3 is considered a small effect, around 0.5 a medium effect, and 0.8 and above a large effect.

Figures 3-1 and 3-2 show the differences between the pre- and posttests. The effect sizes for the differences between the two groups were medium (G&V, $d = .68$; reading, $d = .60$). Thus, for the initial research question, it was found that the one-year ER program helped the students improve their grammar and vocabulary knowledge, as well as their reading proficiency.

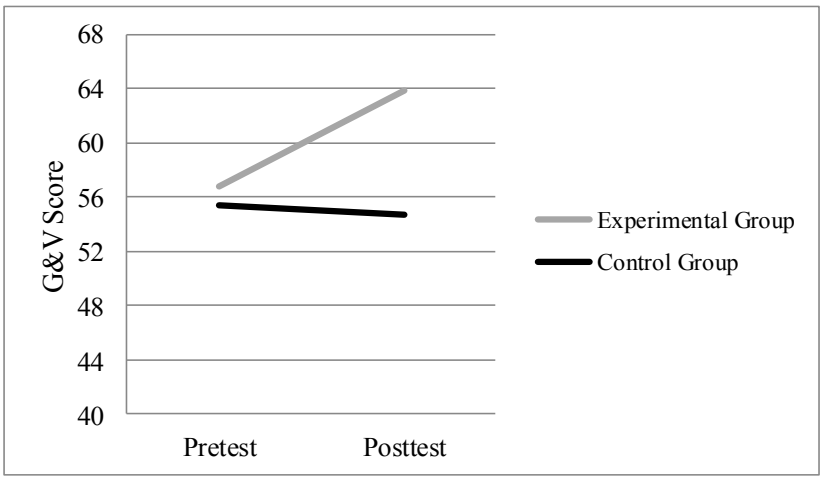

Figure 3-1. Pre- and posttest results of the grammar and vocabulary (G&V) section.

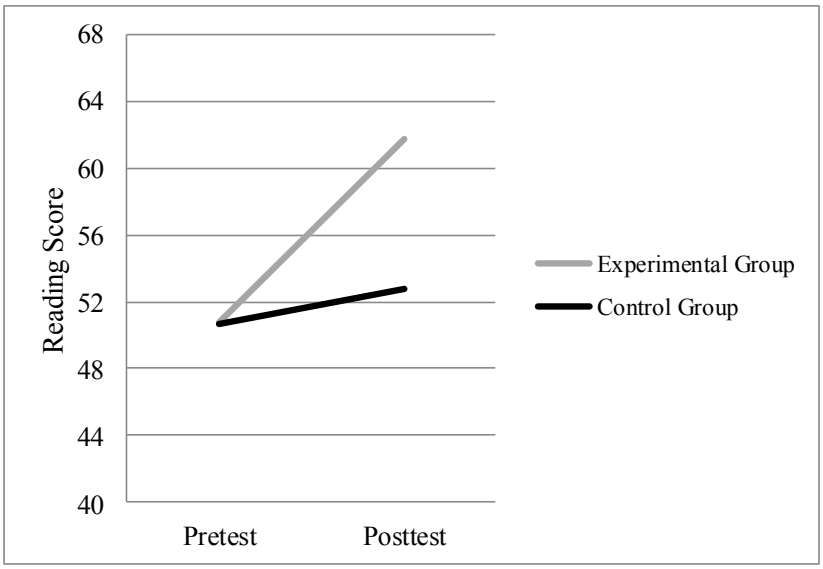

Figure 3-2. Pre- and posttest results of the reading section.

3.4.2 *Research Question 2*

Since a positive answer was obtained for the first research question, it was then investigated whether all students benefited from the ER program. The means from the G&V and reading sections at the pretest in the experimental group were used to investigate the differences in each section of the BACE test between the three proficiency groups (high, medium, and low), defined based on their scores on the G&V and reading sections of the pretest (Tables 3-3 and 3-5). Grouping was done using the following

formula: mean score ± 0.5 × standard deviation. Subsequently, a one-way ANOVA was conducted to see if the three groups were statistically different. The results of the one-way ANOVA for both the G&V (Table 3-4) and reading sections (Table 3-6) confirmed that there were significant differences among the groups at the pretest. A post-hoc Tukey test also showed statistical differences between the three groups on both the G&V and reading sections, with a significance level of 5%. These results allowed comparison of the pre- and posttest scores of each group in the subsequent step (F (2, 198) = 339.27, $p < .000$; F(2, 198) = 345.05, $p < .000$), as depicted in Tables 3-3, 3-4, 3-5, and 3-6.

Table 3-3

Descriptive Statistics for the G&V Section for the Experimental Group on the Pretest (N=200)

	M	*SD*	*Min*	*Max*
High group (n = 84)	66.92	6.62	62	90
Medium group (n = 56)	54.79	2.01	53	57
Low group (n = 60)	44.33	4.90	27	49

Table 3-4

Results of the One-way ANOVA for the G&V Section

	Sum of Squares	*df*	Mean Square	*F*	*p*
Between groups	18148.82	2	9074.41	339.27	<.001
Within groups	5269.18	198	26.75		
Total	23418.00	200			

Table 3-5

Descriptive Statistics for the Reading Section for the Experimental Group on the Pretest (N=200)

	M	*SD*	*Min*	*Max*
High group (n = 41)	67.46	6.79	62	89
Medium group (n = 78)	53.24	2.50	51	56
Low group (n = 81)	40.04	6.83	9	45

Table 3-6

Results of the One-way ANOVA for the Reading Section on the Pretest

	Sum of Squares	*df*	Mean Square	*F*	*p*
Between groups	21233.32	2	10616.66	345.05	<.001
Within groups	6061.46	198	30.77		
Total	27294.78	200			

First, each section of the pre- and posttests within the group of high-proficiency learners in the experimental group was compared. The means for the G&V section, as shown in Table 3-7, were 66.92 and 70.64 for the pre- and posttest, respectively. For the reading section, learners scored 67.46 on the pretest and 67.80 on the posttest. The result of the *t* test for the high-proficiency group revealed a statistically significant difference between the pre- and posttests for the G&V section ($t(82) = -1.20$, $p = .007$). However, as shown in Table 3-7, there was no significant difference between the pre- and posttests for the reading section ($t(39) = -.14$, $p = .89$, *n.s.*). There was a small effect size for the G&V section, but only a very small effect size for the reading section (G&V, $d = .36$; reading, $d = .03$).

Table 3-7

T-test Results for the Pre- and Posttest Scores of High-Proficiency Learners in the Experimental Group

	Pretest		Posttest		*t*	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
G&V	66.92	6.62	70.64	12.82	-1.20	.007	.36
Reading	67.46	6.79	67.80	14.49	-.14	.89	.03

Note. For Cohen's *d*, an effect size of 0.2 to 0.3 is considered a "small" effect, around 0.5 a "medium" effect, and 0.8 and above a "large" effect.

Next, the medium-proficiency group was compared. The means for the G&V section, as shown in Table 3-8, were 54.79 and 62.18 for the pre- and posttests, respectively, and 53.24 and 61.17 for the reading section pre- and posttests. There were also statistically significant differences between the pre- and posttest scores in the G&V and reading sections ($t(54) = 4.03$, $p = .000$; $t(76) = -3.84$, $p = .000$, respectively). The data in Table 3-8 show medium effect sizes for both sections (G&V, $d = .74$; reading, $d = .61$). Mean improvement rates for the two sections were much larger for the medium-proficiency group than for the high-proficiency group, being 7.39 and 7.93 for the G&V and reading sections, respectively.

Table 3-8

T-test Results for the Pre- and Posttest Scores of Medium-Proficiency Learners in the Experimental Group

	Pretest		Posttest		*t*	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
G&V	54.79	2.01	62.18	13.90	-4.03	<.001	.74
Reading	53.24	2.50	61.17	18.22	-3.84	<.001	.61

Note. For Cohen's *d*, an effect size of 0.2 to 0.3 is considered a small effect, around 0.5 a medium effect, and 0.8 and above a large effect.

Last, the pre- and posttest scores of the low-proficiency group were examined. The means, as shown in Table 3-9, were 44.33 and 55.90 for the G&V section of the pre- and posttests, respectively, and 49.88 (pretest) and 61.15 (posttest) for the reading section. Mean improvement rates for the two sections were much larger than for the high-proficiency group, being 11.57 and 11.27 for the G&V and reading sections, respectively. There were also statistically significant differences between the pre- and posttests in both the G&V and reading sections ($t(58) = -7.96$, $p < .001$; $t(79) = -6.74$, $p < .001$, respectively). Table 3-9 shows the larger effect sizes for both sections (G&V, $d = 1.37$; reading, $d = .94$) for the low-proficiency learners. Thus, to answer RQ2, it appears that ER was most effective for the low-proficiency group. Figures 3-3 and 3-4 also demonstrate how much each group of participants improved from pre- to posttests for the G&V and reading sections of the BACE test.

Table 3-9

T-test Results for the Pre- and Posttest Scores of Low-Proficiency Learners in the Experimental Group

	Pretest		Posttest		*t*	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
G&V	44.33	4.90	55.90	10.87	-7.96	<.001	1.37
Reading	49.88	5.19	61.15	16.16	-6.74	<.001	.94

Note. For Cohen's *d*, an effect size of 0.2 to 0.3 is considered a small effect, around 0.5 a medium effect, and 0.8 and above a large effect.

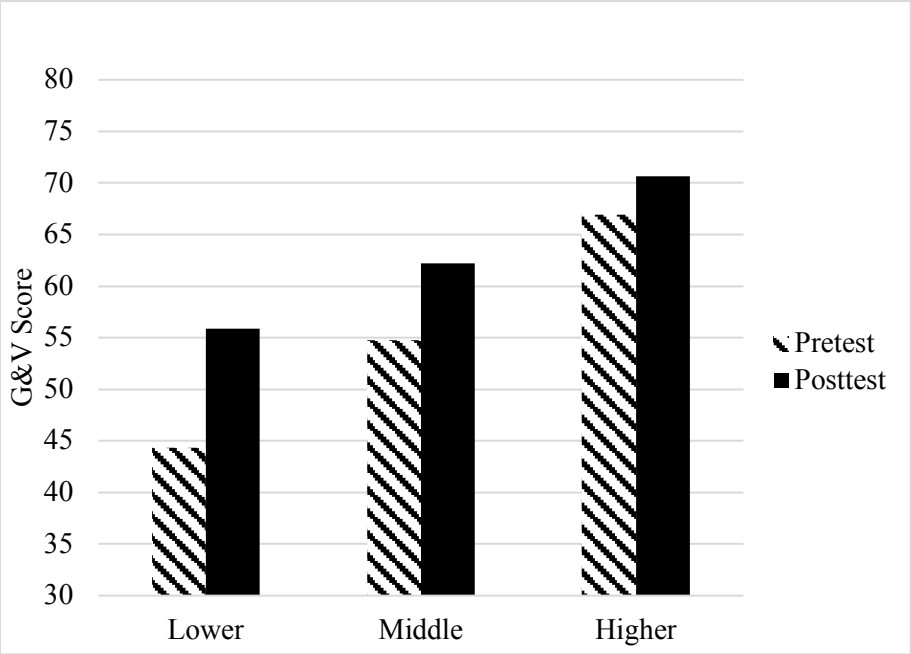

Figure 3-3. Comparison of the three proficiency groups on the G&V section.

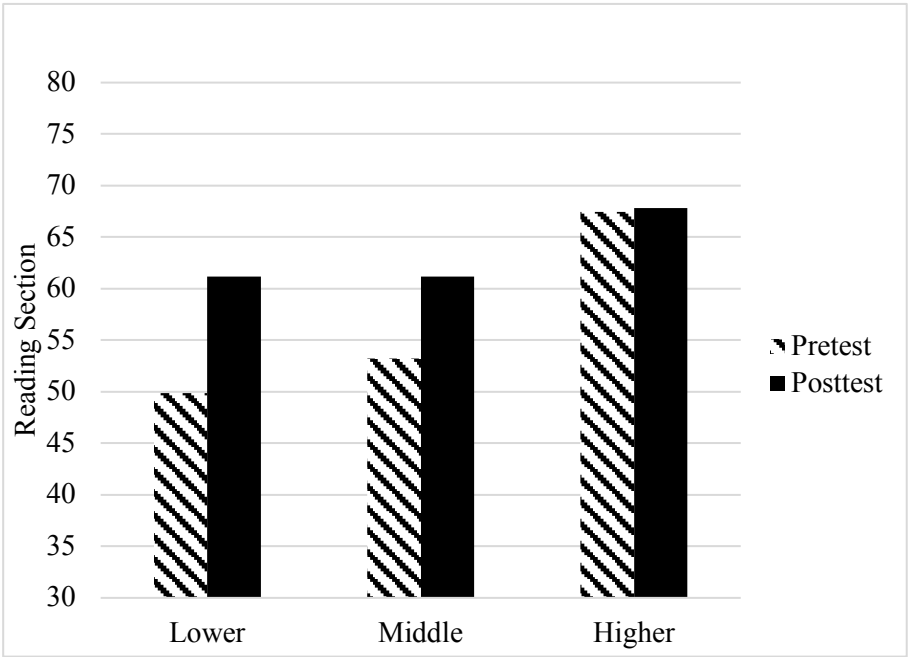

Figure 3-4. Comparison of the three proficiency groups on the reading section.

3.5 Discussion

The results show that the ER group performed better than the control group in terms of language knowledge and reading performance. Regarding research question 1 (RQ 1), the results of the posttest support the view that ER over the course of a one-year period can be effective for EFL high school

learners with three years' learning experience in an EFL input-poor context. The results strongly suggest that undertaking ER for one year was more effective than two hours a week of grammar instruction in building learners' language knowledge and reading skills.

One of the reasons why the ER program may have been so effective is the quantity of input. The participants in the experimental group read approximately 115,000 words on average (49,000 words in the first semester and 66,000 words in the second semester), which is equivalent to 23 government-authorized textbooks of around 5,000 words each. According to Nishizawa et al. (2010), the positive effects of ER do not transfer to learners' English proficiency when reading only up to 100,000 words. The present study, however, found that the learners could improve their English proficiency level with 100,000 words read. It could be reasonably assumed that students encountered words or grammar items repeatedly in their reading, and in a variety of contexts that they had already learned in junior high school. Moreover, through the program, it is more likely that the learners grasped the meaning and use of words and grammatical concepts more accurately or deeply from reading them in context. Simply stated, the learners' partially known words might have become completely known at the level of sight vocabulary. This consideration can be supported in reference to Pigada and Schmitt (2006), who detailed the acquisition process for words through ER by which students use spelling, meaning, and grammatical characteristics, showing that the participants gradually enhanced their lexical knowledge through ER. Although it remains unknown how partially known words become automatic and fluent for language users, the scores for the experimental group in the reading section improved more than those of the control group. Therefore, it seems plausible that they increased their sight vocabulary and vocabulary size, as suggested by Pigada and Schmitt (2006). Furthermore, as noted, the number of words read by the participants in the second semester was 1.33 times greater than that in the first semester. Beglar, Hunt, and Kite (2012) have shown that ER facilitates learners' reading speed, especially among those who read easier materials, thereby contributing to reading comprehension as well. Although no exact data on learners' reading speeds were presented, it is likely that word recognition speed improved, affecting learners' reading speeds and test scores as well. Therefore, improvements in reading speed would also be a factor enhancing learners' English proficiency.

The present study shows that a one-year ER program enhanced the English proficiency level of high school EFL learners. Kanatani et al. (1991) found that the effects of ER appeared after six months. As this study involved a longer period, it is not clear whether the participants in the experimental group surpassed the control group in the first six months of the process. However, this study was conducted in a regular classroom with a large sample of participants rather than as part of an after-school program, as studied by Kanatani et al. (1991). Therefore, 60 hours of ER in a year appears to be beneficial for high school EFL learners. In this study, the participants undertook ER over the course of a year, but it should be noted that the period under examination included approximately seven weeks of summer vacation and two weeks of winter break. Yoshii and Lavin (2017) have highlighted that learners' English proficiency levels drop during breaks between semesters. Despite occasional breaks in the programs, the effects of ER could still be observed in the high school learners. Given these considerations, future studies should examine whether six-month ER programs might benefit students in a regular course.

For research question 2 (RQ2), we also examined the learning gain between the pre- and posttests for each proficiency group to see which group of participants improved their English proficiency the most through ER. The findings show that ER was more effective for the medium- and low-proficiency groups than for the high-proficiency group. The learners in the medium- and low-proficiency groups might have had more chances to activate the knowledge they had learned in junior high school than the high group. More specifically, it appears that the learners' partial knowledge of vocabulary or grammar had gradually been enhanced by reading extensively, contributing to an improved learning outcome in both sections of the test. Although the scores on G&V slightly improved in the high-proficiency group, the mean score gain of 3.72 was much lower compared to the other groups. Moreover, the mean of the reading section in the high-proficiency group showed no statistical difference. As all the groups with the exception of the high-proficiency group improved in both sections, it would appear that learners' English proficiency was measured with varying effectiveness through the BACE test, especially for the high-proficiency group. In other words, because the BACE test was created to measure the English knowledge of junior high school students, it is likely that the test measured the English proficiency levels of the medium- and low-proficiency groups more accurately than the high group. If a test more

sensitive to differences at a high level of proficiency had been used for the high group, it is probable that larger learning gains between the pre- and posttests of that group would have been found.

There are some limitations to this study. First, even though the learning gain of the experimental group was higher than that of the control group on the BACE test, there were only 16 items in the G&V section and 12 items in the reading section. Furthermore, learners' grammar and vocabulary knowledge were measured in the same section. These factors might have obscured the effects of ER on the high-proficiency group. There are a few English external examinations available to those who have just graduated from junior high school. The institution in this study requires all students to take a BACE test to measure their English ability every year before starting English classes in April, which enabled the author to create the experimental design of the present study. Another experimental design could have been adopted using self-created tests or another external test such as the Society for Testing English Proficiency (STEP) test. However, to minimize the mental and financial burdens on students, the author chose to use the BACE test as a measurement of the learners' English abilities. In addition, this experiment could not have been done without the curriculum changes in the institution in which the study took place.

Second, it remains unclear which skills the learners acquired through the one-year ER program, even though the test scores show improvements in the learners' linguistic abilities and reading comprehension skills. One reason for this uncertainty is that individual learners were exposed to different types of reading passages at varying levels since the purpose of the ER class was for the students to enjoy reading. Therefore, they were allowed to choose whatever they wanted to read according to their English level and interests, making it difficult to identify what knowledge all the learners acquired through ER.

Although the results of this study demonstrate the positive effects of ER, it remains necessary to investigate which skills lead to the improvement in learners' English proficiency levels. In future studies, it would be desirable to separate the G&V sections and add more questions so that more precise data on English skills acquisition will be available. Furthermore, a method needs to be developed to ascertain not only the number of words that learners encounter, but also how many times the learners encounter the same grammatical items or words during a program. More accurate information will help

researchers and educators determine how well learners acquire words and grammatical items through ER.

3.6 Conclusion

The present study demonstrated an improvement in English language abilities through one year of ER instruction, especially among medium- and low-proficiency learners. The findings of the study also show that reading over 115,000 running words during one academic year contributed to the development of learners' English proficiency. Adolescent EFL learners can significantly improve their reading abilities through a one-year ER program, which implies they can start reading materials in a foreign language by themselves without the teachers' support if the input is relatively easy to grasp. As language-focused learning, involving for example the detailed study and understanding of grammar passages, is the preferred approach in English education in Japan, students have few opportunities to read English materials that are not demanding. However, fluency training such as ER should be included in language teaching to activate what students learn in textbooks. Such training will also help students acquire word decoding skills in context and increase their sight vocabulary, leading in turn to the development of general English proficiency. However, the number of words that participants encountered was not enough for them to develop into autonomous readers, for which one million words are assumed necessary (Sakai, 2008). Nonetheless, considering that learners became more confident in foreign language reading as they developed their reading skills during the program, ER is likely to be beneficial in the early stages of language learning.

The number of studies involving high school-level learners is limited compared to those involving university-level learners. Taking account of some of the limitations of earlier studies, the present study was conducted with a large sample of learners in regular English classes. Furthermore, the low relative cost of the BACE test enabled us to conduct the study with a greater number of participants. Although more research is necessary, this study suggests that ER instruction is an effective means to improve young EFL learners' reading fluency during the early stages of L2 learning.

Chapter 4

Incidental Learning of a Grammatical Feature from Reading by *Kosen* Students

4.1 Introduction

Reading fluency is one of the most important skills that English learners in Japan need to acquire (Grabe, 2010; Kanatani, 2008; Takase, 2010). Researchers have explored various effective practices to promote reading fluency, such as ER (Beglar & Hunt, 2014; Pigada & Schmitt, 2006), repeated reading (Chang, 2012; Taguchi & Gorsuch, 2002; Webb & Chang, 2012), narrow reading (Chang & Millet, 2017), and audio-assisted reading (Brown, Waring, & Dankaewbua 2008; Teng, 2018). These teaching approaches differ, but all share the idea that learners should be exposed to a large quantity of comprehensible input in order to enhance their reading fluency skills. Nation (2013) suggests approximately one quarter of reading class time must be spent on such activities to achieve reading fluency. However, developing reading fluency skills tends to be overlooked in the second language (L2) classroom, as compared to language-focused learning (Grabe & Stoller, 2002; Nation, 2013).

Extensive reading (ER) is one of the effective approaches to increasing learners' exposure to English input. It enhances not only learners' reading abilities (Beglar, Hunt, & Kite, 2012; Beglar & Hunt, 2014; Bell, 2001; McLean & Rouault, 2017; Suk, 2017) and vocabulary knowledge (Nation & Waring, 2020; Pigada & Schmitt, 2006; Rott, 1999; Waring & Takaki, 2003), but also their overall English proficiency (Aka, 2019; Elley & Mangubhai, 1983). However, which skills learners are able to develop through ER that contribute to the development of their English proficiency are not fully understood. Since learners tend to choose books based on their interests (Day & Bamford, 2002), which is one of the guiding principles for implementing ER, it is not clear what levels of language input individual learners have encountered through ER to improve their English proficiency in the previous studies. Such uncertainty is one of the experimental limitations of existing research on ER. Another

issue is that it takes time to see the effects of ER, as the process is said to be slow, fragile, and haphazard (Grabe, 2009; Kanatani, Nagata, Kimura, & Minai, 1991; Nation, 2013; Pigada & Schmidt, 2006). Such factors may make it difficult for educators to implement ER, especially in English as a foreign language (EFL) contexts where teachers are often bound by government course guidelines and limited instructional hours (Chang & Renandya, 2017; Macalister, 2010; Robb, 2002). According to the questionnaire survey conducted by Chang and Renandya (2017), EFL teachers in Asia believe that providing constant exposure to comprehensible input is a good practice for improving learners' reading fluency skills; however, only a few teachers implement this in their curriculum.

With careful attention to the experimental design, the present study examines whether learners can learn one grammatical feature incidentally through repeated encounters of the same target grammar structure in reading passages. The reason for focusing on a single grammatical feature is that there are few studies that have examined the incidental learning of one grammatical feature (Lee, Schallert, & Kim, 2015; Shintani & Ellis, 2011; Song & Sardegna, 2014) as compared to incidental vocabulary learning (Brown et al., 2008; Pigada & Schmitt, 2006; Rott, 1999; Waring & Takaki, 2003; Webb & Chang, 2015). To the best of author's knowledge, few studies have been done that have focused on the acquisition of one grammatical feature (Shintani & Ellis, 2011; Lee, Schallert, & Kim; Song & Sardegna, 2015). Additionally, investigating the process of learning a specific grammar item through reading enables us to answer the following questions: Are learners able to improve their grammatical knowledge incidentally, as can be done with incidental vocabulary learning? If so, how many encounters are needed to affect the development of learners' grammatical knowledge? Answering these questions is the main purpose of this study. It also provides information that may be beneficial for language teachers, especially in EFL or ESL settings.

It should also be noted that the present study differs from typical ER instructional practice, in which learners voluntarily select books according to their interests. In this study, the learners read the passages the researcher assigned. When considering implementing ER in the EFL context, where the amount of input and class hours are limited, there is a need to find an alternative method to help learners improve their reading habits, skills, and fluency. Repeated successful experiences of understanding reading passages within their linguistic levels might help them enhance their motivation toward reading

in a foreign language, and it may contribute to their experiences outside of the English classroom. For these reasons, the study was implemented with preselected reading materials.

4.2 Literature Review

Research on incidental learning has shown that learners can develop their linguistic abilities in an incremental way through constant exposure to comprehensible input (Horst & Meara, 1999; Pigada & Schmitt, 2006). One of the known incidental learning methods is ER, which has received attention as an effective method to facilitate learners' language development. During ER, the learners' primary focus is not on intentionally learning L2 linguistic features but on comprehension. Nevertheless, learners exhibit incidental gains in vocabulary development (Pigada & Schmitt, 2006; Rott, 1999; Waring & Takaki, 2003), reading speed and comprehension skills (Beglar & Hunt, 2014; Beglar et al., 2012; Bell, 2001; McLean & Rouault, 2017; Suk, 2017), and grammatical competence (Elley & Mangubhai, 1983; Song & Sardegna, 2014) as by-products of ER. The consensus of these studies is that learners' linguistic knowledge develops through receiving a large quantity of input within their linguistic abilities while their focus is mainly on comprehension. If learners are provided with input that is higher than their proficiency level, it may be difficult for them to improve their linguistic knowledge while reading. Beglar and Hunt (2014) supported this idea by showing that a group of participants who read easy reading materials improved their reading speed and comprehension skills more than those who received the same amount of English input but with more difficult reading materials.

As indicated earlier, while incidental learning from ER is effective, but researchers have also pointed out that the effects of ER are slow to appear and transfer to learners' English proficiency (Grabe, 2009; Grabe & Stoller, 2002; Nation, 2013; Pigada & Schmitt, 2006; Yamashita, 2008). For instance, Yamashita (2008) examined the effects of ER on general reading ability and lower-level linguistic ability. The results showed that the effects of ER transferred quickly to general reading ability, but more slowly to linguistic ability. Based on this finding, Yamashita concludes that linguistic forms may not be salient enough to capture learners' attention. This also provides evidence that it is difficult to see the benefits of ER in a relatively short period of time.

Regarding incidental vocabulary learning from ER, while admitting that the process of ER is slow, fragile, and haphazard compared to intentional vocabulary learning (Horst, Cobb, & Meara, 1998; Nation, 2013), researchers have pointed out that many words cannot be learned solely by means of explicit vocabulary instruction; rather, most words are learned in an incremental way through repeated encounters during ER (Hulstijn, 2001; Krashen, 1989; Rott, 1999). Learners' partial knowledge slowly but surely improves through repeated exposure to *i minus 1* reading materials (Day & Bamford, 1998), which strengthen learners' form-meaning connections and likewise increase their sight vocabulary. The important point is that learners need to keep reading and encountering the partially-learned words to sufficiently reinforce them to be acquired (Nation, 2013; Nation & Waring, 2020). Time can be an important factor for words to be acquired (Webb & Nation, 2017). If learners do not encounter target words for a long period of time, the knowledge usually cannot be retained.

During ER, learners receive a large amount of input within the range of their linguistic abilities, but do not absorb all the data. According to Schmidt (1994), the incidental learning of linguistic forms can take place under any of the following conditions:

> (a) When the primary task requires that attention be allocated to language form;
> (b) When the primary task does not deplete attentional resources and something about the relevant structure attracts a learner's attention; and/ or
> (c) When the primary task does not deplete all attentional resources, but unattended form nevertheless enters long-term memory (p. 17).

Gass (1988) pointed out that only *noticed* information by learners, which differ from learner to learner, will be acquired. The outstanding linguistic features for learners then become available for integration into the learners' intake. Gass (1988) explained that this language acquisition mechanism operates through five stages. The initial stage of the five, which she called apperceived input or noticed input, is the first necessary step in language acquisition. Gass also mentioned that four factors influence learners' noticed input: (1) frequency, (2) affect, (3) association and prior knowledge, and (4) attention. These factors integrate with each other and contribute more to learners' apperceived input than

individual factors alone. Among these factors, frequency is essential (Gass, 1988; Hulstijn, 2003; Rott, 1999) , although something infrequent but conspicuous may be acquired by learners (Webb, 2008).

Research on incidental vocabulary learning suggest that when learners repeatedly receive the same vocabulary in reading passages, they gradually acquire the target vocabulary (Pigada & Schmitt, 2006; Rott, 1999; Waring & Takaki, 2003; Webb, 2007). Rott (1999) investigated the effects of frequency, that is, how many times learners need to encounter target words to acquire them. The findings of the study showed that the more frequently learners encountered target words in reading passages, the more they acquired them. More specifically, two or four encounters of target words resulted in similar word gain, but six encounters yielded higher gains in vocabulary knowledge. Moreover, Webb (2007) verified the effects of vocabulary repetition, demonstrating that learners need to encounter target words more than 10 times in context, while the results of Waring and Takaki (2003) showed that target words must be encountered over 20 times for learners to acquire them. Other similar studies have reported inconsistent findings concerning the required number of repetitions for new vocabulary acquisition—from six to over 20 encounters. Zahar, Cobb, and Spada (2001) acknowledged that frequency is key to acquiring vocabulary, but is also related to learners' English proficiency level; beginner learners need more encounters than advanced learners do. This is an indication that exposure frequency through reading enhances learners' language knowledge in an incremental way. In addition to frequency, Rott (1999) also pointed out the importance of learners' ability to infer the meanings of target words based on their context. If there are sufficient contextual clues surrounding target words, learners can guess the meaning of the words and acquire them more easily; otherwise, it is difficult to infer their meaning (Webb, 2008).

Compared to research on incidental vocabulary learning through ER (Brown, Waring & Dankaewbua, 2008; Pigada & Schmitt, 2006; Rott, 1999; Waring & Takaki, 2003; Webb & Chang, 2015), however, there have been very few studies examining grammar acquisition through ER (Nakanishi, 2015). Nakanishi (2015) performed a meta-analysis of the literature and reported that the most frequently examined area of ER is its effects on reading comprehension, followed by reading speed and vocabulary acquisition, while grammar acquisition through ER is the least-studied area among them all. While some studies showed improvement in overall grammatical competence through

ER (Elley & Mangubhai, 1983), almost none have focused on the acquisition of a specific grammatical feature. Since these studies did not reveal the type of grammatical items learners encountered nor their frequency, it remains unclear whether increasing the number of the same grammatical features in the written input enhances learners' grammatical knowledge. If frequency affects the incidental learning of grammatical features, the question is whether the number of necessary encounters is similar to that of incidental vocabulary learning or whether more encounters are necessary for acquisition. Research on the development of grammar knowledge may give us clues concerning the process of its acquisition. To the best of the author's knowledge, however, there is only one study (Song & Sardegna, 2014) investigating incidental grammar acquisition with a specific focus—the use of English prepositions. From this perspective, the study by Song and Sardegna (2014) is important because it was the first to investigate incidental grammar acquisition with a specific focus, the use of English prepositions.

Song and Sardegna (2014) examined the incidental acquisition of prepositions among 24 Korean EFL students aged 15-16 years over the course of one semester. There were two groups of participants in this study: (1) a control group that received only regular instruction and (2) an experimental group that received regular instruction plus two classes of enhanced ER instruction (EERI) in an after-school program, which employed various output activities after ER (60 minutes of ER and 30 minutes of output activities). Learning gain was measured by means of pre- and post-achievement tests on prepositions consisting of three sections: section 1 (notice), section 2 (notice and know), and section 3 (notice and produce). The results of the experimental group (n=12) showed greater gains in all sections. However, the scores obtained by the participants receiving solely regular instruction (n=12) only exhibited small gains in section 1 and no improvement in sections 2 or 3. The findings indicated that frequent exposure to prepositions in a variety of contexts, as well as participation in 30-minute output activities, facilitated the learners' acquisition of the target grammatical feature.

However, there were several methodological limitations in their study. First, it may be difficult to generalize to the larger population of EFL learners due to the small number of experimental participants in the after-school program (n=12). Second, it remains uncertain to what extent the result was because of ER, as the EERI included output activities that may have facilitated the acquisition of prepositions. In other words, the results may not be solely attributed to the effects of ER. Furthermore, Song and

Sardegna (2014) did not provide the number and type of prepositions the participants encountered during the treatment period. The information regarding how much learners had read would be a great educational implication since it takes time to see the effects of ER on learners' English proficiency.

Given this current background, it is important to increase the number of studies focusing on the development of one specific grammatical item for two reasons. First, examining the learning process of a grammatical item would reveal if learners are able to learn a grammar rule incidentally by reading and, if so, how many meetings are necessary to learn it. Explicit grammar instruction represents a mainstream practice in grammar instruction, especially in the EFL contexts (Grabe, 2007). It enhances learners' grammatical knowledge and prepares learners for its use, but this does not necessarily imply that learners are able to apply this knowledge during language production (Moore, 1989). Concerning comprehension level, for example, Ellis (1993) suggested the importance of consciousness-raising activities that induce learners to notice and understand the grammar rules in the input. Increasing the number of the same grammatical exemplars in reading passages would help learners notice the use of a grammatical item, which would also lead them to confirm partially learned structures more accurately (Ellis, 1999). Second, it is still unknown whether incidental learning of grammatical features is more difficult than incidental learning of vocabulary items and whether the frequency of exposure is an important factor in boosting their grammatical knowledge. Answering these questions would provide useful educational implications for language teachers.

Based on the literature review and research conducted so far, the present study investigates the effects of ER on the incidental learning of one grammatical feature. More specifically, the study analyzes whether Japanese EFL learners will exhibit greater incidental gains in the use of a target grammatical item if they are exposed to it more than a group receiving only limited exposure to the item. The present study thus investigated the following research questions:

RQ1: Will learners be able to learn a specific grammatical feature incidentally by reading?
RQ2: Does language proficiency affect the acquisition of a target grammatical form?

4.3 Materials and Method

4.3.1 Participants

A total of 157 *Kosen* students aged 15 to 16 years participated in this study. A *Kosen* is a specialized institution for early engineering education in Japan, with a five-year educational program that is equivalent to a combination of high school and junior college. The participants in this study were all first-year students at a *Kosen*, which is the equivalent of high school freshmen. A Basic Assessment of Communicative English (BACE) test was assigned to the participants to check their English proficiency levels. This test was developed by the English Language Proficiency Assessment (ELPA) institute. The participants scored an average of 177 on the BACE test. When this is converted to Common European Framework of Reference for Languages (CEFR), their average English proficiency level is considered to be at the A1 level. These types of students are not motivated to learn English (Nishizawa, Yoshioka, & Itoh, 2010) since they do not have to take university entrance exams like other high school students. Generally, Japanese high school learners' motivation to learn English is mostly to pass entrance examinations (Takase, 2007; Koizumi & Matsuo, 1993); therefore, this can mean a further disincentive to learning English.

The students had three 90-minute English classes once a week for seven weeks during the treatment period of this study: one intensive reading class, one listening class, and one ER class. The researcher taught all the participants in the ER class where this study was conducted. Two other English teachers taught the other two classes (intensive reading and listening classes) following the same syllabus and using the same textbooks. As all participants took the same afore-mentioned English classes, the amount of English input the participants received was almost identical. Furthermore, the textbooks the participants used during the treatment were also checked to confirm that there were no chapters dealing with to-infinitives.

The ER class was conducted in the school library, where 3,000 graded readers were available to students. In the first half of the ER class, the participants were encouraged to choose and read graded readers within their linguistic ability according to their interests. In the second half of the ER class,

students were assigned to read and answer questions on reading passages that the researcher had given them.

Four classes were randomly assigned either to a control group (n=74) or to an experimental group (n=83), to investigate whether the participants in the experimental group would be better able to learn a specific grammar item through reading controlled passages. The participants in the experimental group read five passages consisting of 40 sentences in total containing a specific grammatical feature, to-infinitives used as nouns, whereas the participants in the control group read the same number of reading passages but with only 10 sentences of to-infinitives used as nouns. The difference between the two groups was the number of instances that the target grammatical feature appeared in the reading passages.

4.3.2 Experimental Materials

The present study employed a grammar test and 10 reading passages as experimental materials (Appendices A and B). The grammar test was used to measure learners' pre-and post-tests. The reading materials were used during the interventions. More details about the experimental materials will be explained in sections 4.3.2.1 and 4.3.2.2.

4.3.2.1 Grammar Test

This study employed to-infinitives used as nouns as the target grammatical item. The test was developed by the author based on what the participants had already learned in junior high school. The grammar test consisted of two sections as measures of acquisition of to-infinitives used as nouns (see Table 4-1 and Appendix A). The first section measured whether learners "notice" the appropriate grammatical form and fill in the correct choice. The second section is more challenging because learners should not only "notice" the use of to-infinitives used as nouns, but also "manipulate" the appropriate combination of words to form a correct sentence. Therefore, section 1 was labelled as "notice" and section 2 as "notice and manipulate (N&M)." The use of two sections enabled the gradual progress of the learners' grammatical acquisition to be ascertained. Each section of the test comprised 30 question items: 10

to-infinitives used as nouns and 20 other grammatical items (Table 4-1). The reason for the inclusion of a variety of grammar items is that the grammar test was used as an indication of the learners' overall grammatical knowledge. These items also function as distractors to prevent the learners from noticing what was being measured before the treatment. The same grammar test was used before and after the treatment; when conducting the post-test, the items within each section were shuffled to prevent the participants from realizing that the two tests were practically the same.

The reliability of the overall grammar test (60 items) was calculated using SPSS and found to have a Cronbach's alpha of 0.77. The Cronbach alpha reliability coefficients for sections 1 and 2 were 0.49 and 0.54, respectively. These mediocre figures were likely due to the small number of test items (10 items in each section). Therefore, the Spearman-Brown prophecy formula for 30 items was applied to sections 1 and 2 to defend a low reliability coefficient. Since the original test had 10 test items and 20 distractors in each section, the reliability was calculated including 20 test items instead of 20 distractors using the Spearman-Brown prophecy formula (Table 4-1). Hence, distractors were considered as test items. If the above formula was applied to each section of the test, Cronbach's alpha estimated was found to be 0.74 and 0.78, respectively.

Table 4-1
Number of infinitives and distractors in the Grammar Test

	Notice	Notice and manipulate	Total
Infinitives	10	10	20
Distractors	20	20	40
Total	30	30	60

Note. "Infinitives" indicates the number of infinitives used as nouns.

4.3.2.2 Target Grammar Items

To-infinitives used as nouns were the target grammar items in this study. The following sentences are all examples of to-infinitives used as nouns employed in the experimental materials:

1. *To sing* this song is difficult.
2. He decided *to go* camping.
3. Mike's hope is *to become* a doctor.
4. I want *to study* Japanese history.
5. It is dangerous *to swim* in the river.

There are several reasons why to-infinitives used as nouns were tested as the target grammar items. First, this grammar item is frequently found in the reading materials used in the course. The participants had been taught three kinds of to-infinitives in junior high school: (1) to-infinitives used as nouns (e.g., He likes *to play* soccer), (2) to-infinitives used as adjectives (e.g., She has something *to drink*), and (3) to-infinitives used as adverbs (e.g., I was surprised *to hear* the news). However, the reading materials used in this study, *Reading for Speed and Fluency* (1 and 2) by Nation and Malarcher (2007), include more to-infinitives used as nouns than the other uses of to-infinitives. If learners know the function of to-infinitives used as nouns well, they would likely be able to read the ER materials more easily. On the other hand, if they do not know the rules, they might struggle to comprehend the materials. Considering that the reading materials contained many to-infinitives used as nouns, this grammatical feature is one of the most meaningful grammatical items learners need to acquire for reading comprehension. Another reason why the researcher chose the partially-learned item as target grammar was that the learners need to become more familiar with its use while reading. In addition to three types of to-infinitives, the participants in this study were also taught other uses of *to*, for instance, *to* as a preposition and *to* as a part of idioms. Hence, it is possible that some of the learners still struggled to determine the meaning of *to* while reading, even though they were explicitly taught its different forms in junior high school. To understand the variety of usages of *to* at the comprehension level, learners need to

meet the target item in different contexts through reading. Repeated encounters may incrementally enhance their grammar knowledge. Therefore, the study selected to-infinitives used as nouns as a target grammatical item.

4.3.2.3 Reading Materials

The present study adopted 10 passages from *Reading for Speed and Fluency* (1 and 2) by Nation and Malarcher (2007) for the experiment (Tables 4-2 and 4-3). The passages in these books are written in expository style. They are made up of five pairs of passages from the five same categories. Each passage consists of approximately 300 running words, followed by five multiple-choice comprehension questions. Each question has three options, testing learners' global understanding rather than an understanding of detailed information. For more detailed text analysis, *RANGE* was used (Nation & Heatley, 2002), the results of which showed that each passage contained high-frequency vocabulary, mostly from the first 1,000-word list (see Tables 4-2 and 4-3). The experimental group read five passages including 40 sentences with to-infinitives used as nouns, whereas the control group read the same number of reading passages, but with only 10 sentences containing to-infinitives used as nouns (see Tables 4-2 and 4-3). The two groups read different passages, but the author chose passages from the same categories that were as similar as possible. On the first day of the treatment, the experimental group read the passage titled "Cats and Dogs," while the control group read "Penguins," both of which were categorized in the same series of animals.

Table 4-2

Results of the Text Analysis for the Experimental Group

Title	1. Cats and Dogs	2. Learning to Play Music	3. Step by Step Learning	4. Marketing	5. Cars in America
	tokens / %	tokens / %	tokens / %	tokens / %	tokens / %
1,000	273 / 91.9	262 / 87.3	288 / 97.0	287 / 96.3	275 / 92.6
2,000	16/ 5.4	19 / 6.3	9 / 3.0	6 / 2.0	7 / 2.4
3,000	1/ 0.3	1 / 0.3	0 / 0.0	1 / 0.3	0 / 0.0
Not in the list	7 / 2.4	18 / 6.0	0 / 0.0	4 / 1.3	15 / 5.1
Word count	297	300	297	298	297
Infinitives	8	7	10	9	6

Note. "Infinitives" indicates the number of infinitives used as nouns.

Table 4-3

Results of the Text Analysis for the Control Group

Title	1. Penguins	2. Everybody Loves Music	3. Learning and Unlearning Fear	4. Making Money	5. History of Flight
	tokens / %	tokens / %	tokens / %	tokens / %	tokens / %
1,000	249 / 81.9	265 / 88.0	261 / 87.9	266 / 91.1	260 / 87.5
2,000	31/ 10.2	4/ 1.3	19 / 6.4	13 / 4.5	20 / 6.7
3,000	2/ 0.7	2/ 0.7	2 / 0.7	7 / 2.4	2 / 0.7
Not in the list	22 / 7.2	30 / 10.0	15 / 5.1	6 / 2.1	15 / 5.1
Word count	304	301	297	292	297
Infinitives	1	2	3	2	2

Note. "Infinitives" indicates the number of infinitives used as nouns.

4.3.3 Procedure

As shown in Table 4-4, the present study was conducted over seven weeks during the first semester. On the first day, the participants took a grammar test as a pre-test. From Week 2 onwards, they were given one passage each week for five weeks, but both groups read different passages, followed by multiple-choice questions on the reading passage (Table 4-4). At Week 7, one week after the last treatment, the participants took the same grammar test as a post-test, but with the questions in a different order.

Table 4-4

Summary of the Treatment Procedure

	Experimental Group	Control Group
Week 1	**Pre-test**	**Pre-test**
Week 2	1. Cats and Dogs	1. Penguins
Week 3	2. Learning to Play Music	2. Everybody Loves Music
Week 4	3. Step by Step Learning	3. Learning and Unlearning Fear
Week 5	4. Marketing	4. Making Money
Week 6	5. Cars in America	5. History of Flight
Week 7	**Post-test**	**Post-test**

4.3.4 Data analysis

The data were analyzed excluding 10 participants who gained perfect scores (20 points) of to-infinitives used as nouns in section 1 and section 2 of the pre-test. A mixed between- and within-subjects repeated measures ANOVA with time and group was performed to compare the average score of the grammar tests of the experimental group and control group (between subjects), as well as the pre- and post-test scores of each group (within subjects). Furthermore, both groups were divided into three groups based on their overall grammar test scores (sections 1 and 2), namely into high-, medium-, and low-proficiency groups. Grouping was done using the following formula: mean score ± 0.5 × standard deviation. A mixed between- and within-subjects repeated measures ANOVA with time and group was also conducted to see in which section the participants showed greater improvement and which group (i.e., high-, medium-, and low-proficiency groups) benefited the most from the current experimental treatment.

4. 4 Results

4.4.1 Research Question 1

Table 4-5 presents the results of the descriptive statistics for the experimental and the control groups, respectively. A mixed between- and within-subjects repeated-measures ANOVA was performed to compare the grammar test results of both sections 1 and 2 (see Tables 4-6 and 4-7). As shown in Table

4-6, for the "notice" section, only the main effect of time was statistically significant with a small effect size (F (1, 155)=4.87, p<.05, eta squared=.03). All others were insignificant (see details in Tables 4-6 and 4-7). The results indicated that the scores of section 1 changed over time between the pre- and post-test within subjects, but not between the experimental and control groups. Since only time for the "notice" section was reported as significant (Table 4-6), a paired t-test was conducted to explore which group of participants had a statistically significant score gain from pre-test to post-test. As shown in Table 4-5, there was a statistically significant difference between the pre- and post-test scores of the experimental group for the "notice" section (t (73)=-2.25, p<.05, d=.29), but not for the control group (t (82)=-.90, p>.05, d=.12). This result indicated that the experimental group benefitted from the treatment only at the "notice" and not at the "notice and manipulate (N&M)" level.

Table 4-5

Descriptive Statistics and t-test Results for the Pre- and Post-Test Scores of the Experimental and Control Groups

	Pre-test (SD)	*Post-test (SD)*	*t*	*df*	*p*	*Cohen's d*
Experimental Group (n=74)						
Notice	7.89 (1.65)	8.36 (1.70)	-2.25	73	0.03	0.29
N&M	7.69 (1.58)	7.69 (1.73)	0.00	73	1.00	1.00
Control Group (n=83)						
Notice	7.66 (1.72)	7.86 (1.95)	-0.90	82	0.37	0.12
N&M	7.66 (1.50)	7.51 (1.80)	1.12	82	0.27	-0.10

Note. *p<.05. For Cohen's d, an effect size of 0.2 to 0.3 is considered a small effect, around 0.5 a medium effect, and 0.8 and above a large effect. N&M indicates "notice and manipulate"

Table 4-6

Summary of the Repeated Measures ANOVA of the Notice Section

Source	*SS*	*df*	*MS*	*F*	*p*	*η2*
Within-subjects effect						
Time	8.67	1	8.67	4.87	0.03	0.03
Time * group	1.54	1	1.54	0.86	0.35	0.01
Error (time)	275.68	155	1.78			
Between-subjects effect						
Group	10.67	1	10.67	2.40	0.12	0.02
Error (time)	689.42	155	4.45			

Table 4-7

Summary of the Repeated Measures ANOVA of the Notice and Manipulate Section

Source	*SS*	*df*	*MS*	*F*	*p*	*η2*
Within-subjects effect						
Time	0.48	1	0.48	0.57	0.45	0.00
Time * group	0.48	1	0.48	0.57	0.45	
Error (time)	130.48	155	0.84			
Between-subjects effect						
Group	0.86	1	0.86	0.19	0.67	0.00
Error (time)	720.52	155	4.65			

4.4.2 Research Question 2

In answer to research question 2, the participants in both groups were divided into three different proficiency groups: high, medium, and low (Table 4-8). The three groups were defined based on the overall grammar test scores (60 points), using the following formula: mean scores ± 0.5 x 1*SD* (Mean scores=47.25, *SD*=5.67 were applied to this formula). The results of a one-way ANOVA for the overall grammar test confirmed that the three proficiency groups in both the experimental and control groups were statistically different (F (2, 71)=141.14, p<.00; F (2, 80)=167.43, p<.00 respectively). A post-hoc Tukey test also showed statistical differences between each pair of the three groups on the grammar test, with a significance level of 5%. These results allowed the subsequent comparison of each group.

Table 4-8

Descriptive Statistics of the Overall Grammar Test Scores for High-, Medium-, and Low-Proficiency Groups

Experimental Group				*Control Group*			
Proficiency	*M (SD)*	*Min*	*Max*	Proficiency	*M (SD)*	*Min*	*Max*
High (*n*=27)	52.62 (2.18)	50	57	High (*n*=33)	52.70 (2.19)	50	58
Medium (*n*=28)	47.29 (1.51)	45	49	Medium (*n*=24)	46.75 (1.48)	45	49
Low (*n*=19)	40.07 (3.71)	31	44	Low (*n*=26)	39.92 (3.70)	30	44

Tables 4-9 and 4-10 show the results of the descriptive statistics of the experimental and the control groups based on the different proficiency groups respectively (Figures 4-1 and 4-2). A mixed between- and within-subjects repeated-measures ANOVA was performed to determine the effects of the treatment (see Tables 4-11 and 4-14). Regarding the "notice" section, Table 4-11 shows that the main effect of time was statistically significant ($F(1, 71)=7.46$, $p<.01$, eta squared=.10). Additionally, as described in Table 4-11, there was a significant interaction between time and level for the "notice" section ($F(2, 71)=3.49$, $p<.04$, eta squared=.09). These results implied that the scores of the "notice" section changed over time between the pre- and post-tests within subjects, but the three groups improved differently.

In the next step, a paired *t*-test was conducted within the experimental group to explore which group's scores improved from pre-test to post-test (Table 4-12). As illustrated in Table 4-12, there was a statistically significant improvement between the pre- and post-test scores of the low-proficiency group for the "notice" section and the effect size (Cohen's d) was medium ($t(18)=-3.06$, $p<.05$, $d=.58$), but not for the high- and medium-proficiency groups ($t(26)=-.14$, $p>.05$, $d=.02$; $t(27)=-.79$, $p>.05$, $d=.13$, respectively). On the other hand, as described in Table 4-13, a paired *t*-test result for the control group confirmed that none of the three proficiency groups improved significantly ($t(32)=-.50$, $p>.05$, $d=.10$; $t(23)=.00$, $p>.05$, $d=.09$; $t(25)=-.89$, $p>.05$, $d=.34$).

Subsequently, the "N&M" section was examined based on proficiency groups. As shown in Table 4-14, the main effect of time for the "N&M" was not statistically significant ($F(2, 71)=.00$, $p>.05$,

eta squared =.00) and no interaction effect was found between time and group (F (2, 71)=.03, p>.05, eta squared =.00). Since all the results were insignificant, a further comparison was not conducted for the "N&M" section.

Table 4-9

Descriptive Statistics of the Experimental Group for the Three Proficiency Groups

Experimental	*Notice*		*N&M*	
Group	*Pre-test (SD)*	*Post-test (SD)*	*Pre-test (SD)*	*Post-test (SD)*
High (*n*=27)	8.93 (1.04)	8.96 (1.16)	8.89 (0.89)	8.85 (0.94)
Medium (*n*=28)	8.07 (1.33)	8.36 (1.81)	7.82 (0.98)	7.82 (1.44)
Low (*n*=19)	6.16 (1.42)	7.53 (1.90)	5.79 (1.27)	5.84 (1.42)

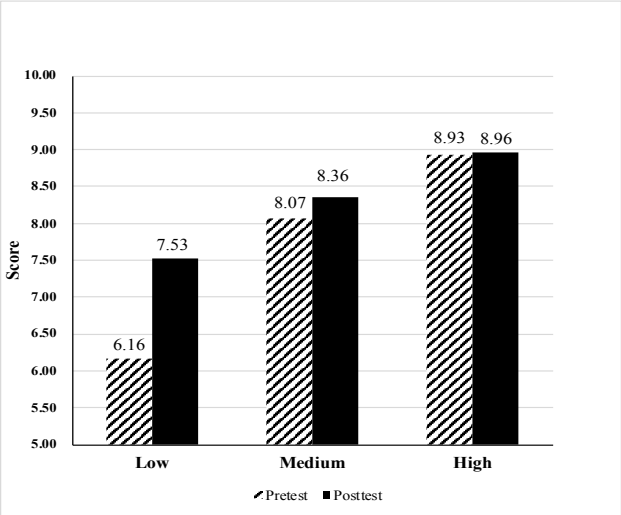

Figure 4-1. Comparison of the experimental group on the "notice" section.

Table 4-10

Descriptive Statistics of the Control Group for the Three Proficiency Groups

Control	*Notice*		*N&M*	
Group	*Pre-test (SD)*	*Post-test (SD)*	*Pre-test (SD)*	*Post-test (SD)*
High (*n*=33)	8.61 (0.98)	8.76 (1.74)	8.76 (0.85)	8.94 (1.13)
Medium (*n*=24)	8.08 (1.15)	8.08 (1.66)	7.42 (1.22)	7.08 (1.41)
Low (*n*=26)	6.08 (1.75)	6.50 (1.65)	6.50 (1.37)	6.08 (1.38)

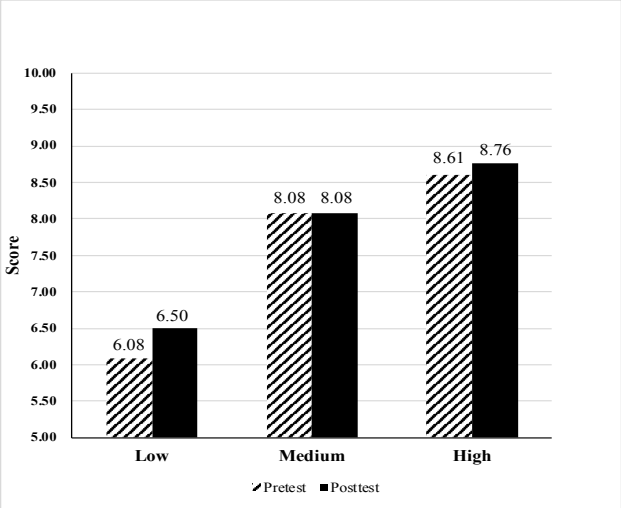

Figure 4-2. Comparison of the control group on the "notice" section.

Table 4-11

Summary of the Repeated Measures ANOVA of the Notice Section for High-, Medium-, and Low-Proficiency Groups of the Experimental Group

Source	*SS*	*df*	*MS*	*F*	*p*	*η2*
Within-subjects effect						
Time	11.41	1	11.41	7.46	0.01	0.10
Time * level	10.67	2	5.34	3.49	0.04	0.09
Error (time)	108.55	71	1.53			
Between-subjects effect						
Level	99.25	2	49.62	18.37	0.00	0.34
Error (time)	191.82	71	2.70			

Note. $*p < .05$.

Table 4-12

Notice Section T-Test Results for the Pre- and Post-Test Scores of the Experimental Group

Group	*Pre-test*	*Post-test*	*t*	*df*	*p*	*Cohen's d*
High (*n*=27)	8.93 (1.04)	8.96 (1.16)	-.14	26	0.89	.02
Medium (*n*=28)	8.07 (1.33)	8.36 (1.81)	-.79	27	0.44	.13
Low (*n*=19)	6.16 (1.42)	7.53 (1.90)	-3.06	18	0.01	.58

Note. $*p < .05$. For Cohen's *d*, an effect size of 0.2 to 0.3 is considered a small effect, around 0.5 a medium effect, and 0.8 and above a large effect.

Table 4-13

Notice Section T-Test Results for the Pre- and Post-Test Scores of the Control Group

Group	*Pre-test*	*Post-test*	*t*	*df*	*p*	*Cohen's d*
High (*n*=33)	8.61 (0.98)	8.76 (1.74)	-.50	32	.62	.10
Medium (*n*=24)	8.08 (1.15)	8.08 (1.66)	.00	23	1.00	.00
Low (*n*=26)	6.08 (1.75)	6.50 (1.65)	-.89	25	.38	.25

Note. For Cohen's *d*, an effect size of 0.2 to 0.3 is considered a small effect, around 0.5 a medium effect, and 0.8 and above a large effect.

Table 4-14

Summary of the Repeated Measures ANOVA of the N&M Section for High-, Medium-, and Low-Proficiency Groups of the Control Group

Source	*SS*	*df*	*MS*	*F*	*Sig.*	*η2*
Within-subjects effect						
Time	0.00	1	0.00	0.00	0.97	0.00
Time * level	0.05	2	0.02	0.03	0.98	0.00
Error (time)	63.96	71	0.90			
Between-subjects effect						
Level	209.69	2	104.84	58.15	0.00	0.62
Error (time)	128.02	71	1.80			

4. 5 Discussion

4.5.1 Research Question 1: Will learners be able to learn a specific grammatical feature incidentally by reading?

Research question 1 asked whether learners would be able to learn grammatical knowledge by exposure to simple English. The findings of this study partially supported the view that learners can learn a specific grammatical item incidentally by reading, which positively contributes to the development of their grammatical knowledge. In the "notice" section, the scores of the experimental group increased, whereas no improvement was found for the "notice and manipulate (N&M)" level, which indicates that the improvement was limited to the "notice" level. The learning gains observed in the "notice" section for the experimental group likely resulted from reading passages that included repeated encounters of the target grammar item. Since there was no difference between the two groups of participants'

instruction and materials during the whole study, except for the five reading passages used in the treatment, the result was assumed to be closely related to the effects of the five-week study.

The findings described above are consistent with the results of previous research on incidental vocabulary learning through reading in terms of the fact that the frequency of exposure affects learners' vocabulary knowledge (Brown, Waring, & Donkaewbua, 2008; Pigada & Schmitt, 2006; Rott, 1999; Waring & Takaki, 2003). The results of this study indicate that repeated encounters with the same target grammar gradually enhanced learners' grammatical knowledge. In the present study, the participants in the experimental group encountered 40 sentences of to-infinitives used as nouns scattered throughout the reading passages, whereas the participants in the control group received only 10 sentences containing to-infinitives used as nouns.

The encounter rate, that is, how frequently the participants encountered the target grammar in the reading passages, was also calculated. The parts constituting, *to + the base form of a verb* (e.g., to go, to study, and to sing), which is a set of to-infinitives used as nouns, were counted as one word in the reading passages. The participants in the experimental group encountered one to-infinitive used as a noun once every 37 running words, which can be assumed to have helped them notice the target grammatical form, ultimately improving their grammatical knowledge. On the other hand, the participants in the control group encountered a to-infinitive used as a noun only once every 149 running words. We can surmise that these encounters were insufficient for the learners to notice and learn the grammatical item incidentally. From this perspective, repeated encounters through reading passages are effective in helping learners notice a target grammar rule.

From this perspective, it seems that more repetitions are needed to acquire target grammatical items through reading passages. In other words, incidental grammar acquisition does not occur with ease compared to incidental vocabulary acquisition. It is assumed that learners can also reinforce grammar items that are explicitly taught, but not completely acquire them incidentally by reading. According to previous research on incidental vocabulary acquisition, frequency of exposure affects learners' vocabulary acquisition. The number of required encounters differs in the literature from six to 20 times (Rott, 1999; Waring & Takaki, 2003; Webb, 2007), yet learners can successfully acquire the meanings of new words incidentally by reading. Regarding grammar acquisition, however, the findings of the

present study revealed that 10 encounters of the same grammatical form, that is, once every 149 running words, did not affect learners' grammatical knowledge. On the other hand, 40 encounters, that is, once every 37 running words, enabled learners to notice the grammatical item and learned more about it incrementally, but not at the notice and manipulate level. Considering that the grammar test scores for the control group did not improve after the intervention of 10 encounters even at the "notice" level, it could also be said that learning grammatical rules incidentally through reading is more challenging than learning vocabulary. In addition, the number of encounters is one of the biggest differences between incidental vocabulary acquisition and incidental grammar acquisition.

There are several reasons why incidental grammar learning is more difficult than incidental vocabulary learning. As explained in Section *3.2.2*, the learners were taught many usages of *to* in junior high school. For example, in *I go to school*, *to* is categorized as a preposition, and learners were instructed to place a noun after *to*. Another example is the sentence *he looks forward to seeing her*, which students usually learn as an example of an English idiom. Moreover, the learners had also been taught to-infinitives used as adjectives and adverbs, in addition to to-infinitives used as nouns. Such wide variety of usages of *to* may confuse learners when noticing and constructing the forms.

The present study revealed that the improvement was limited to the "notice" section. Both groups' pre- and post-test scores of the "notice and manipulate (N&M)" section did not increase significantly. One explanation for this may be that the participants had enough knowledge of the target grammar item to enjoy reading the passages as they already scored over 70 percent on the pre-test of the "N&M" section. Another possibility is that it may be difficult for learners to enhance their grammar knowledge at the "N&M" level by reading incidentally. In other words, it may not be easy to learn grammar rules accurately by reading incidentally. If so, it could be argued that different approaches other than repetitions—for example, an explicit explanation, an output activity, or an interaction—would be necessary to help them acquire the use of the target grammar item at the "N&M" level. In the next section, the analysis will involve dividing the participants into different proficiency groups. This might reveal more clear implications for this study.

4.5.2 Research Question 2: Does language proficiency affect the acquisition of a target grammatical form?

For research question 2, the learning gains between pre- and post-test scores of three proficiency groups were investigated to see which group of participants improved their grammatical knowledge the most. There was a statistically significant difference between the pre- and post-test scores of the experimental group's low-proficiency group for the "notice" section, but not for the high- and medium-proficiency groups. Moreover, no improvements were found between the pre-and post-test scores for the "N&M" section for all three proficiency groups, which implies that improvements were limited to the "notice" level.

The findings of the study indicate that a low-proficiency group of learners could improve their ambiguous grammar knowledge by reading within their linguistic abilities. Since learning gains between the pre-and post-test scores of section 1 were found in the low-proficiency group, it can be said that 40 encounters gave them the opportunity to pay attention to the grammatical form and improve their grammatical knowledge of to-infinitives used as nouns. In this study, they read approximately 1,500 words in five reading passages, but they unconsciously accumulated the knowledge of to-infinitives used as nouns by meeting them in a variety of contexts. Their partially-learned grammar knowledge improved, but was limited to the "notice" level. In the current study, we focused on only a single grammar item, to-infinitives used as nouns, for the sake of the experiment. Therefore, it is difficult to generalize the findings from this study to other grammar items. The encounter rates to be noticed by learners may be different depending on the complexity of grammatical items. Nevertheless, it could be said that continuous reading practices within their linguistic abilities may likewise help learners notice other ambiguous grammar items scattered throughout reading passages. This, in turn, contributes positively and incrementally to their partially-acquired grammar knowledge. Aka (2019) also reported the improvement of the linguistic ability by a low-proficiency group, showing that the learning gains of that group was higher than the other high- and medium-proficiency groups. This was in line with the present study, implying that the repeated encounters within their linguistic ability facilitate the acquisition of learners' partially-learned knowledge even though their proficiency level is low.

As for the "N&M" section, however, none of the three proficiency groups' knowledge increased statistically between the pre-and post-tests. From this perspective, it could be assumed that the learners may not be able to enhance their grammar knowledge with ease at the "N&M" level through repeated encounters by reading. As mentioned in Section *5.1*, increasing constant exposure to a target grammar item through reading is important, but approaches other than repetitions, such as an output activity or an interaction, would be more effective in enhancing their more accurate grammar knowledge. This was also supported by Yamashita (2008) that reading within their linguistic ability may not be as effective as explicit instructions to improve learners' linguistic knowledge.

In Japan, reading fluency activities are usually neglected, as high school teachers usually follow the government course guidelines over limited hours of English classes. While learners in this study received comprehensible input only once per week, it still reinforced learners' grammar knowledge, especially those in the low-proficiency group. It is implicitly understood that learning new grammar items and new vocabulary explicitly is important, but learners also need to reinforce what they have learned through comprehensible input.

4.6 Study Limitations

The findings of this study revealed that repeated encounters of the target grammar item in a short period of time affected learners' grammatical knowledge. They had the chance to read a given passage only once a week, but continuous reading practices within their linguistic ability gradually reinforce understanding of partially-learned grammatical items. However, this study also has some limitations. First, the finding of the study showed that 40 encounters of the target form affected learners' grammatical knowledge at the notice level, but testing of other grammar items and with different proficiency groups may result in different outcomes. There are more complex grammar items than to-infinitives used as nouns, and further study should be conducted in order to reveal more accurate information about the development of grammar acquisition and as well as how many encounters are necessary for acquisition of other grammar items.

Another limitation is that a delayed posttest was not given to the participants due to educational and logistical reasons. The study was conducted in a high school EFL classroom, therefore, all the learners were expected to receive same instruction. In the study treatment, the participants in the experimental group received five reading passages with 40 to-infinitives used as nouns, whereas the participants in the control group received the same amount of reading passages with only 10 to-infinitives used as nouns. However, after the experiment, both groups of learners read the materials they did not read during the treatment. This means that the experimental group participants also read the five other reading passages that the control group had read. Therefore, it was impossible to conduct a delayed-posttest in this experiment.

Lastly, the present study differs from other ER research in terms of the learners' autonomy to choose ER materials according to their interests, as the author assigned the learners' reading materials to ensure adequate exposure to the target grammar item. Moreover, the number of running words that learners encountered through the reading passages was very limited, considering that the study was conducted in an ER class. The participants only read approximately 1,500 words in five reading passages in total. The learner's autonomy and reading as much as possible are important principles for implementing ER (Day & Bamford, 2002). These principles might have been followed, as the experiment was conducted in an ER class. However, the purpose of this study is to obtain an alternative way of using ER in which EFL teachers can implement in their regular classroom. In order to find such a method, the study examined whether learners would be able to improve their grammatical knowledge effectively through repeated encounters with the same grammatical item in the controlled versions of reading passages. As a result, the study revealed how well the learners could acquire one grammatical item through this process. For these reasons, it was impossible to follow the ER principles.

Future research should further examine incidental grammar acquisition by revising the experimental design, for example, by increasing the number of test items, creating a test that is more appropriate for the participants, or employing another grammar item. Discovering more about the mechanisms of ER by focusing on the acquisition of another grammar item would make the results of this study more generalizable regarding the effects of grammar acquisition through ER.

4.7 Conclusion

The results of the present study demonstrate that the development of learners' grammatical knowledge is enhanced by repeated encounters with the same target grammar at the notice level. The findings of this study revealed that repeated encounters of a target grammar item through reading over a short period of time improved learners' grammatical knowledge. They read one passage once per week, but continuous reading practices within their linguistic abilities gradually reinforced understanding of the partially-learned grammatical item. The findings also showed that incidental grammar learning is more complicated than incidental vocabulary learning. The study revealed that learning a grammatical item consists not only of learning a grammar rule, but also understanding its usage through a variety of sentences, including the target grammar item. From this perspective, the present study contributes positively to an area hitherto unexplored by the majority of the literature on ER in the EFL context.

English teachers in Japan might recognize that constant exposure to English input is necessary for students to enhance their English skills, but they are restricted in that they must follow the government course guidelines in their English classes. However, as this study implies, reading one short passage once per week within learners' linguistic abilities will still reinforce the grammar item they have learned in their classroom. Reading the same, teacher-provided materials does not follow the principles of ER, but continuously doing so would enhance learners' English ability over time. During the process, some learners might notice their ability to read by themselves, which may motivate them little by little, to read more extensively. While this study focused on a particular grammar item, it is possible that other grammar items scattered throughout reading passages may also be reinforced by reading. From this view point, the present study could yield an alternative method for teaching ER in EFL contexts where English class hours and learning contents are restricted and controlled. Considering that there have been few studies conducted so far that cover incidental grammatical acquisition through ER, the present study still provides beneficial information for language teachers.

Chapter 5

Do Different Types of Text Affect the Reading Comprehension of *Kosen* Students?

5.1 Introduction

Reading fluency is one of the most important skills for English as a Foreign Language (EFL) learners to become independent readers. To improve learners' reading fluency skills, second language (L2) reading researchers have investigated the difficulties learners face during reading, especially by focusing on low-level processing skills (Yamashita, 2008). In particular, researchers have introduced approaches for developing learners' reading fluency skills, such as repeated readings (Chang & Millet, 2013), extensive reading (Elley & Mangubhai, 1983), timed reading (Serrano & Huang, 2018), narrow reading (Chang & Millet, 2017), and reading while listening (Brown, Waring, & Donkaewbua, 2008). To improve EFL learners' reading comprehension, researchers also stress the need for constant reading practice within their linguistic abilities in a reading instruction (Yamashita, 2015). These approaches help learners develop their reading abilities, enhance their motivations toward reading, and give them confidence how much they can read within their linguistic abilities (Nuttall, 2005).

These above approaches have been reported to be effective in improving EFL learners' reading fluency. However, teachers and educators must also know in depth the characteristics of the texts they use in the classroom. Analyzing the nature of texts as well as their relationship with learners' reading comprehension levels can reveal more about the challenges that learners face during reading. In this sense, different genres of reading materials can affect EFL learners' reading comprehension. Although this line of research has been widely investigated in first language (L1) contexts, there is a scarcity of studies on the influence of different genres of texts on reading comprehension in L2 reading contexts (Shokouhi & Maniati, 2009).

The present study investigates whether different types of texts, expository and narrative texts, affect high school EFL learners' reading comprehension. This study conducts text analysis to explore the factors that prevent them from thoroughly understanding the passages. According to the curriculum guidelines (2018), high school students in Japan need to get accustomed to a wide range of reading texts. Therefore, language teachers must know the characteristics of reading materials, as this information may be useful when teaching students in an L2 classroom: for example, what reading materials learners can read well as opposed to the materials they struggle to read. As mentioned above, there are few studies that investigated the relationship between learners' reading comprehension and types of texts compared to L1 reading research. An investigation of relationship between learners' reading comprehension and text types may contribute to the L2 reading research.

5.2 Literature Review

As mentioned in the introduction, there is a scarcity of L2 reading research on whether different types of reading affect learners' reading comprehension; therefore, we refer to L1 reading research. In L1 contexts, research on the influence of text types on reading comprehension has focused on the children's reading development, especially third- and fourth- grade learners (Best, Floyd, & McNamara, 2004; McNamara, Ozuru, & Floyd, 2011). These studies have aimed to better understand the so-called *fourth-grade slump*. According to Best et al. (2004), *the fourth-grade slump* is a transitional period in which the genres of reading materials change from narrative to expository texts. In general, children up to the third grade mostly read narrative texts at school, while a shift to expository texts occurs when they are in the fourth grade. Several studies have shown that children face reading comprehension challenges in this period, particularly with regard to the comprehension of expository texts (Arya, Hiebert, & Pearson, 2011; Best, Floyd, & McNamara, 2008; Gardner, 2004). This aspect has led researchers to investigate the difficulties that young learners face while reading expository texts. Accordingly, these studies have examined the characteristics of different genres of texts and their relationship with learners' reading comprehension. Such an analysis has proven to help educators and language learners overcome *the fourth-grade slump* effectively.

Best, Floyd, & McNamara (2008), for example, explored the factors, reading decoding skills, and world knowledge that influence third graders' reading comprehension of both narrative and expository texts. Their findings showed that third-grade children scored higher in the narrative texts than in expository texts, regardless of their background knowledge. Furthermore, learners' reading decoding skill is a significant predictor for narrative texts, whereas world knowledge and reading decoding skills together are predictors for the expository texts (with world knowledge being a stronger predictor for expository texts). From this perspective, children with less prior knowledge are able to comprehend narrative texts, but struggle to comprehend expository texts because of the lack of prior knowledge of unfamiliar information and fewer ideas related to their personal experiences. In other words, the learners with less prior knowledge face difficulties in generating appropriate inferences when reading expository materials. Therefore, their linguistic ability alone cannot enable them to comprehend expository materials.

In addition to the lack of world knowledge, learners face comprehension challenges in understanding expository materials because of other factors, such as the number of propositions embedded in the texts, their background knowledge, and the words used in the texts. These factors integrate each other and contribute to learners' difficulty in reading comprehension. Gardner (2004) analyzed the words used in 28 narrative texts and 28 expository texts. The findings showed that the number of general high-frequency words in the narrative texts is greater than in the expository texts. On the other hand, the number of academic high-frequency words and unique words in the expository texts is greater than in the narrative texts. These findings indicate that narrative texts contain a higher proportion of high-frequency words, whereas expository ones contain higher proportion of specialized vocabulary. The words used in texts also affect learners' reading comprehension. Furthermore, the number of word types in expository texts is greater than in narrative texts. This also implies that the same words are used repeatedly in narrative texts, which may facilitate learners' reading comprehension.

In the early stages of the acquisition of reading skills, novice learners need teachers' support to become independent readers. From the extensive reading (ER) perspective, Nation and Waring (2020) point out the importance of whole-class reading instruction, in which a teacher and other students read

the same texts together before learners start self-selected reading. Such preparation benefit learners, as it enables them to build a foundation knowledge of how texts are constructed. Instructing language learners how to read leads them to not only a single genre of text, but also to try a variety of genres of reading materials later. Although the purpose of reading differs across learners, this knowledge can enhance their reading speed and comprehension.

In comparison to research in the L1 context, however, very few studies have examined whether different text types, in particular expository and narrative texts, affect EFL learners' reading comprehension. L1 acquisition research commonly reports that expository texts are more difficult to read than narrative texts, since the former contains more academic and specialized vocabulary (Gardner, 2004). Furthermore, expository texts have more embedded prepositions, which makes it difficult for children to comprehend them (McNamara, Ozuru, & Floyd, 2011). In addition, since children are in the transition from narrative to expository texts, therefore, the lack of knowledge in the latter affects their reading comprehension.

As for L1 acquisition, the above findings have been reported through the investigation of the children's reading comprehension process. Learners' background knowledge increases as their age rises (Best, Floyd, & McNamara, 2004; Gardner, 2004; Grasser, McNamara, & Louwerse, 2004). From this perspective, EFL learners over the age of elementary school students in L1 settings are assumed to have more information and concepts related to expository texts. Their accumulated personal experiences can assist them in reading expository texts. This means that there is a possibility that they can use their background knowledge in reading expository texts. As research on this aspect is limited in EFL settings, it remains unclear whether students also struggle to comprehend expository texts, as revealed in L1 reading research findings.

Based on the findings of previous studies, this study investigates whether the reading comprehension levels of EFL high school learners are different depending on the genres of reading materials. This study also explores the relationship between learners' reading comprehension levels and the characteristics of different types of texts. In this study, reading comprehension test scores are compared between different genres of texts by dividing the participants. Looking at the reading

comprehension with different proficiency groups will reveal descriptions of how learners' reading comprehension skills develop. Answering these questions is a main purpose of this study.

In EFL settings, English teachers provide learners with a wide range of reading topics in both narrative and expository texts. Some of them may need to get more familiar with expository materials to prepare for the college or university in the future. Therefore, EFL learners also need to overcome the difficulties they face while reading. Identifying such difficulties in texts can help learners overcome challenges in reading in a foreign language and enhance their reading skills. Therefore, this study focuses on the nature of text analysis and its relationship with EFL learners' reading comprehension. In particular, this study addresses the following research questions:

RQ1: Do different types of texts affect EFL learners' reading comprehension?
RQ2: Does language proficiency affect reading comprehension of different types of texts?

5.3 Materials and Method

5.3.1 Participants

The participants in this study were 86 *Kosen* students aged 15 to 16 years. A *Kosen* is a Japanese institution specializing in early engineering education with a five-year educational program that is equivalent to a combination of high school and junior college. All participants in this study were first-year students at a *Kosen*, which is equivalent to high school freshmen. These types of students are not motivated to learn English (Nishizawa, Yoshioka, & Itoh, 2010) as they are not required to take university entrance exams as other high school students. In general, Japanese high school learners' motivation to learn English is mostly to pass entrance examinations (Takase, 2007; Koizumi & Matsuo, 1993). This can be an additional disincentive for them to realize the importance of learning English when they are in their first year at *Kosen*. However, the *Kosen* learners need to improve their reading skills, particularly in expository texts. As the grade goes up, so does the number of specialized subjects where these learners are assigned to read expository materials both in Japanese and English. For this

reason, these learners need to prepare themselves to become familiar with expository reading materials for future training.

5.3.2 Experimental Materials

5.3.2.1 Vocabulary Levels Test

The New Vocabulary Levels Test (NVLT) developed by McLean and Kramer (2015) was administered to all participants (Appendix C). The test consists of five sections with 24 items in each level. This study chose NVLT for several reasons. First, the test contains the first 1,000-word frequency levels and is therefore considerably comprehensive. In addition, bilingual versions of the test are available for Japanese EFL leaners. Considering that the participants were still novice learners, it was better that they were able to choose the answers written in Japanese. Therefore, NVLT was considered appropriate for the participants in this study.

The results of NVLT showed that the participants scored a total of 47.92 / 72 (*SD*=6.19), with 21.17 / 24 (*SD* = 1.85), 14.98 / 24 (*SD* = 3.30), and 11.17 / 24 (*SD* = 3.06) at levels 1,000, 2,000, and 3,000, respectively (Table 5-1). The receptive vocabulary knowledge was 88.20%, 62.42%, and 46.54% at levels 1,000, 2,000, and 3,000, respectively. The total score calculated as the learners' vocabulary size was 1995.26 (*SD* = 257.76).

Table 5-1
Participants' NVLT Results from Levels 1,000 to 3,000

	M (SD)	*Min*	*Max*
1,000	21.17 (1.85)	12	24
2,000	14.98 (3.30)	8	22
3,000	11.77 (3.06)	4	18
Total	47.92 (6.19)	33	63
Vocabulary size	1995.26 (257.76)	1375.11	2625.21

5.3.2.2 Reading Materials

This study used four passages as reading materials: two narrative texts and two expository texts (Appendix D and Table 5-2). The narrative texts, *Father's Day Present* (*Father*) and *A Hero above New York* (*Hero*), were chosen from *True Stories*, *Enjoy Simple English Readers* by Takayama and Stewart (2015). Each text consists of approximately 494 words (489 and 499 respectively), followed by five multiple-choice questions. Each question item has four options, testing learners' global understanding rather than detailed information of the passages. The question items were created by the author. Two expository texts, *The History of Telephones* (*Phone*) and *The Secrets to a Long Life (Life)*, were adopted from *Reading for Speed and Fluency 2* by Nation and Malarcher (2007). Each text consists of approximately 300 words (300 and 301 respectively), followed by five multiple-choice comprehension questions. Each question has four options: three options were originally from the textbook and one additional distractor was made by author of this paper to reduce the chance of guessing correctly and maintain a balance between the texts. These questions test learners' global understanding rather than understanding detailed information.

The reliabilities of the narrative texts (10 items) and the expository texts (10 items) were calculated using SPSS. The Cronbach alpha reliability coefficients for the narrative texts and the expository texts were 0.58 and 0.44, respectively. These mediocre figures were probably due to the small number of test items and the type of questions.

For a more detailed text analysis, the Range program was used (Nation & Heatley, 2002), the results of which showed that each passage contained high-frequency vocabulary, mostly from the first 1,000 words list (Table 5-2). As shown in Table 5-2, approximately 96% and 85% of the words used in the expository and the narrative texts, respectively, are from the first 1,000 words list. From this viewpoint, reading expository texts appears to be easier than reading narrative texts. However, "Not in the list" section in Table 5-2 reveals that the percentages in the narrative texts are higher than the expository texts. "Not in the list" section includes mainly proper nouns. For example, the passage *Father*, has several proper nouns, such as Braun, Russ, and Watkins. *Hero* also includes several proper nouns, such as Hudson, Sullenberger, Chesleyand Sully. The repeated use of the same proper nouns in

the narrative texts can reduce learners' cognitive burdens in word processing during reading. If the words in "Not in the list" section are included, the coverage rate increases to over 90%, becoming close to that of the expository texts. Given that the participants' vocabulary knowledge is approximately at 2,000-word level, all the reading materials chosen for this study were appropriate for their levels.

Table 5-2
Text Analysis for the Four Reading Passages Used to Measure Learners' Reading Comprehension

	Narrative texts		Expository texts	
Title	1. *Father*	2. *Hero*	3. *Phone*	4. *Life*
	token (%)	token (%)	token (%)	token (%)
1,000	416 (85.07)	429 (85.97)	288 (96.00)	289 (96.01)
2,000	31 (6.34)	31 (6.21)	11 (3.67)	8 (2.66)
3,000	5 (1.02)	16 (3.21)	0 (0.00)	1 (0.33)
Not in the list	37 (7.57)	23 (4.61)	1 (0.33)	3 (1.00)
Total	489	499	300	301

5.3.3 Procedure

The reading comprehension tests were administered to all participants, who read the narrative and expository texts. They took NVLT in the first week, read the two narrative texts in the second week, and read the two expository texts in the third week (Table 5-3). When they finished reading one passage, they turned the page and answered five multiple-choice questions on the back of the paper. They were instructed not to look at what they had read while answering the questions. Thus, they answered all the questions without referring to the reading passages.

Table 5-3

Summary of the Treatment Procedure

Week	Procedure
Week 1	**New Vocabulary Levels Test**
Week 2	1. *Father* (N)
	2. *Hero* (N)
Week 3	3. *Phone* (E)
	4. *Life* (E)

Note. (N) = narrative text; (E) = expository text.

5.4 Results

5.4.1 Research Question 1

RQ1: Do different types of texts affect EFL learners' reading comprehension?

All the participants read the two narrative and the two expository texts. The reading comprehension scores in the two types of texts were compared using descriptive statistics to verify whether different types of texts affect EFL learners' reading comprehension. Table 5-4 shows the descriptive statistics for the four reading passages, including the means, standard deviations (*SD*), and minimum and maximum scores. The mean scores of *Father* and *Hero* categorized as narrative texts, were 4.41 (*SD*=0.79) and 4.38 (*SD*=1.01), respectively. On the other hand, the mean scores of *Phone* and *Life, which are* expository texts, were 2.57 (*SD*=1.12) and 2.78 (*SD*=1.18), respectively. As shown in Table 5-5, the participants scored 3.45 points higher on the narrative texts than the expository texts in average scores.

Table 5-4
Descriptive Statistics for Four Reading Comprehension Tests

Genre	*M (SD)*	*Min*	*Max*
Narrative texts			
1. *Father*	4.41 (0.79)	2	5
2. Hero	4.38 (1.01)	0	5
Expository texts			
3. *Phone*	2.57 (1.12)	0	5
4. *Life*	2.78 (1.18)	0	5

In the next step, a paired *t*-test was performed to compare both reading comprehension test scores of narrative and expository texts (Table 5-5). As shown in Table 5-5, there was a statistically significant difference between the reading comprehension test scores of the narratives and expositories ($t(85)=17.12$, $p<.001$, $d=2.08$), which indicates that learners comprehend better at narrative texts than expository texts.

Table 5-5
Results of Reading Comprehension Tests

	M (SD)	*Min*	*Max*	*t* (85)	*p*	*Cohen's d*
Narratives	8.80 (1.45)	3	10	17.12	.001	2.08
Expositories	5.35 (1.81)	2	9	-	-	-

Note. For *Cohen's d*, an effect size of 0.2 to 0.3 is considered a small effect, around 0.5 a medium effect, and 0.8 and above a large effect.

In addition to comparing the reading comprehension scores, distributions of reading comprehension scores in the narrative and expository texts were examined to verify how many learners achieved 70% of reading comprehension level (Table 5-6 and Figure 5-1). Nation (2005) suggests readers should score between 70% and 80% when developing reading fluency (p. 33). Hence, the study analyzed the distributions based on the criterion of 70% comprehension. Table 5-6 and Figure 5-1 show that 93.02% of the participants ($n=80$) scored over 7 out of 10 points in the narrative texts, whereas only 27.90% of the participants ($n=24$) achieved over 7 points in the expository texts. In other words, 72.10% of the participants struggled to understand the expository texts during reading.

Table 5-6

Distributions of the Reading Comprehension Test Scores

	Narratives	*Expositories*
Range	*Score (%)*	*Score (%)*
0	0 (0.00)	0 (0.00)
1-2	0 (0.00)	6 (6.98)
3-4	2 (2.33)	20 (23.26)
5-6	4 (4.65)	36 (41.86)
7-8	21 (24.42)	23 (26.74)
9-10	59 (68.60)	1 (1.16)
Total	86 (100.00)	86 (100.00)

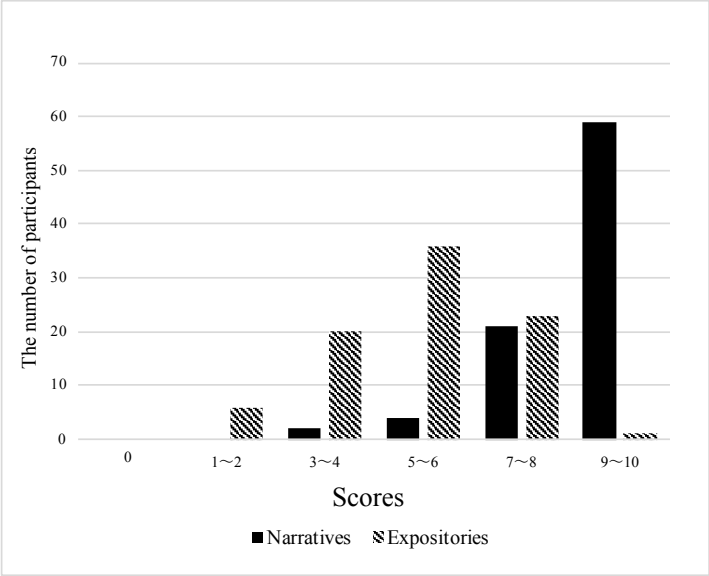

Figure 5-1. Distributions of the reading comprehension test scores.

5.4.2 Research Question 2

RQ2: Does language proficiency affect reading comprehension of different types of texts?

Regarding RQ2, the participants were divided into three groups, according to proficiency level: high-, medium- and, low-proficiency groups (Table 5-7). The grouping was done based on the vocabulary size estimated by NVLT. The following formula was used to assess learners' vocabulary size: mean scores ± 0.5 x 1*SD* (Mean scores=1995.26, *SD*=257.76 were applied to this formula). A one-way ANOVA for NVLT was performed to investigate whether the three groups were statistically different. The results of

the ANOVA confirmed that there were significant differences between the groups (F (2, 83)=190.12, p < .00). A post-hoc Tukey test also showed statistical differences between each pair within the three groups in NVLT, with a significance level of 5%. These results allowed the subsequent comparison of the groups.

Table 5-7
The Results of the NVLT levels 1,000 to 3,000 for the High-, Medium-, and Low-Proficiency Groups

	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
	1,000	2,000	3,000	Level
High (n=22)	22.40 (1.33)	18.41 (1.89)	14.68 (2.06)	2312.69 (118.39)
Medium (n=35)	21.14 (1.42)	15.46 (2.13)	12.26 (1.90)	2035.88 (55.49)
Low (n=29)	20.28 (2.14)	11.79 (2.18)	8.97 (2.38)	1709.91(147.95)

Table 5-8 and Figure 5-2 present the reading comprehension test scores in the narrative and expository texts of the three proficiency groups. A mixed between- and within-subjects repeated-measures ANOVA was performed to explore whether learners' proficiency affects their reading comprehension (Table 5-9). Table 5-9 shows that the main effect of genres was statistically significant (F(2, 83)= 287.12, p<.00). However, there was no statistically significant interaction between genres and proficiency levels (F(2, 83)= 2.52, p>.09). Regardless of their vocabulary levels, all learners comprehended the narrative texts better than the expository texts. There was no statistically significant difference between groups; however, the learners' reading scores in the expository texts gradually increased as their proficiency rose from a lower to a high-proficiency group.

Table 5-8
Reading Comprehension Test Scores for High-, Medium-, and Low-Proficiency Groups

	Narrative texts			*Expository texts*		
	M (SD)	*Min*	*Max*	*M (SD)*	*Min*	*Max*
High (n=22)	9.05 (1.09)	7	10	6.14 (1.64)	3	9
Medium (n=35)	8.57 (1.54)	4	10	5.26 (1.74)	2	8
Low (n=29)	8.90 (1.57)	3	10	4.86 (1.87)	2	8

Table 5-9

Summary of the Repeated Measures ANOVA of the Narratives and Expository Texts for the High-, Medium-, and Low-Proficiency Groups

Source	*SS*	*df*	*MS*	*F*	*p*
Within-subjects effect					
Genres	484.86	1	484.86	287.12	<.001
Genres * level	8.49	2	4.25	2.52	.09
Error (time)	140.16	83	1.69		
Between-subjects effect					
Level	15.74	2	7.87	2.25	.11
Error (time)	290.78	83	3.50		

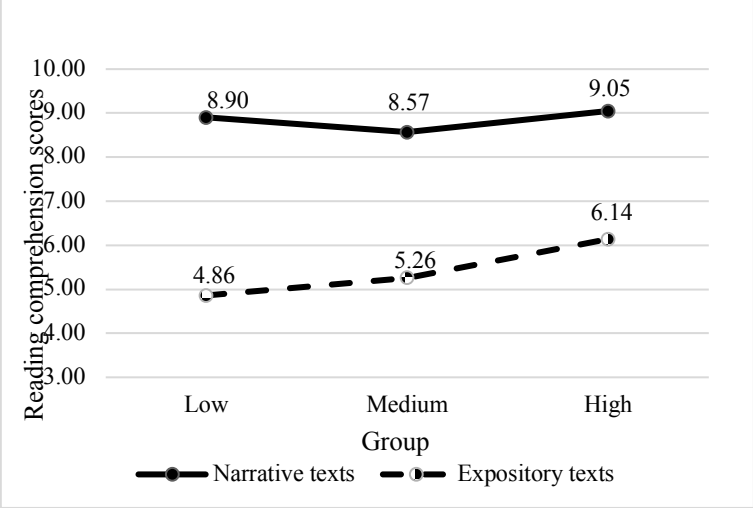

Figure 5-2. Reading comprehension test scores for the high-, medium-, and low-proficiency groups.

5.5 Discussion

5.5.1 Research Question 1

RQ1: Do different types of texts affect EFL learners' reading comprehension?

This study investigated whether different types of texts affect learners' reading comprehension. The findings supported previous studies conducted in the L1 context, which pointed out that learners face comprehension challenges when reading expository texts. Prior to the experiment, the words present in the four selected reading passages were examined using the Range program. The results of the analysis

showed that all the reading materials consist mainly of words from the first 1,000 words list. Therefore, these materials were considered identical in terms of vocabulary levels. However, since the word levels in the reading materials cannot explain the difficulties the learners faced, an additional analysis was conducted focusing on the relationship between text analysis and learners' reading comprehension.

To further analyze the characteristics of the texts and to explore what makes expository texts more challenging than narrative texts, *Coh-Metrix* was used to explore which types of indices are more likely to depict learners' reading comprehension. Developed by Graesser, McNamara, and Louwerse, *Coh-Metrix* is a text assessment tool available *at* http://www.cohmetrix.com. This assessment tool scales text readability from a wide range of dimensions. It comprises 106 indices categorized into 11 groups, such as descriptive, text easability principal component scores, referential cohesion, connectives, situation model and so on. While some indices in *Coh-Metrix* are measured based solely on the characteristics of the explicit text, other indices are based on factors such as vocabulary overlap, lexical diversity, sentence syntax similarity (Graesser, McNamara, & Louwerse, 2004). Therefore, the results produced by *Coh-Metrix* varied depending on what variables are included in the indices.

The indices that describe the relative difficulty of the expository materials were employed as target indices, since the findings of this study show that reading comprehension score in the expository texts was significantly lower than in the narrative texts. The following indices are more likely to explain participants' reading comprehension: descriptive (mainly the number of sentences, the number of words, mean number of words of the sentence, among others), referential cohesion (overlap in content words between local sentences or co-reference), lexical diversity (the variety of unique words [types] that occur in a text in relation to the total number of words). These indices revealed that the expository texts are more challenging than the narrative texts. In sum, it was surmised that factors such as word overlap and sentence length affect participants' reading comprehension. Hence, this study analyzed two additional dimensions other than vocabulary levels in the texts: 1) the number of words in each sentence and 2) the number of word types in each text. These detailed approaches may account for the reasons why the participants scored higher in the narrative texts than in the expository texts.

Another factor that can affect learners' reading comprehension is sentence length. The average number of words in each sentence in the narrative and the expository texts was examined to compare

the sentence length in each text genre. Readability measures, such as Flesch Reading Ease and the Flesch Kincaid Grade Level, also determines the text difficulty based on sentence length as one of the factors that affect learners' reading comprehension (*See more details at* https://www.webfx.com/tools/read-able/flesch-kincaid.html). The result of the analysis showed that the number of words per sentence is 8.17 words in average (8.15 words for *Father* and 8.18 words for *Hero*, respectively) in the narrative texts and 12.31 words (13.04 for *Phone* and 11.58 for *Life,* respectively) in the expository texts (Table 5-10). The sentences in the expository texts are 4.14 words longer than the narrative texts. This means that the sentences in the expository texts are longer than those used in the narrative texts.

Furthermore, the study examined the distributions of the number of sentences in the narrative and the expository texts (Table 5-11 and Figure 5-3). The minimum and maximum numbers of words used per sentence were 1 and 24, respectively. Therefore, the distributions of the numbers of sentences were categorized into five frequency bands, as shown in Table 5-11. As a result, 75.20% of the sentences in the narrative texts were categorized in the frequency bands 1-5 and 6-10 (24.79% and 50.41%, respectively), whereas only 46.93% of the sentences in the expository texts were categorized into the frequency bands of 1-5 and 6-10 (12.24% and 34.69%, respectively). On the other hand, only 3.31% of the sentences in the narrative texts are categorized into the frequency bands 16-20 and 21-25 (3.31%, and 0% respectively), while 32.65% of the sentences were categorized into the frequency bands of the 16-20 and 21-25 (28.57%, and 4.08 respectively). The results show that the expository texts contained a greater number of longer sentences than the narrative texts, indicating that more information is embedded in the expository texts. The vocabulary levels in the two genres of texts were controlled as equivalent; however, it may have been hard for the learners to construct meaning as the sentences in the expository texts are longer than those in the narrative texts.

Table 5-10

Number of Words per Sentence in the Two Types of Texts

	Narrative texts		Expository texts	
Title	1. *Father*	2. *Hero*	3. *Phone*	4. *Life*
	token	token	token	token
Total No. of words	489	499	300	301
No. of sentences	60	61	23	26
Words per sentence	8.15	8.18	13.04	11.58
Words per sentence by genre	8.17		12.31	

Table 5-11

Distributions of the Number of Words per Sentence in the Two Types of Texts

	Narratives		Expositories	
No. of words in a sentence	No. of sentences (%)	Cumulative (%)	No. of sentences (%)	Cumulative (%)
1-5	30 (24.79)	30 (24.79)	6 (12.24)	6 (12.24)
6-10	61 (50.41)	91 (75.20)	17 (34.69)	23 (46.93)
11-15	26 (21.49)	117 (96.69)	10 (20.41)	33 (67.34)
16-20	4 (3.31)	121 (100.00)	14 (28.57)	47 (95.91)
21-25	0 (0.00)	121 (100.00)	2 (4.08)	49 (100.00)
Total	121 (100.00)	121 (100.00)	49 (100.00)	49 (100.00)

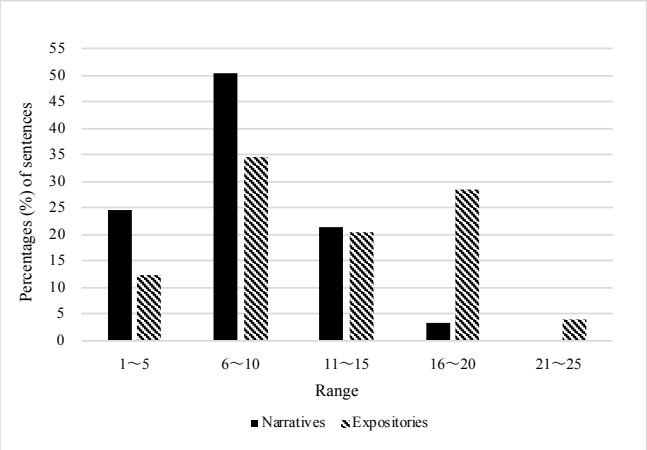

Figure 5-3. Distributions of the number of words in a sentence in the narrative and expository texts.

Since the result of *Coh-Metrix* identified that the referential cohesion and a variation of vocabularies affect learners' reading comprehension, the subsequent analysis would focus on the word types used in each genre of text. The number of word types were counted using the RANGE program to identify how frequently the same words are used in the narrative and in the expository texts. The more frequently the same words are used in a text, the easier it is for the learners to comprehend it. Since the number of words used differs across texts, the comparison was done by calculating the average number of word types per 100 words (Table 5-12). As shown in Table 5-12, there were 37.35 word types (37.22 and 37.47) and 46.75 word types (43.33 and 50.17) in the expository and the narrative texts, respectively. The expository texts contained more word types than the narrative texts. As words are repeatedly used more frequently in the narrative texts, there is a possibility that it was easier for the participants to process the words found during reading in this genre. As for the expository texts, on the other hand, the number of word types is greater than in the narrative texts. Therefore, the participants may have needed to pay more attention to each word to construct meaning while reading these texts.

Table 5-12

Numbers of Word Types in the Narrative and Expository Texts

	Narrative texts		Expository texts	
Title	1. *Father*	2. *Hero*	3. *Phone*	4. *Life*
	type (%)	type (%)	type (%)	type (%)
1,000	154 (84.62)	161 (86.10)	122 (93.85)	139 (92.05)
2,000	15 (8.24)	9 (4.81)	7 (5.38)	8 (5.30)
3,000	2 (1.10)	8 (4.28)	0 (0.00)	1 (0.66)
Not in the list	11 (6.04)	9 (4.81)	1 (0.77)	3 (1.99)
Total	182 (100.00)	187 (100.00)	130 (100.00)	151 (100.00)
No. of word types per 100 words	37.22	37.47	43.33	50.17

In sum, the findings show that different text genres influence EFL learners' reading performance. The participants were able to comprehend the narrative texts well, whereas they struggled more while reading the expository texts. All reading materials were regarded as appropriate for the participants in

terms of their vocabulary levels. However, the average scores in the expository texts were significantly lower than those in the narrative texts. As the findings of this study show, factors such as sentence length and the number of word types affect learners' reading comprehension. From this viewpoint, it is surmised that learners' lack of linguistic processing skills may have prevented them from constructing meaning while reading the expository texts.

One explanation for the fact that the learners scored lower in the expository texts is that their deficient linguistic processing skills affected their reading comprehension. In this study, the word levels in the two text genres were controlled as equivalent; however, a sentence in the expository texts becomes approximately four words longer than in the narrative texts. Moreover, about 32.65% of the sentences in the expository texts are categorized into the frequency bands 16-20 and 21-25, whereas only 3.31% of the sentences in the narrative texts are categorized into these frequency bands. From this figure, it is evident that a large number of longer sentences is present in the expository texts. Previous research has shown that the longer the sentence, the greater the likelihood that more information is embedded in the text (Arya, Hiebert, & Pearson, 2011; Best, Floyd, & McNamara, 2004; Gardner, 2004). According to Arya et al. (2011), in comparison to narrative texts, expository texts introduce more concepts that are new to readers (p.232). In this study, the participants were high school EFL learners. Considering their educational background, they are assumed to possess more information and concepts regarding the expository materials compared to children in previous studies. This means that they have already experienced frequent exposures to expository texts written in their first language since childhood. However, their reading scores in the expository texts were much lower than in the narrative texts, which implies that their accumulated personal experiences could not assist them in reading expository texts because of their lack of linguistic processing skills in English. From these findings, it is concluded that capturing new information and processing the expository texts in the foreign language simultaneously demanded more cognitive burdens for the EFL learners.

In addition to the sentence length, the ratio of word overlaps also affected learners' reading comprehension. According to Crossley, Allen, and McNamara (2011), increasing the overlap of content words reduces the burden in the construction of meaning. This study used the Range program to count the number of word types including not only content words, but also other parts of speech as word

overlaps. The result of the Range program showed that the expository texts contained fewer word overlaps than the narrative texts. This means that more words were used repeatedly in the narrative texts, but not many word types were repeated in the expository texts. The ratio of word overlaps in the narrative texts was higher than in the expository texts, which implies that the participants in this study found the same words repeatedly in the narrative texts. Considering that the same words were used repeatedly in the narrative texts, this may have reduced learners' cognitive demands in reading the narrative texts. This also enabled the participants to activate their "story grammar" learned since childhood, helping them to comprehend the narrative texts. On the other hand, the learners needed to pay more attention to construct meaning while reading the expository texts.

5.5.2 Research Question 2

RQ2: Does language proficiency affect reading comprehension of different types of texts?

Regarding RQ2, the participants were divided into three different groups according to their proficiency levels to verify whether their language proficiency affects their reading comprehension according to text genre. No statistically significant differences were found between the groups. This means that, regardless of their vocabulary levels, the three groups of participants comprehended the narrative texts well, whereas they scored low in the expository texts. This finding concords with L1 reading research in that most children have schemata about narrative texts, which enhances their comprehension of narrative texts (Arya, Hiebert, & Pearson, 2011; Best, Floyd, & McNamara, 2008; Gardner, 2004). In general, narrative texts deal with information about social or interpersonal relationships and everyday problem solving (Gardner, 2004), making it easy for children to follow them. This study also observed the tendency that the participants, regardless of their proficiency groups, could activate their "story grammar" on the narrative texts, which may have reduced their cognitive burdens in reading narrative texts, thus contributing to successful reading performance.

As for the expository texts, there was no statistically significant difference between the groups. However, the learners' reading scores on the expository texts increased slightly as their proficiency levels went up from a lower-level to a higher-level group. One explanation for this is that the

participants, especially those in the medium- and low-proficiency groups, still struggle to decode expository texts at linguistic levels. Best et al. (2008) point out that "in contrast to narrative texts, expository texts tend to place increased processing demands on the reader due to their greater structural complexity, greater information density, and greater knowledge demands" (p.140). In the expository texts, approximately 96% of the words were from the first 1,000 words list. When analyzing only the learners' vocabulary levels of 2312.69 and 1709.91 for the high- and low-level groups, respectively, it was found that they were ready to read all the assigned passages. However, the number of words in the expository texts was about four words longer than in the narrative texts. In addition, the expository texts included a small portion of word overlaps compared to the narrative texts. These results indicate that more information was embedded in the expository texts (Arya, Hiebert, & Pearson, 2017). This also implies that simultaneous language processing and the collection of information written in the foreign language may have placed heavy cognitive burdens on the learners, especially on those in the medium- and the low-proficiency level groups. These factors together prevented all the learners from comprehending the expository materials.

As explained above, this study showed that reading comprehension in expository texts is harder than in narrative texts. Despite its valuable findings, this study had some limitations. First, the number of texts was limited to four texts: two narrative and two expository texts. For this reason, there were only five multiple-choice questions in each text due to the length of the passages. Increasing the number of texts would lead not only to the solution of the number of question items, but also to more rigorously evaluating learners' reading performance. In addition, as this line of research has not been widely addressed in the EFL setting, further research that includes a greater number of texts would help consolidate the findings of this study.

5.6 Conclusion

This study showed that different types of texts affect EFL learners' reading comprehension. It is noteworthy that, although the materials used in both types of texts were within the participants' language proficiency, different types of texts still influence their reading comprehension because of their linguistic

processing skills. This finding indicates that reading expository texts implies heavy cognitive demands on the participants, since more information is embedded in a longer sentence. Furthermore, the texts were written in a foreign language, which demanded more effort from the EFL learners to collect new information from the texts. To reduce their burden on linguistic processing, learners need to become familiar with the expository text structures. One effective approach to this may be an explicit instruction of a text structure (Carrell, 1985; Becerra, Herazo, García, Sagre, and Díaz, 2019). Although some language teachers have already tried such activities in their language classes, a specific suggestion and a strategy used step by step in a reading class may help readers recognize where they must pay attention when reading. For example, giving directions to learners (before reading) to read a passage while paying attention to how the main idea is discussed may facilitate where they must focus on while reading. While research on the comparative effects of different types of text comprehension has been widely conducted in L1 settings, few studies have addressed this issue in the EFL context. Taking this into consideration, this research provides beneficial information.

Chapter 6

Effects of Reading-While-Listening and Reading-Only on Reading Comprehension of *K*osen Students

6.1 Introduction

Acquiring reading fluency skills—for instance, decoding words into phonologically appropriate sounds and recognizing the meaning of words encountered accurately and rapidly—is necessary for language learners to become autonomous readers. Researchers have been exploring effective ways of improving learners' reading fluency skills, such as extensive reading (ER), repeated readings, and reading while listening approach (RWL). In recent years, the RWL mode in second language (L2) learning has gained recognition as an effective means to enhance reading fluency skills among learners (Chang, 2019; Teng, 2016; Webb & Chang, 2012). The RWL approach literally means that learners read the passages while listening to the audio-recordings of the same passages. Research has shown that RWL helps learners improve their bottom-up reading processing skills (Amer, 1997), acquire natural reading behaviors (Kadota, Noro, & Shiki, 2010), and motivate reading in a foreign language autonomously (Chang, 2009). In the course of reading and listening simultaneously, learners can also acquire English intonations, as it delivers grammatical structure, emotions, and sequences of clauses and sentences (Cheetham, 2017). As audio-assisted reading supports learners in many ways, researchers have recommended the use of bi-modal input in the EFL and ESL settings (Chang, 2019; Wells, 2010).

The RWL approach encourages learners to acquire a natural reading behavior. However, no studies investigated when it works the best or when learners can read independently, without relying on the audio-assisted reading. Previous research has examined the effects of simultaneous reading and listening mostly on vocabulary acquisition. In contrast to research on vocabulary acquisition (Brown, Waring, & Dankaewbua 2008; Chang, 2019; Teng, 2016; Webb & Chang, 2012). However, only a few studies have covered with reading comprehension (Chang & Millet, 2015).

With careful attention to the experimental design, this study investigates whether or not the different modes of reading affect learners' reading comprehension and their perceptions. This study aims to identify the proficiency levels of the groups of learners that still depend on audio-assisted reading. It does so by dividing the participants into different groups based on proficiency. The findings contribute toward understanding the effects of simultaneous reading and listening on reading comprehension.

6.2 Literature Review

Reading fluency development is one of the most important considerations in contemporary English education in Japan (Grabe, 2010; Kanatani, 2008; Takase, 2010). Nation (2013) pointed out that a quarter of all reading courses should be devoted to reading fluency development. However, developing reading fluency skills tends to be overlooked in L2 classroom when compared to language-focused learning (Grabe & Stoller, 2002; Nation, 2013). Reading fluency is defined as "the ability to read rapidly with ease and accuracy, and to read with appropriate expression and phrasing" (Grabe, 2009, p. 291). According to Kuhn and Stahl (2003), reading fluency comprises (a) accuracy in decoding, (b) automaticity in word recognition, and (c) the appropriate use of prosodic features such as stress, pitch, and juncture. From these definitions, it is understood that fluent readers can read smoothly while maintaining reading comprehension as well. Fluent reading requires the integration of many processing skills with each other (Grabe, 2002). It has been widely accepted that increasing the quantity of words that learners encounter can enhance their reading fluency efficiently (Grabe, 2009; Nation, 2013). Automatizing reading fluency skills reduces learners' attentional resources of decoding words, enabling them to pay greater attention to better reading comprehension.

Researchers have explored effective approaches toward improving learners' reading fluency skills by introducing extensive reading (Beglar & Hunt, 2014; Pigada & Schmitt, 2006), repeated reading (Chang, 2012; Taguchi, 2002; Webb & Chang, 2012), narrow reading (Chang & Millet, 2017), and audio-assisted readings (Brown et al., 2008; Teng, 2016) in order to improve learners' reading fluency. Although teaching approaches differ from one other, a common point among these approaches is that

learners gain exposure to a large quantity of comprehensible input to enhance their reading fluency. These approaches enable the formation of words and strengthen the meaning connections through repeated encounters of vocabulary and grammar items, which in turn, develop their word recognition and reading processing skills. Day and Bamford (1998) suggested that learners should practice reading with very easy materials at *i minus 1* level to improve their reading fluency skills. The positive experiences of reading within their linguistic abilities eventually build learners' positive attitudes toward independent reading. These experiences increase their motivation to read as well (Nuttall, 2005).

Audio-assisted reading is one of the effective approaches to supporting the development of learners' reading fluency. Audio-assisted reading (Chang & Millet, 2015) is also known as "reading while listening" (Brown et al., 2008; Chang, 2009), "simultaneous reading and listening" (Renandya & Jacobs, 2016), and "bi-modal input" (Cheetham, 2017) and so on. Research on this topic has gradually been on the rise. The method has been recognized as useful in developing learners' reading fluency skills. Various aspects of English proficiency improve through audio-assisted reading such as learners' listening skills (Chang, 2009; Chang, Millet, & Renandya, 2018), vocabulary knowledge (Brown et al., 2008; Chang, 2015b; Chang, 2019; Teng, 2016; Webb & Chang, 2012), and reading rate and comprehension (Chang & Millet, 2015; Taguchi, Takayasu-Maass, & Gorsuch, 2004). Concurrent reading and listening stimulates both learners' English proficiency and their English learning motivation (Chang, 2009). To the best of the researcher's knowledge, a relatively large quantity of research on vocabulary acquisition through audio-assisted reading has been explored and has shown positive gains when compared to the other topic areas such as the improvements in reading speed and comprehension, grammar acquisition, and listening skills.

Brown et al. (2008) investigated the rate at which English vocabulary was acquired through three input modes: reading only (RO), RWL, and listening only (LO) to stories. They assessed the effects with two test formats: the multiple-choice recognition and meaning-by-translation tests. They found that more repetitions were necessary in listening (15-20) and reading (10-13) than in RWL (7-9) for substantive improvements in incidental learning. Teng (2016) also investigated the effects of both the RO and RWL modes on vocabulary acquisition, and the best results were obtained for the RWL group. These findings are in line with Brown et al. (2008), who found that the RWL mode required lesser word

exposure than the RO mode for learners to acquire new vocabulary.

Chang and Millet (2015) compared two groups of participants, audio-assisted and silent reading groups, and found that both improved their reading speed and comprehension levels after an intervention that lasted 26 weeks. However, improvements in the audio-assisted reading group were substantially higher than those in the silent reading group. The learners' reading speed improved approximately twice that of the RO group from the pre-test to the post-test and from the pre-test to the delayed post-test stages. The audio-assisted reading group improved significantly in terms of reading comprehension from the pre-test to the post-test and from the pre-test to the delayed post-test stages. On the other hand, for the silent reading group, the score did not improve significantly from the pre-test to the post-test stage, but there was a statistically significant gain from the pre-test to the delayed post-test stage. Both groups retained the gains in terms of reading speed and comprehension as evidenced in the delayed post-test that had been conducted three months after the interventions. From these results, Chang and Millet (2015) concluded that a simultaneous reading and listening mode was more beneficial than a silent reading mode in order to improve learners' reading speed and reading comprehension skills.

However, there is some doubt with respect to one interpretation that Chang and Millet (2015) had made. According to Chang and Millet (2015), the audio-assisted reading and silent reading groups were divided based on their vocabulary levels test scores. The results of the vocabulary levels test confirmed that both groups were comparable. However, the reading comprehension test scores at the pre-test stage for both groups were completely different. The audio-assisted reading group scored 63 and the silent reading group scored 49 in the pre-test. The results of the repeated measures ANOVA for reading comprehension showed that there was a statistically significant difference between subjects in the pre-test stage. This means that both groups had different proficiency levels in terms of their reading comprehension. However, Chang and Millet (2015) interpreted the audio-assisted group as having improved substantially more than the silent reading group by comparing the post-test scores of the reading comprehension test alone. Considering that both groups were different in the beginning, their post-test scores may not have been comparable. Furthermore, their findings showed that both groups had improved significantly from the pre-test to the delayed post-test stages. This means that the silent

reading group had also improved its reading comprehension skills in the course of this study. Hence, it is not clear that improvements in reading speed and comprehension are the beneficial results of audio-assisted reading.

Although some experimental limitations have been identified, the above introduced studies support the effectiveness of audio-assisted reading for certain reasons. For example, audio-assisted reading helps learners move beyond the bottom-up reading style and to cultivate positive attitudes toward reading (Amer, 1997; Kadota et al., 2010). According to Kadota et al. (2010), one of the purposes of audio-assisted reading is to learn a natural reading behavior without going back and forth to understand reading passages. As the audio does not stop while reading, learners are able to afford more attentional resources to comprehension. Wells (2010) also suggested that the simultaneous reading and listening approach should be conducted more in the EFL and ESL settings as they enable learners to acquire English intonation skills. According to Wells (2010), intonation delivers grammatical structures, attitudes, and emotions, and how sequences of clauses and sentences go together in speech. Cheetham (2017) stated that learners should engage in ample supplementary reading with a multi-dimensional approach that can help them enhance their reading skills and eventually improve their general English learning motivation as well. Cheetham (2017) also noted that continuous practice using audio-assisted reading helps learners reduce their input overload when compared to mono-modal inputs and improves their reading ability over time.

Audio-assisted reading motivates learners to read and enhance learners' language ability as indicated above. The questionnaire used by Chang (2009) also helped identify the positive psychological impact on learners regardless of their English proficiency. For example, the learners felt that the story was shorter, interesting, and comfortable. These factors helped them learn better. From the results, it was apparent that audio-assisted reading enhanced learners' motivation to learning English. However, provided that the audio-assisted reading is an approach to improve learners' reading fluency development, researchers and educators should suggest when learners can read by themselves without relying on audio-assisted reading. In other words, learners need to gradually become independent readers without depending on audio support. These studies have not shown when audio-assisted reading works best and whether the approach functions for all learners or not. Discovering these unsolved areas

is one of the aims of the present study.

The benefits of audio-assisted reading may vary from learner to learner. Chang and Millet (2015) found that audio-assisted reading works best when learners' reading rates are slightly slower than the speech rates in audio recordings. If learners can read faster than the audio recordings, they may feel frustrated listening to the audio while reading. In the EFL classroom, where learners usually listen to the audio recordings together, it is difficult for each learner to adjust the audio speed to match their levels of comfort. From this perspective, some learners benefit from simultaneous reading and listening, whereas others may not need audio support to be autonomous readers. According to Cheetham (2017), the benefits of bi-modal input may not take place soon after the intervention. As for vocabulary learning by audio-assisted reading, Chang (2019) also highlighted that learners acquire target vocabulary through a large quantity of input in various contexts. The findings from the study also supported that "a word repeatedly appearing in multiple-texts tends to be better learned than one appearing many times in a single text" (Chang, 2019, p. 13). These studies suggest that it takes time to transfer the positive impact of audio-supported reading to the improvement of learners' linguistic knowledge.

Considering that the ultimate goal of foreign language reading is to help an individual become an autonomous reader, they should not depend heavily on audio support. In Chang (2009), positive feedback from the questionnaire was obtained from both high and low-proficiency groups. From this finding, Chang (2009) concluded that the audio-assisted reading mode is more effective than the LO mode for all levels of learners in terms of increasing their motivation. However, the long-term use of bi- and multi-modal input may prevent them from learning to read independently. When learners reach a certain point where they can read faster than audio recordings, as suggested by Chang and Millet (2015), they should try reading without audio recordings to acquire natural reading behavior. Previous studies have not indicated when learners will be able to read independently without audio support. Some unsolved issues related to the effects of audio-assisted reading on reading comprehension are as follows:

1. To the best of researcher's knowledge, few studies have examined the effects of audio-assisted reading on reading comprehension (Chang & Millet, 2015; Taguchi et al., 2004). Increasing the

number of studies in the area can generalize and reveal more details on the effects of audio-assisted reading on reading comprehension.

2. Previous studies have some experimental limitations. For example, Chang and Millet (2015) examined the effects of the RWL and RO modes on reading comprehension. However, it is still not clear whether the results of the study were exclusively because of the effects of audio-assisted reading.
3. Previous studies have been conducted without examining the different proficiency levels of the groups involved. The need for audio-assisted reading differs from learner to learner. Therefore, research on different proficiency levels among groups is necessary to reveal when learners can read autonomously without depending on audio support. Reading without audio support is a natural reading behavior.
4. No study has examined learners' perceptions of RWL and RO modes on reading comprehension, after they experience both modes.

The present study examines the effects of RWL and RO modes on learners' reading comprehension. Learners' perceptions of both RWL and RO modes will be explored as well. This study poses the following research questions to investigate these unsolved areas:

RQ1: Which mode facilitate reading comprehension better, reading while listening (RWL) or reading only (RO)?

RQ2: Do two modes of input, reading while listening (RWL) or reading only (RO), have different effects on three different English proficiency groups?

RQ3: Which mode do learners prefer, reading-while-listening (RWL) or reading only (RO)? Are there any different perceptions between English proficiency groups?

6.3 Materials and Method

6.3.1 Participants

A total of 168 *Kosen* students aged between 15 and 16 years participated in this study. A *Kosen* is a specialized institution for early engineering education in Japan. It offers a five-year educational program that is equivalent to a combination of high school and junior college. The participants in this study were all first-year students at a *Kosen*, which is the equivalent of high school freshmen. They had received three years of formal English education in junior high school before entering the *Kosen*. These students were seldom motivated to learn English. Rather, they tended to focus more on mathematics and science. The *Kosen* students do not have to take university entrance exams like other high school students because their curriculum provides a five-year educational program. As they do not take these exams, this can mean a further disincentive to learn English. Thus, *Kosen* students tend to differ from most other high school students in terms of their English language learning motivation.

The participants had three 90-minute English classes a week during the study period: one intensive reading class, one listening class, and one ER class. The researcher taught all participants in an ER class in which this study was conducted. Four classes were randomly assigned either to group A (n=85) or B (n=83). All participants experienced two different reading conditions: two reading passages with audio support and two without, to compare which mode they scored higher in, and preferred. The detailed procedure is explained in section 6.3.3.

6.3.2 Experimental Materials

This study employed a vocabulary levels test and four reading passages as experimental materials (Appendices C and E). More details of experimental materials are explained in Sections *6.3.2.1* and *6.3.2.2.*

6.3.2.1 Vocabulary Levels Test

A New Vocabulary Levels Test (NVLT) developed by McLean and Kramer (2015) was administered to all participants (Appendix C). The results showed that group A (n=85) had scored a total of 48.59 / 72 (SD = 6.15), with 20.69 / 24 (SD = 1.74), 15.81 / 24 (SD = 2.94), and 12.08 / 24 (SD = 3.03) in the first 3,000 NVLT in order, whereas group B (n= 83) had scored a total of 47.95 / 72 (SD = 6.63), with 20.89 / 24 (SD = 1.67), 16.17 / 24 (SD = 3.37), and 10.90 / 24 (SD = 3.53) (Table 6-1). The receptive vocabulary knowledge at each level was 86%, 66%, and 50% for group A and 87%, 67%, and 45% for group B. The total score was calculated as learners' vocabulary size. Group A scored 2040.71 (SD = 259.82) and Group B scored 2013.98 (SD = 280.21). The results of the t-test between the total scores of each group showed that there was no statistically significant difference between both groups (t (166) = .64, p = .52), implying that their vocabulary levels were comparable.

Table 6-1
The Result of NVLT 1,000 to 3,000 Levels for both Groups A and B

	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
	1,000	2,000	3,000	Total	Level
Group A	20.69 (1.74)	15.81 (2.94)	12.08 (3.03)	48.59 (6.15)	2040.71 (259.82)
Group B	20.89 (1.67)	16.17 (3.37)	10.90 (3.53)	47.95 (6.63)	2013.98 (280.21)

6.3.2.2 Reading Materials

This study used four passages as reading materials (Appendix E): *An Amazing Pig (Pig), Father's Day Present* (*Father*), *Daily Marathons (Marathons)*, and *A Hero above New York* (*Hero*) were chosen from *True Stories*, *Enjoy Simple English Readers* by Takayama and Stewart (2015). Each passage comprised approximately 500 (between 469 and 513) words, followed by five multiple-choice questions. Each question item had four options to test the learners' global and not their detailed understanding of the passages. The words used in these materials were typed into a computer program called *RANGE* (Nation & Heatley, 2002) and the results are shown in Table 6-2. The text analysis

showed that the reading materials contained high frequency vocabulary, mostly ranging from the first 1,000-word list (Table 6-2). The participants' vocabulary knowledge was at about the 2,000-word level. Therefore, the reading materials chosen for this study were appropriate for their levels.

Table 6-2
The Text Analysis for Four Reading Passages Used in Measuring Learners' Reading Comprehension

Title	1. *Pig*	2. *Father*	3. *Marathons*	4. *Hero*
	token / %	token / %	token / %	token / %
1,000	374 / 79.74	416 / 85.07	449 / 87.35	429 / 85.97
2,000	37 / 7.89	31 / 6.34	17 / 3.31	31 / 6.21
3,000	8 / 1.71	5 / 1.02	17 / 3.31	16 / 3.21
Not in the list	50 / 10.66	37 / 7.57	31 / 6.03	23 / 4.61
Word counts	469	489	514	499
Audio duration	0:04:12	0:03:49	0:04:30	0:03:57
WPM	110.00	124.00	114.67	124.30

Note. WPM indicates words per minute

6.3.3 Procedure

The reading comprehension tests with and without audio support were administered to all participants. Groups A and B were assigned the same materials but different modes to compare the effects of RWL and RO modes on reading comprehension. Group A read *Pig* and *Marathons* with audio support and *Father* and *Hero* without audio support, whereas Group B read *Father* and *Hero* with audio support and *Pig* and *Marathons* without audio support (Tables 6-3 and 6-4). When they finished reading one passage, they turned the page over and answered the five multiple-choice questions that each offered four options to choose from. They were told not to refer to the passage while answering the questions. All participants complied with this instruction. On the last day of the study in week 3, the participants also answered a short questionnaire with four questions and one open-ended question about their perceptions of the RWL and RO modes (Appendix F).

Table 6-3
Research Design

Reading passages / Mode	Reading While Listening (RWL)	Reading Only (RO)
1. *Pig*	Group A	Group B
2. *Father*	Group B	Group A
3. *Marathons*	Group A	Group B
4. *Hero*	Group B	Group A

Table 6-4
Summary of the Treatment Procedure

Week / Group	Group A	Group B
Week 1	**A New Vocabulary Levels Test**	**A New Vocabulary Levels Test**
Week 2	1. *Pig* (RWL)	2. *Father* (RWL)
	2. *Father* (RO)	1. *Pig* (RO)
Week 3	3. *Marathons* (RWL)	4. *Hero* (RWL)
	4. *Hero* (RO)	3. *Marathons* (RO)
	Questionnaire	**Questionnaire**

6.4 Results

6.4.1 Research Question 1

RQ1: Which mode can facilitate reading comprehension better, RWL or RO?

In response to the first research question, the reading comprehension test score was analyzed using *t*-test (Table 6-5). First, the results of two reading passages, *Pig* and *Marathons*, were analyzed to see the effects of both modes. Group A read them with the RWL mode and Group B read them with the RO mode. Table 6-5 shows the reading comprehension scores. Group A scored 6.72 ($SD = 1.94$) with RWL mode and Group B scored 6.51 ($SD = 2.30$) with RO mode. There was no statistically significant difference between both groups ($t(166) = .72$, $p < .47$, $d = .09$), implying that the difference in the modes did not influence the learners' reading comprehension test scores.

Similarly, the other two passages, *Father* and *Hero*, were examined. Group A read two reading passages with RO mode and Group B read them with RWL mode (Table 6-5). Group A scored 8.34

(*SD* = 1.70) and Group B scored 8.46 (*SD* = 1.51). There was no statistically significant difference between both groups (t (166) = .37, p < .71, d = .07), implying that the difference in the modes did not influence learners' reading comprehension test scores (Table 6-5).

Table 6-5

Result of the t-test on the Four Reading Passages with and without Audio Support for Groups A and B

Group	RWL				RO			
Reading Passages	*M (SD)*	*Min*	*Max*	*Group*	*M (SD)*	*Min*	*Max*	*Group*
1. *Pig* 3. *Marathons*	6.72 (1.94)	2	10	A (*n*=85)	6.51 (2.30)	2	10	B (*n*=83)
2. *Father* 4. *Hero*	8.46 (1.51)	4	10	B (*n*=83)	8.34 (1.70)	3	10	A (*n*=85)

	t (166)	*p*	*Cohen's d*
1. *Pig* 3. *Marathons*	.72	.47	.09
2. *Father* 4. *Hero*	.37	.71	.07

Note. For *Cohen's d*, an effect size of 0.2 to 0.3 is considered a small effect, around 0.5 a medium effect, and 0.8 and above a large effect.

6.4.2 Research Question 2

RQ2: Do both modes have different effects on the three different groups with three different English proficiency levels?

The 168 participants were divided into three different proficiency groups based on the NVLT results (Table 6-6), using the following formula: mean score ± 0.5 × standard deviation. A one-way *ANOVA* was conducted to see if the three different proficiency groups were statistically different. The results showed that there were statistically significant differences among the groups in terms of their receptive vocabulary knowledge (F (2, 165) =261.91, p <.00). A post-hoc Tukey test also confirmed statistical

differences between the groups (between High and Medium, between High and Low, and between Medium and Low) with a significance level of 5%, the result of which facilitated the comparison of both modes on different proficiency groups.

Table 6-6
Results of the NVLT for High-, Medium-, and Low-Proficiency Groups

Group	*M*	*Min*	*Max*
High (*n*=53)	2307.62 (119.08)	2184	2646
Medium (*n*=69)	2033.65 (68.86)	1932	2142
Low (*n*=46)	1695.52 (205.33)	840	1890

In the next step, two-way *ANOVA* (two modes: RWL and RO and three proficiency groups: high, medium, and low) was performed to explore whether both modes had different effects on three different English proficiency groups. Table 6-7 presents the results of the reading comprehension test scores for *Pig* and *Marathons* of the different groups. Group A read them with RWL mode and group B with RO mode. Within Group A, the high-proficiency group scored 7.66 ($SD = 1.95$), the medium-proficiency group scored 6.74 ($SD = 1.71$), and the low-proficiency group scored 5.45 ($SD = 1.57$) with RWL mode. Within group B, the high-proficiency group scored 7.38 ($SD = 1.97$), the medium-proficiency group scored 6.43 ($SD = 2.20$), and the low-proficiency group scored 5.75 ($SD = 2.52$) with RO mode. As shown in Table 6-8 and Figure 6-1, there was no main effect on the modes ($F(1, 162) = .10, p < .76$). There were no interaction effects with groups and modes ($F(2, 162) = .36, p < .70$). The results imply that learners' reading comprehension did not change either with or without audio support. The findings indicated that no groups of participants received benefits of RWL or RO while comprehending the reading passages.

Table 6-7

Reading Comprehension Test Scores at Time 1 for Different Proficiency Levels

	Group A (*n*=85) with RWL				Group B (*n*=83) with RO			
Group	*M (SD)*	*Min*	*Max*	*N*	*M (SD)*	*Min*	*Max*	*N*
High	7.66 (1.95)	2	10	28	7.38 (1.97)	5	10	24
Medium	6.74 (1.71)	3	10	34	6.43 (2.20)	5	10	35
Low	5.45 (1.57)	2	8	23	5.75 (2.52)	4	10	24

Note. Time 1 = When the participants read *Pig* and *Marathons*.

Table 6-8

The Result of ANOVA at Time 1 for the Different Proficiency Levels

Source	*Sum of Squares*	*df*	*Mean Square*	*F*	*p*
Proficiency	89.71	2	44.85	11.09	.00
Mode	0.38	1	0.38	0.10	.76
Proficiency and Mode	2.91	2	1.46	0.36	.70
Error	655.32	162	4.05		
Total	8097.00	168			
Corrected Total	749.85	167			

Note. Time 1 = When the participants read *Pig* and *Marathons*.

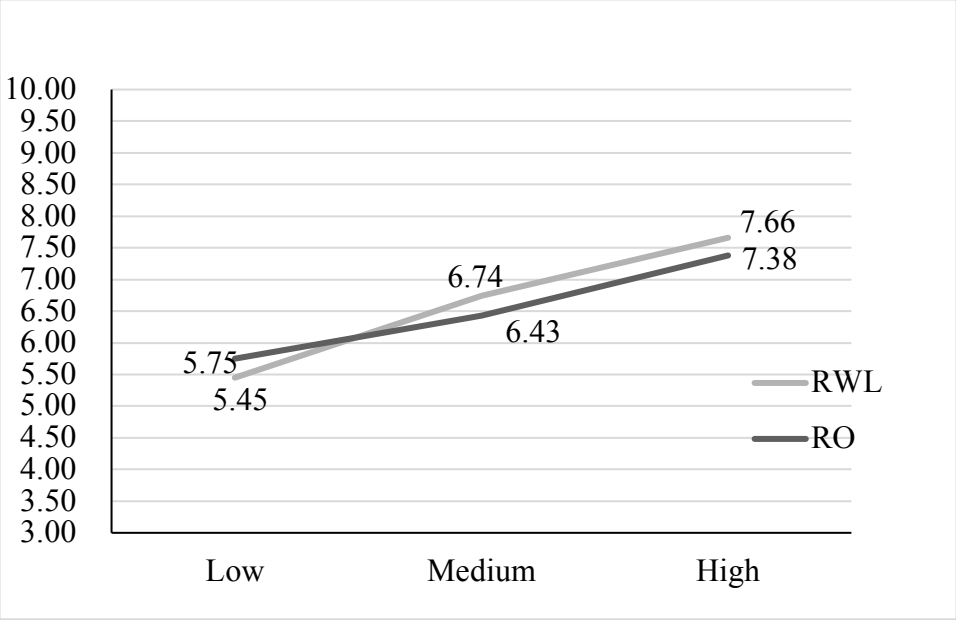

Figure 6-1. Comparison of the reading scores of three different proficiency groups at time 1.

Reading comprehension test scores of the other two passages, *Father* and *Hero*, were also examined in a similar manner as were *Pig* and *Marathons*. Two-way *ANOVA* (two modes: RWL and RO and three proficiency groups: high, medium, and low) was conducted to see the effects of RWL and

RO on different proficiency groups. Table 6-9 shows the results of the reading comprehension test scores for *Father* and *Hero* of different proficiency levels. Groups A and B read them with the RO and RWL modes, respectively. Within Group A, the high-proficiency group scored 8.97 (*SD* = 1.09), the medium-proficiency group scored 8.68 (*SD* = 1.66), and the low-proficiency group scored 7.00 (*SD* = 1.75) with RO mode. Within Group B, the high-proficiency group scored 9.08 (*SD* = 1.18), the medium-proficiency group scored 8.34 (*SD* = 1.57), and the low-proficiency group scored 8.00 (*SD* = 1.56) with RWL mode.

As shown in Table 6-10 and Figure 6-2, there was no main effect on the modes (F (1, 162) = 1.25, $p < .26$). There was no interaction effect with groups and modes with these reading materials (F (2, 162) = 2.77, $p < .07$). The findings show that there were no statistically significant differences between RWL and RO modes in three different English proficiency groups. The results imply that learners' reading comprehension did not change with or without audio support. However, as seen in Table 6-10, the p value of the interaction effects with proficiency and mode approached a significance level of .05 ($p < .07$). Since the low-proficiency group of participants scored higher on the reading comprehension test with RWL than with RO, we can say that the participants in the low-proficiency group may have depended more on audio support than did the other groups while comprehending reading passages.

Table 6-9

Reading Comprehension Test Scores at Time 2 for Different Proficiency Levels

	Group A (*n*=85) with RO				Group B (*n*=83) with RWL			
Group	*M (SD)*	*Min*	*Max*	*N*	*M (SD)*	*Min*	*Max*	*N*
High	8.97 (1.09)	6	10	28	9.08 (1.18)	4	10	24
Medium	8.68 (1.66)	4	10	34	8.34 (1.57)	2	9	35
Low	7.00 (1.75)	3	10	23	8.00 (1.56)	2	10	24

Note. Time 2 = When the participants read *Father* and *Hero*.

Table 6-10

The Result of ANOVA at Time 2 for the Different Proficiency Levels

Source	*Sum of Squares*	*df*	*Mean Square*	*F*	*p*
Proficiency	58.50	2	29.25	13.16	.00
Mode	2.78	1	2.78	1.25	.26
Proficiency and Mode	12.32	2	6.16	2.77	.07
Error	360.13	162	2.22		
Total	12281.00	168			
Corrected Total	430.28	167			

Note. Time 2 = The participants read *Father* and *Hero*.

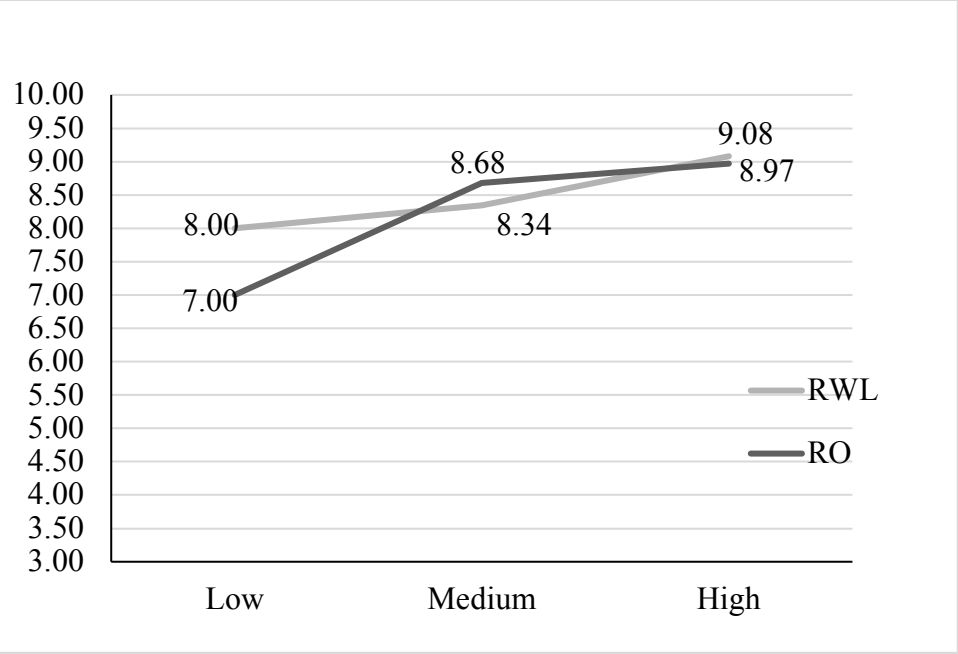

Figure 6-2. Comparison of three different proficiency groups on the reading scores at Time 2.

6.4.3 Research Question 3

RQ3: *Which mode do learners prefer, RWL or RO? Are there any differences in the perceptions among the English proficiency groups?*

The questionnaire had four question items to gather responses to RQ3. They were administered to all participants on the last day of the study. The questionnaire aimed to explore learners' perceptions of RWL and RO modes on reading comprehension by dividing them into three different groups based on proficiency levels.

Question item 1 concerned learners' preferences toward understanding the reading passages. As many as 60.84% of the learners preferred RWL while comprehending reading passages, whereas 39.16% responded that they had a better understanding of the passages with RO mode (Table 6-11 and Figure 6-3). The responses for each proficiency group show that the number of participants in the low-proficiency group that favored RWL (69.57%) was larger than the number of participants in the high and medium-proficiency groups with the same preference (58.82% and 56.52% respectively). Thus, those in the low-proficiency group tended to be more dependent on audio support while comprehending the passages, as opposed to the other two proficiency groups.

Table 6-11

Students' Responses to Question 1: Which mode do you prefer when reading a passage; reading with audio support or without audio support?

	1 (RWL)	2 (RO)
High (*n*=51)	30 (58.82%)	21 (41.18%)
Medium (*n*=69)	39 (56.52%)	30 (43.38%)
Low (*n*=46)	32 (69.57%)	14 (30.43%)
Total (*n*=166)	101 (60.84%)	65 (39.16%)

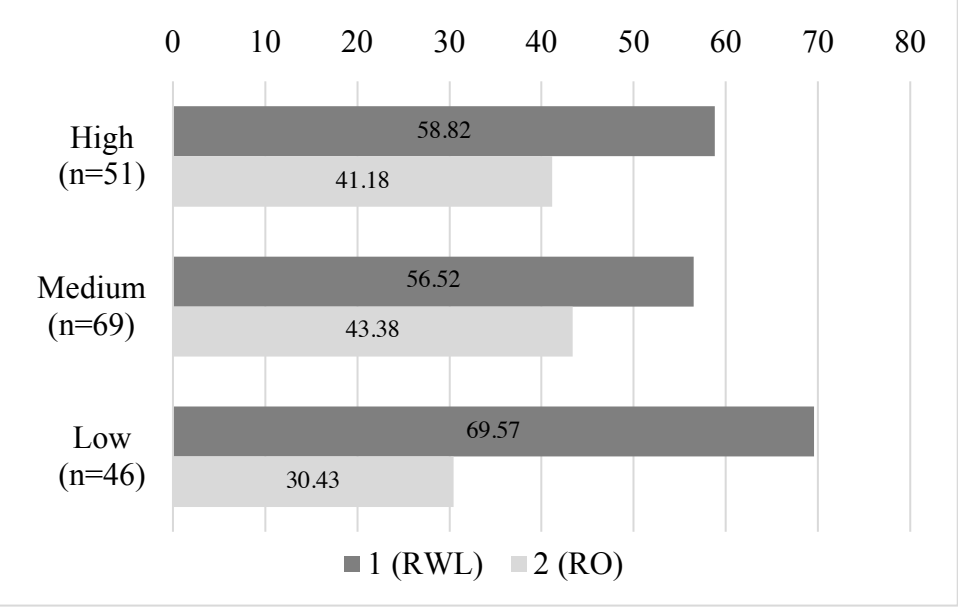

Figure 6-3. Comparison of the three groups on the mode preference.

Question item 2 asked the learners about the audio speed that was most appropriate for them to follow (Table 6-12 and Figure 6-4). The result showed that 54.90% of the learners in the high-proficiency group felt that the audio was very fast (50.98%) or a bit fast (3.92%) to follow, whereas approximately 38.80% of the medium and 40.00% of the low-proficiency groups answered that the audio was very fast (25.37% and 33.33% respectively) or a bit fast (13.43% and 6.67% respectively). Over half the participants in the medium and the low-proficiency groups (53.73% and 57.78% respectively) considered the audio speed appropriate to follow, whereas less than half the high-proficiency group (37.25%) considered it appropriate to follow. These results show that a larger number of participants in the medium and low-proficiency groups found the audio speed easy to follow when compared with the high-proficiency group of participants.

Table 6-12

Students' Responses to Question 2: In your opinion, was the audio speed appropriate to adequately follow?

	1 (Very slow)	2 (A bit slow)	3 (Appropriate)	4 (A bit fast)	5 (Very fast)
High (*n*=51)	0 (0%)	4 (7.84%)	19 (37.25%)	2 (3.92%)	26 (50.98%)
Medium (*n*=67)	1 (1.49%)	4 (5.97%)	36 (53.73%)	9 (13.43%)	17 (25.37%)
Low (*n*=45)	0 (0%)	1 (2.22%)	26 (57.78%)	3 (6.67%)	15 (33.33%)
Total (*n*=163)	1 (0.61%)	9 (5.52%)	81 (49.69%)	14 (8.59%)	58 (35.58%)

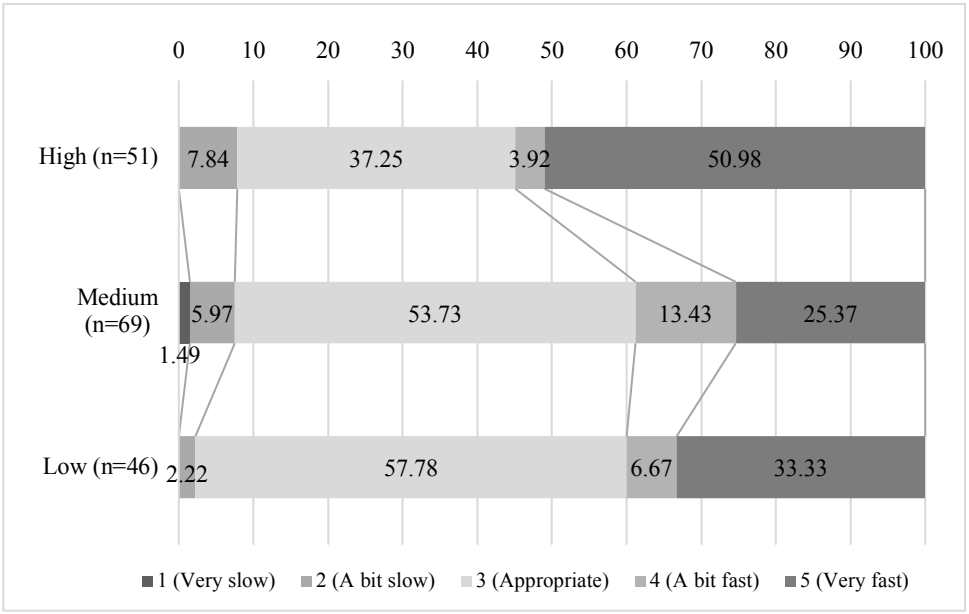

Figure 6-4. Perceptions of audio speed by the three proficiency groups.

Question item 3 investigated the extent to which learners thought they could understand the reading passage while using the RWL mode. As many as 87.20% of the participants indicated that they could understand over 60% of the reading comprehension with audio-assisted reading (Table 6-13 and Figure 6-5), 94.12% of the participants in the high-proficiency group answered that they could understand the reading passages with audio support, and 85.29% and 82.22% of the participants in the medium and the low-proficiency groups, respectively, showed over 60% of the understanding levels (Table 6-13 and Figure 6-4).

Table 6-13

Students' Responses to Question 3: In your opinion, to what extent would you understand the passages with audio support?

	1 (100%)	2 (80%)	3 (60%)	4 (40%)	5 (20%)	6 (0%)
High (*n*=51)	6 (11.76%)	33 (64.70)	9 (17.65%)	0 (0%)	3 (5.88%)	0 (0%)
Medium (*n*=68)	5 (7.35%)	34 (50.00%)	19 (27.94%)	7 (10.29%)	3 (4.41%)	0 (0%)
Low (*n*=45)	1 (2.22%)	21 (46.67%)	15 (33.33%)	5 (11.11%)	3 (6.67%)	0 (0%)
Total (*n*=164)	12 (7.32%)	88 (53.66%)	43 (26.22%)	12 (7.31%)	9 (5.49%)	0 (0%)

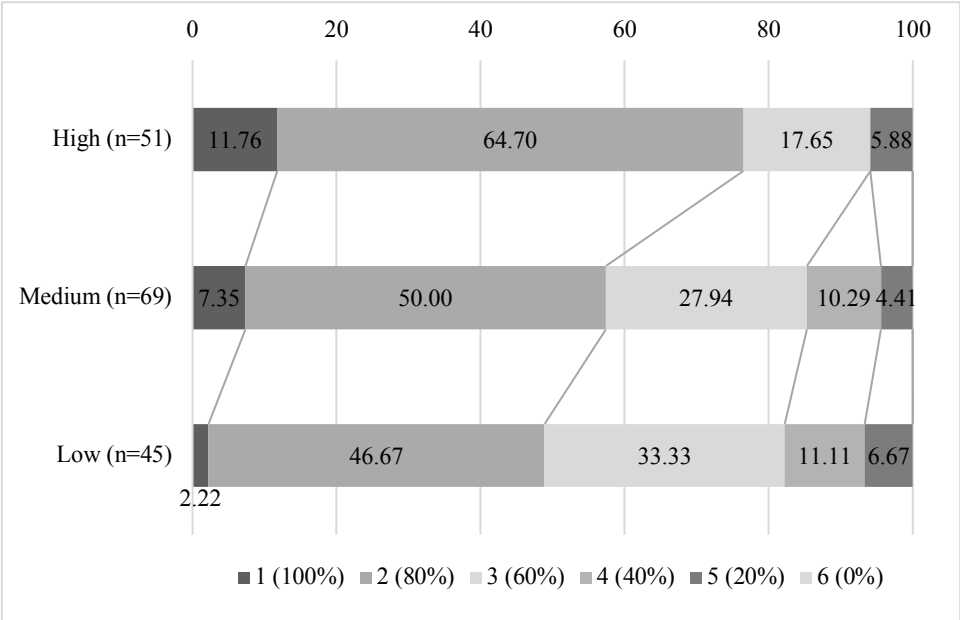

Figure 6-5. Comparison of the three proficiency groups on the understanding levels with RWL.

Question item 4 explored the learners' perceptions of comprehension level with RO mode. As many as 74.53% of the participants responded that they were able to understand over 60 percent of the reading comprehension without depending on audio support (Table 6-14 and Figure 6-6). As many as 91.49% and 80.87% of the participants in the high and medium-proficiency groups, respectively, said that they could understand the reading passages without audio support. However, in the low-proficiency group, only 47.82% of the participants understood 60% of the reading passages without audio support (Table 6-14 and Figure 6-6). The degree of their confidence in reading comprehension with RO mode dropped dramatically when compared to the high and medium-proficiency groups. As seen in Figures 6-5 and 6-6, regardless of the participants' proficiency levels, their confidence level with the RWL mode was higher than those with the RO mode. Comparing the RWL and RO modes in the low-proficiency group showed that the participants understood better when they relied on audio support. They lacked confidence while reading without audio support.

Table 6-14

Students' Responses to Question 4: In your opinion, to what extent do you understand the passages without audio support?

	1 (100%)	2 (80%)	3 (60%)	4 (40%)	5 (20%)	6 (0%)
High (*n*=47)	11 (23.40%)	19 (40.43%)	13 (27.66%)	4 (8.51%)	0 (0%)	0 (0%)
Medium (*n*=68)	8 (11.76%)	23 (33.82%)	24 (35.29%)	9 (13.24%)	4 (5.88%)	0 (0%)
Low (*n*=46)	1 (2.17%)	10 (21.74%)	11 (23.91%)	13 (28.26%)	11 (23.91%)	0 (0%)
Total (*n*=161)	20 (12.42%)	52 (32.30%)	48 (29.81%)	26 (16.15%)	15 (9.32%)	0 (0%)

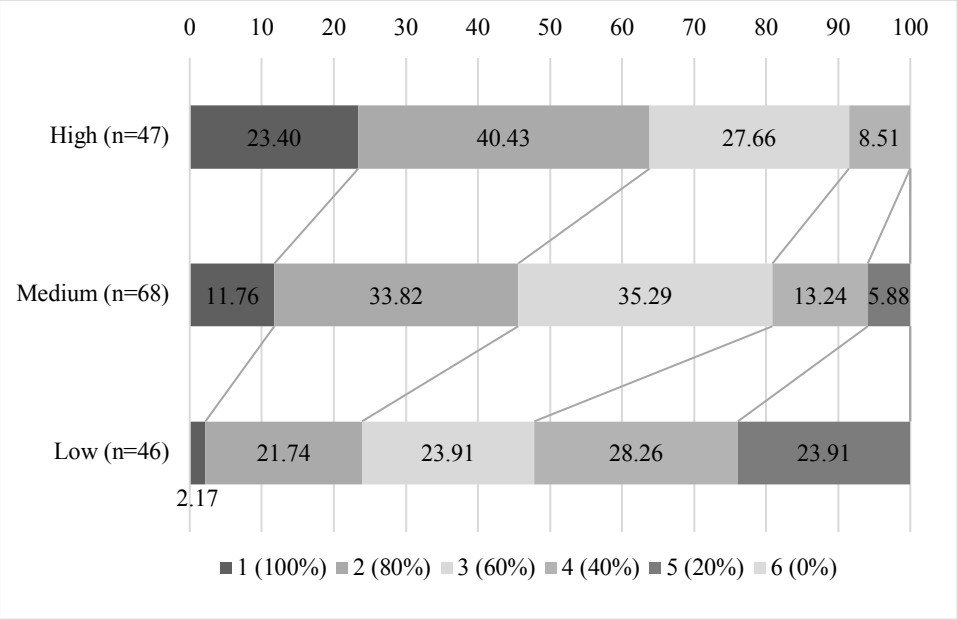

Figure 6-6. Comparison of the three proficiency groups on the understanding levels of RO.

6.5 Discussion

6.5.1 Research Question 1: *Which mode facilitates reading comprehension better, RWL or RO?*

In answer to the first research question, RWL and RO modes did not influence the participants' reading performance. This study is partially in agreement with Chang and Millet's findings (2015) that both groups of participants improved their reading comprehension scores from the pre-test to the delayed post-test, though no delayed post-test was administered to the participants in the present study. There are several possible explanations for why both RWL and RO modes did not influence their reading performance. First, they benefited differently from both RWL and RO modes. In the case of the RWL mode, for example, the participants do not need to decode the written words into aurally appropriate sounds as the audio recording does this for them. In this respect, it may be easy for some learners, especially those whose reading speed was faster than that of the audio recordings, to follow and understand the passages, whereas the other learners whose reading speeds were slower than that of the audio recordings, may have found it difficult to construct the meaning through simultaneous reading and listening because of the speed in the audio recording. In the RO mode, on the other hand, learners were able to read the sentences they could not understand back and forth, and this may have facilitated their understanding more effectively. Another possibility is that the learners found it difficult to decode the written words into appropriate sounds themselves, which may have prevented them from understanding the passages better. It can thus be concluded that the modes of understanding the passages with and without audio-assisted reading differ from learner to learner, and depends on their preferences and proficiency levels. A few studies have investigated the effects of simultaneous reading and listening on reading comprehension (Chang & Millet, 2015). It is thus difficult to compare the results of the present study with previous studies. Increasing the number of studies can generalize ideas revealed by this study.

In the present study, different modes of reading did not affect the participants' reading comprehension test scores. However, past studies on vocabulary acquisition have reported that learners benefited from simultaneous reading and listening in order to learn new words (Brown et al., 2008;

Chang, 2009; Teng, 2016; Webb & Chang, 2012). The findings of these studies showed higher vocabulary gains from the RWL mode than from the RO or LO modes. Brown et al. (2008) and Teng (2016) found that the ratios of the word form acquisition, which is the first necessary step in learning new words, was higher than those of meaning recognition. It is thus assumed that the effects of RWL transfer more easily to vocabulary acquisition than to reading comprehension. While reading, learners need to construct the meanings by understanding each word or sentence they encounter. From this perspective, it is possible that some learners may struggle to understand reading passages in the RWL mode, as learners cannot control audio speed by themselves.

Another possible explanation is that the experiment was conducted in the EFL context where learners usually listen to audio recordings together in class. The learners had no opportunity to adjust the listening speed to suit the pace they were most comfortable with. In this manner, some learners benefited from audio-assisted reading because the speed was appropriate for them. However; other learners felt uncomfortable with the RWL mode because reading speed was slower or faster than their own reading speeds. Finally, there was no time limitation in this study. This means that some learners may have had the chance to re-read a passage when they were engaged in the RO condition. Further, the absence of a time limitation in this study may have enhanced their reading comprehension scores with the RO mode. If a measurement other than one without a time limitation had been applied to this study, the participants may have performed differently.

6.5.2 Research Question 2: *Do two modes of input, RWL or RO, have different effects on three different English proficiency groups?*

The participants were divided into three different proficiency groups. It is assumed that some learners benefited from the RWL mode, while others benefited from the RO mode. A comparison of the different proficiency groups presents a clearer picture of the effects of the RWL and RO modes on comprehending the reading passages. In this study, there was no main effect, except regarding learners' proficiency, or interaction effects between the modes (RWL and RO) and learners' proficiency level (high, medium, and low). However, looking at the result of the two passages, *Father* and *Hero* (Table

6-10 & Figure 6-2), there was a slightly closer interaction effect for learners' proficiency and the two modes. The high and medium-proficiency groups of participants with vocabulary sizes of 2307.62 (ranges from 2,184 to 2,646) and 2,033.65 (ranges from 1,932 to 2,142) respectively, scored over 80% in the reading comprehension test with and without audio support. In contrast, the low-proficiency group with a vocabulary size of 1695.52 (ranges from 840 to 1,890) scored 80% with the RWL mode and 70% with the RO mode. This indicates that the different modes of reading did not affect reading performance in the high and medium-proficiency groups, but did so in the low-proficiency group. The low-proficiency group scored higher with the RWL mode than with the RO mode (Table 6-10 & Figure 6-2). The result indicated that learners in the low-proficiency group depended more on audio support while reading when compared to the high and medium-proficiency groups.

There are several reasons why the low-proficiency group depended more on the audio recordings than the high and medium-proficiency groups. Previous research has showed that when beginners read passages, they pay more attention to decoding the written words, but not to comprehension (Amer, 1997; Dhaif, 1990). They tend to suffer from the bottom-up reading style. Such learners struggle to convert written words into appropriate sounds. This study also found that learners in the low-proficiency group faced such a challenge while reading the passages on their own as they scored higher with the RWL mode than with the RO mode. The beginners in this study also depended more on audio speech while reading. This is not natural reading behavior, but accumulating such experience may accelerate becoming autonomous readers rapidly by improving the bottom-up reading processing skill, which also motivates them to read by themselves. This is why the low-proficiency group gained a point more with the RWL mode.

6.5.3 Research Question 3: *Which mode do learners prefer, RWL or RO? Are there any differences in the perceptions among the English proficiency groups?*

The learners' perceptions were examined using a questionnaire in order to present a more detailed description of the effects of RWL and RO modes. Question item 1 focused on their mode preferences. The result showed that regardless of their proficiency, 60.84% of the participants preferred the RWL

mode, while the other 39.16% preferred the RO mode. However, this was particularly noticeable for the low-proficiency group (Table 6-11 and Figure 6-3). Approximately 70% of the learners in this group preferred the RWL mode. There was an open-ended question asking why they preferred the mode they chose. The participants who preferred the RWL mode made comments such as the following:

Participant 1: I can understand how the words sound better.

Participant 2: I can understand the meaning of the words better by listening to the audio.

Participant 3: By the listening to the audio, I did not need to read the passage by myself.

Participant 4: It is hard to understand without knowing how to pronounce words. Listening to the audio gives you appropriate pronunciation. Therefore, it is easy to understand the meaning of a passage.

Participant 5: Information gathered from listening to the audio tends to last longer in my memory than information gained without audio support.

On the other hand, the participants who preferred the RO mode made the following comments:

Participant 6: I can take time to read a passage at my own pace.

Participant 7: I can re-read a passage until I understand.

Participant 8: There is no time to think in the RWL mode, as the audio does not stop. However, with RO mode, I can take time and go back to unknown words or sentences again and guess their meanings.

Participant 9: I can re-read something that I could not understand well the first time.

Participant 10: I can read at my own pace.

Based on their comments, students who preferred the RWL mode faced difficulties decoding written words into phonologically correct sounds. They were comfortable listening to the audio recording of the passage while reading along. However, Participant 3 mentioned that he did not need to read it by himself, which indicates that some students may just listen to the audio without reading the

passages at all. On the other hand, most learners who preferred the RO mode answered that they liked it because they could read at their own pace. Their comments indicate that some of them may have read the passage back and forth and several times over in order to comprehend the meaning, while others may have read faster than the audio recording, which may have prevented them from reading at their own pace.

Question items 3 and 4 related to the learners' confidence level, and asked them to indicate the extent to which they thought they could understand the passages with either the RWL or RO mode. Learners' perceptions differed across groups. The results highlighted an interesting point in that the number of learners in the low-proficiency group who lacked confidence in the RO mode was much higher than the number of learners in the high and medium-proficiency groups. In addition to the learners' reading comprehension test scores in the low-proficiency group, their confidence level also supported the view that the learners in the low-proficiency group still needed audio support while reading. We can also say that the low-proficiency group participants with vocabulary size 1,695 on an average still needed more phonological support to practice 1,000-word level reading passages. Audio support may have helped them learn to read more quickly and to improve their reading fluency skills. In contrast, the participants in the high and the medium-proficiency groups with a mean vocabulary size of 2,307.62 and 2,033.65 respectively, should practice reading passages without depending on audio support as they can comprehend well and are highly confident about using both modes. They should strive to train themselves by reading passages at levels higher than the 1,000 word-level."

In the questionnaire, learners were also asked if the audio speed was appropriate to follow (Table 6-12 & Figure 6-4). The participants in the medium and low-proficiency group tended to overestimate themselves, and said that they found it easy to follow the passages using the RWL mode. In contrast, the learners in the high-proficiency group underestimated themselves and said that the audio speed was faster than they had expected it to be. From this perspective, it seems that the more advanced the students are, the stronger their desire is to understand every single word accurately. However, Nation (2005) suggested that 70% of the understanding was sufficient while developing learners' reading fluency skills. Teachers must identify this phenomenon and instruct learners on the importance of understanding the overall meaning of the passage rather than everything written in it, if the purpose of

reading is to develop learners' reading fluency skills. This kind of suggestion from teachers may encourage learners to improve their reading behavior.

6.5.4 Follow-up Study

In this study, four reading passages were chosen as experimental materials. Before performing the experiment, a careful text analysis had been conducted to show that all reading materials were same in terms of vocabulary levels. The reason why the experimental materials were analyzed from the vocabulary perspectives was that vocabulary is a crucial predictor for reading comprehension (Alderson, 1984). The researcher was able to choose appropriate reading materials for the participants by considering their vocabulary levels and the vocabulary used in the reading materials.

The text analysis revealed that the passage contained high frequency vocabulary, mostly from the first 1,000-word list. Each passage is covered with over 90% of the words from the first 1,000-word list and proper nouns (Table 6-2). However, the participants' reading comprehension test scores differed across the passages (Table 6-5 & Table 6-15). Group A scored 8.34 with RO mode (1. *Pig* and 3. *Marathons*), whereas Group B scored 6.51 with RO mode (2. *Father* and 4. *Hero*). There is a possibility that other factors besides vocabulary may have influenced the scores, causing the participants to struggle to understand the passages.

A T-unit analysis, which measures the syntactic complexity, was performed as part of the follow-up study in order to figure out why the result yielded different outcomes. The tool for T-unit analysis was drawn from Professor Tom Cobb's website (https://www.lextutor.ca/tools/ex_sent/). Table 6-15 shows the result of four passages, but these passages were divided into two categories based on what the participants in Groups A and B had read with the RO mode. According to Table 6-15, the total number of T-units in 1 and 3 (1. *Pig* and 3. *Marathons*) is 107 while the total number of T-units in 2 and 4 (2. *Father* and 4. *Hero*) is 97. This means that reading passages 1 and 3 contained 10 sentences that were larger than those in passages 2 and 4. As for the average number of words in T-unit, the number in reading passages 1 and 3 was 9.12 (3.52) whereas the number in reading passages 2 and 4 was 9.97 (5.80). The sentences used in reading passages 2 and 4 were longer than those in reading passages 1 and

3. The longer the sentences are, the harder it is for learners to understand. From this perspective, the syntactic complexity of reading passages 2 and 4 seem a little complicated when compared to reading passages 1 and 3. However, it remains unclear to what extent syntactic complexity prevented the participants from understanding the passages accurately.

Table 6-15
The Result of T-unit Analysis for Four Reading Passages using the RO mode

Title	1. *Pig* 3. *Marathons*	2. *Father* 4. *Hero*
Total T-units	107	97
Words per unit (SD)	9.12 (3.52)	9.97 (5.80)
RC Scores	8.34	6.51

Note. Words per unit = Average number of words per unit; RC Scores = Average reading comprehension test scores.

T-unit analysis with each reading passage was also performed to explore why the test scores were different (Table 6-16). From the perspective of syntactic complexity, the most difficult passage was 2. *Father* followed by 3. *Marathons*, 4. *Hero*, and 1. *Pig*. *Father* was the most difficult when seen from the perspective of syntactic complexity, but learners scored second highest while reading it. In contrast, 1. *Pig* was the easiest passage in terms of syntactic complexity, but the second lowest scores were obtained for it. These passages were ranked according to their syntactic complexity, but it is still unclear to what extent the differences in syntactic difficulties had influenced the learners' understanding of the passages. The average number of words per T-unit ranged from 8.52 (1. *Pig*) to 10.48 (2. *Father*). This means that the difference was approximately two words per unit. From these mixed and complicated findings, it may be concluded that such syntactic complexity, say, two-word differences in a sentence on average, did not affect the learners' reading comprehension. The analysis was conducted from two different perspectives: learners' vocabulary levels and syntactic complexity. However, there was no strong evidence that these factors had prevented learners from understanding the passages given to the learners. From this perspective, factors other than the length of a sentence or syntactic complexity in a sentence such as learners' world knowledge may have affected their reading comprehension scores. Adjusting

the syntactic structures and vocabulary levels in a manner that is most appropriate for learners is important while determining reading materials. We also need to examine the contents of the passages in future studies. Considering these factors will create more appropriate materials for the participants.

Table 6-16
The Result of T-unit Analysis for each Reading Passage

Title	1. *Pig*	2. *Father*	3. *Marathons*	4. *Hero*
Total T-units	54	44	53	53
Words per unit (SD)	8.52 (3.35)	10.48 (5.86)	9.74 (3.62)	9.30 (5.36)
RC Scores	3.30	4.12	3.20	4.22

Note. Words per unit = Average number of words per unit; RC Scores = Average reading comprehension test scores.

6.6 Study Limitations

This study has some limitations. First, the experiment was conducted through self-paced reading as the researcher gave top priority to the learners' natural reading behavior. As a result, some of them may have taken advantage of this and may have read the passage back and forth or repeatedly to understand unknown words or sentences and the meaning of the passages. This may be one reason why no strong evidence for the effects of RWL on reading comprehension was found in this study. If there was a time limitation, for example, in how much time can participants read a passage with the RO mode, the study may have produced different outcomes. Second, the study did not measure learners' reading speed. If the study compared learners' reading speeds in addition to reading comprehension, it may have been possible to provide a more accurate description of the effects of RWL and RO modes on reading comprehension. Finally, the learners read only two passages with each mode in this study. According to previous studies, however, it takes time for learners to transfer the benefits of simultaneous reading and listening to their linguistic skills (Chang, 2019; Cheetham, 2017). Thus, learners can encounter words and sentences through a large quantity of inputs in various contexts, which help them improve their

linguistic knowledge further. Overcoming such limitations in future studies will unveil a clearer description of the effects of audio-assisted reading.

6.7 Conclusion

The findings of the present study showed that two different modes of reading affected learners' reading comprehension and their perceptions differently. The participants in the low-proficiency group tended to depend more on audio-assisted reading when compared to the other groups. This study showed that the low-proficiency group struggled from decoding the written words into phonologically appropriate sounds. In this case, the audio-assisted reading helped them construct the meaning by understanding each word, and this developed learners' reading skills. As learners were able to comprehend the reading passages better using the RWL mode, the approach enhanced their motivation toward reading as well.

Studies should be conducted by modifying the experimental design to generalize the idea of the effect of RWL and RO modes on reading comprehension, such as by setting time limitations for reading passages, extending the length of the intervention period, and increasing the number of test items. These revisions in future studies can produce a more detailed concept of simultaneous reading and listening. There are some experimental limitations to this study, however. Considering that only a few studies have been conducted to examine the effects of audio-assisted reading on reading comprehension, this study contributes positively to research on simultaneous reading and listening as one of the effective methods of developing learners' reading fluency skills. It may deserve inclusion in EFL reading programs.

Chapter 7

General Discussion

7.1 Chapter Overview

This chapter summarizes the findings of the four experiments reported in this thesis in Chapters 3 to 6. Subsequently, the focus shifts to the general discussion, where implications of the findings of the four dimensions are highlighted. First, we introduce how repetitions affect learners' attention by focusing on the relationship between input and intake. This answers why some parts of input are stored as intake and others are not. Second, the effects of repetitions are discussed based on an analysis of the data on the target grammar items, to-infinitives used as nouns, and other grammatical items used as distractors in Chapter 4. The analysis provides more accurate information on the effectiveness of repetitions by incidental learning. Third, the discussion focuses on the relation between reading fluency and phonological awareness skills, and why phonological support helped learners' reading comprehension. Last, the importance of a balanced reading activity in the L2 classroom is emphasized based on the findings of this study. Teachers must know what skills are incidentally acquired and which ones are not. Finally, based on the limitations of the study, areas of future research are suggested.

7.2 Summary of the Findings

The research reported in this thesis comprised four studies to examine whether extensive reading (ER) instruction is beneficial in facilitating first-year *Kosen* students' reading abilities, especially in the initial stage of ER. The first experiment, described in Chapter 3, investigated the effects of ER on developing the language knowledge and reading abilities of *Kosen* students over the course of one school year. The results showed that the ER student group, who read approximately 115,000 words in an academic year, performed better than the grammar instruction group in terms of language knowledge and reading performance. The findings of the study indicated that the participants activated the knowledge they

learned in junior high school through the one-year ER course, resulting in the improvement of their language knowledge and reading abilities.

Chapter 3 confirmed the effects of ER instruction, which improved *Kosen* students' reading abilities and linguistic knowledge. Thus, Chapter 4 focused on the learning process of a specific grammar item to examine whether incidental grammar learning takes place in the same way as shown in the research on vocabulary acquisition (Day, Omura, & Hiramatsu, 1991; Henriksen, 1999; Pigada & Schmitt, 2006; Pitts & Krashen, 1989; Robb & Susser, 1989). Few studies have investigated the effects of incidental grammar learning through ER (Lee, Schallert, & Kim, 2015; Shintani & Ellis, 2011; Song & Sardegna, 2014). The findings indicated that learners learned a language form, namely the use of to-infinitives as nouns, even though they focused on reading comprehension. The study implies that frequent exposure to target grammar items repeatedly helps learners notice the grammatical rules regarding to-infinitives used as nouns. Moreover, compared to vocabulary learning, learners may need more encounters when learning grammatical rules incidentally by reading.

Chapters 5 and 6 explored how efficiently teachers could provide learners with a large amount of comprehensible input in the L2 classroom. Chapter 5 focused on the nature of texts learners use in the classroom, and examined whether different types of texts, namely expository and narrative texts, affect the reading comprehension of high school EFL learners. The nature of the texts was investigated to identify the difficulties learners may face when reading different types of texts. In addition, knowing the factors that affect learners' reading comprehension revealed which approaches are effective in improving learners' reading abilities. The number of words per sentence in expository texts is greater than in narrative texts. Increasing the number of words per sentence also means that more propositions are likely to be embedded in the sentence. Furthermore, compared to the narrative texts, the expository texts contained a small portion of word overlaps. The findings showed that learners might have required more cognitive demand in terms of language processing while reading expository texts.

To reduce learners' cognitive burden in terms of reading comprehension, Chapter 6 examined the effectiveness of the reading while listening (RWL) approach in enhancing learners' reading abilities in a whole-class reading setting. RWL can be conducted in a whole-class reading setting while providing learners with a high quantity of comprehensible input. When analyzing data after participants were

divided into different proficiency groups, learners in the low-proficiency group benefited from the effects of the RWL approach more than those in the high - and medium-proficiency groups, who scored well regardless of whether they read with or without audio support. These findings indicate that learners' proficiency levels and the two reading modes, RWL and reading only (RO), affected their reading performance differently. Simultaneous reading and listening modes were identified as effective methods to develop reading skills and motivation, especially for low-proficiency learners.

7.3 Incidental Learning through ER: Does the Repetition Capture L2 Learners' Attention?

The discussion begins with the relationship between incidental learning and repetition. As Chapter 3 and 4 confirmed, incidental learning occurs through consistent exposure to a large amount of comprehensible input. For example, frequent encounters with the same grammar items during reading help learners notice a grammatical rule in an incremental way, which positively contributes to incidental grammar acquisition. To understand why repetition during reading affected learners' reading abilities, we focused on the relationship between input and intake. This may explain why some parts of input are stored as intake and others are not.

Examining the mechanisms of L2 acquisition may reveal why ER improved learners' linguistic abilities. Researchers in the field explain how learners process incoming language input that develops learners' development of L2 knowledge called "interlanguage" (Ellis, 1997; Gass & Selinker, 1994; Lightbown & Spada, 2013; VanPatten, 1993). For example, Gass and Selinker (1994) explained the L2 acquisition model by dividing it into five stages of processing (i.e., apperceived input, comprehended input, intake, integration, and output), while other researchers explain it through three stages of processing (Ellis, 1997; Lightbown & Spada, 2013; VanPatten, 1993). For example, Ellis (1997) explains the basic mechanism of L2 acquisition, representing how L2 acquisition takes place (Figure 7-1). According to a computational model of L2 acquisition, the learner is exposed to input, which is processed in two stages. First, parts of input are attended to and taken into the short-term memory, which is called "intake." Second, some parts of input from intake are stored in the long-term memory as "L2 knowledge." Finally, L2 knowledge is ready for the learner to produce as spoken and written output.

In general, during ER, learners receive a large amount of comprehensible input within the range of their linguistic abilities. Based on the computational model of L2 acquisition, it was assumed that the learners in this study could successfully store some parts of input as intake incidentally through reading L2 comprehensible input, while other parts of input were not stored as intake, which leads to improving their linguistic knowledge. However, the question is what distinguishes the two situations—some parts of input are successfully stored in the short-term memory as intake while others are not. Moreover, this does not necessarily mean that all the input is stored as intake (Gass 1988; Schmidt, 1990; VanPatten, 1996, 2007).

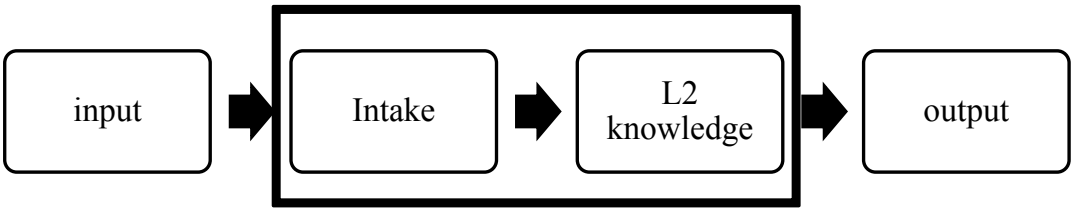

Figure 7-1. A computational model of L2 acquisition
Adapted from "Interlanguage," by R. Ellis, 1997, *Second Language Acquisition*, p.35.

In response to the question above, we focus on the relationship between input and intake in Figure 7-1, which is strongly related to incidental learning in the initial stage of L2 acquisition. According to Gass (1988), only information noticed (or apperceived input) by learners, which differs between learners, affects the integration of their intake. The outstanding linguistic features for learners become available for the intake. Gass proposed that four factors influence learners' noticed input: (1) frequency, (2) affect (e.g., social distance, status, motivation, and attitude), (3) association and prior knowledge, and (4) attention. These factors integrate with each other, contributing more to learners' noticed input than individual factors alone. Among these factors, frequency is essential (Brown, 1993; Gass, 1988; Hulstijn, 2003; Rott, 1999), although learners may acquire something infrequent but conspicuous (Webb, 2008). Furthermore, Brown (1993) emphasizes the importance of two factors, frequency of occurrences and saliency, which greatly influence the beginning of L2 acquisition. These two factors are also related to

each other. Brown (1993) added that repeated encounters of the same words or grammatical forms become salient as they gradually capture learners' attention, which also leads to L2 acquisition.

The experiment described in Chapter 3 provided strong evidence that a large amount of comprehensible input, 100,000 words per year, was effective in developing L2 linguistic knowledge and reading abilities. During the intervention, some parts of input from graded readers were integrated with their existing knowledge, reinforcing their partial L2 knowledge. The four studies comprising the research here consistently employed *Kosen* freshmen as participants, who can be considered equivalent to high school freshmen. This means they underwent at least three years of English learning in junior high school. According to the curriculum guidelines for junior high school, learners are required to receive 360 hours of English classes for 3 years, which is equivalent to 120 hours of English classes per year and approximately 4 hours of English classes per week for three years in junior high school. Considering their three years of English learning experience, it could be assumed that their accumulated knowledge of English studies, what Gass (1988) called association and prior knowledge, supported them to strengthen their partially learned grammar items and vocabulary knowledge. In other words, learners' partial knowledge, once learned but still in an uncertain linguistic form, was reinforced by exposure to a large amount of L2 comprehensible input. Previous incidental vocabulary acquisition research has also confirmed that learners' knowledge of vocabulary is reinforced incrementally by exposure to a large number of words (Hulstijn, 2001; Laufer & Hulstijn, 2001; Pigada & Schmitt, 2006). From this perspective, the continuous practice of a one-year ER program provided learners with opportunities to activate their existing knowledge, which led to improving their overall reading abilities as well.

While the ER group performed well on both sections of the test (the reading and language knowledge sections), no statistically significant improvement was found in the grammar instruction group. They completed the same number of hours of English classes in junior high school as the experimental group in accordance with the curriculum guidelines. In addition, they learned new grammar items during the interventions. This result indicates that if there were no opportunities for learners to activate their existing knowledge, their accumulated knowledge from junior high school was no longer reinforced. This also means that continuous learning of new grammar items does not transfer

to both sections of the test. During the intervention, they had the opportunity to learn new grammar items, but there were no opportunities to activate their prior knowledge. As a result, they lacked noticing experiences through incidental learning, which resulted in no improvement in both sections of the test. The major difference between the two groups of participants is whether they received a large amount of L2 comprehensible input. From this perspective, the quantity of input increased learners' chances of noticing the information by activating their existing knowledge, resulting in the storage of the noticed information in the short-term memory as intake. Note that we are not criticizing an explicit grammar instruction; however, more balanced reading instruction including reading fluency activities is necessary to improve learners' reading abilities.

7.4 Incidental Grammar Learning through ER: Does the Repetition Improve Learners' Grammar Rules?

As the findings from Chapter 4 suggested, learners are able to learn grammar rules incidentally by reading under two conditions: (1) texts are comprehensible for the learners and (2) grammar items are partially learned. All the learners were taught the features of the target grammar item, namely to-infinitives used as nouns, in junior high school. That learners have been taught, however, does not necessarily mean that they can completely understand and use the target grammar item effectively. Rather, it means that the grammar items were once taught but not yet perfectly been acquired—Partially learned grammatical forms are strengthened by increasing learners' experiences of the noticing during reading. In this study, learners might have been aware of the target grammatical form by repeated exposure to the same grammatical form in a variety of contexts, while focusing on comprehension. From a vocabulary acquisition viewpoint, Henriksen (1999) points out that "understanding is gradually changed and increased as experience both of the world and of language is expanded" (p.311). Moreover, according to the U-shaped course of development presented in Figure 7-2, learners use a correct target-language form at the initial stage; then, when time passes, it is replaced with an ungrammatical interlanguage form. Finally, it returns to the use of the correct target form (Ellis, 1997). The U-shaped course of development suggests that learners' interlanguage changes over time by reorganizing their

existing grammatical knowledge to accommodate new knowledge. As mentioned earlier, according to Gass (1989), four main factors (frequency, affect, association and prior knowledge, and attention) affect learners' interlanguage. As for the present study, it is difficult to identify exactly what factors influenced learners' interlanguage or how much each factor contributed to the development of learners' interlanguage; however, it can be said that repetitions affected their interlanguage by meeting target grammatical forms repeatedly in a variety of contexts, resulting in the improvement of the partially learned grammatical form.

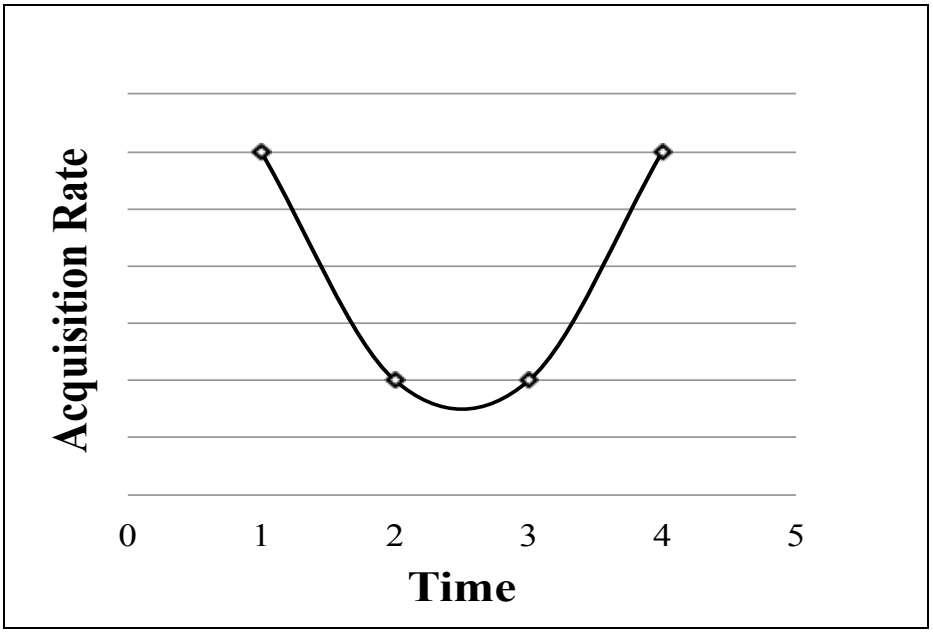

Figure 7-2 U-shaped course of development

As indicated above, learners' partial knowledge of to-infinitives used as nouns was developed through repeated encounters. The question is whether this phenomenon could be applied to other grammatical forms. In other words, what other grammar items would be improved incidentally through consistent exposure to the target grammar items. To look for other grammatical items that could possibly be developed through incidental learning, we analyzed the item facility (IF) values on the grammar test in Chapter 4. The analysis was conducted with the low-proficiency group of learners in the experimental group (n=19) in the first section (the notice section). The results confirmed a positive improvement in their scores in this section. As explained in Chapter 4, the notice section consists of 10

to-infinitive nouns and 20 distractors. These distractors consist of the grammar items that *Kosen* students have learned; thus, it is assumed that IF values similar to the to-infinitives used as nouns may facilitate incidental grammar learning. It should be cautioned that analyzing the IF value of each item is a tentative investigation. However, while it may be difficult to generalize the results of the analysis, examining the IF values will reveal hints for future studies.

First, we examined the IF values on each item in the pre- and post-tests of the to-infinitives used as nouns to determine the percentage of learners able to answer the questions correctly (Table 7-1). This enabled observing what items benefited from the effects of repetitions. Target sentences were listed in order of high scores in the pre-test, meaning the highest score in the pre-test is the top (2. I want *to study* Japanese history), and the lowest one (18. Mike's hope is *to become* a doctor) is listed below. Learners had a mean score of .62 in the pre-test, which increased to a mean of .75 in the post-test. Despite that the same grammatical form was used in 10 target sentences, the IF values ranged from .21 to 1.00 in the pre-test, and from .53 to .89 in the post-test. Even though some items (items 2 and 14) decreased from 1.00 to .89 and from .79 to .74, respectively, the lowest value improved from .21 to .53. These findings imply that some learners were unsure how to use to-infinitives as nouns in the pre-test, but gradually got to know the rules for the target grammar by repeated exposure to the grammatical forms, which resulted in the improvement seen in the post-test. On the other hand, it cannot be ignored that two items decreased from the pre- to post-test. As explained in the U-shaped course of development above, decreasing is also one of the phases of L2 acquisition. In other words, learners' interlanguage is still unstable, but has been gradually moving toward acquisition.

Subsequently, the focus shifts to the items with larger gains between the pre-and post-tests, since these items are likely to benefit from the effects of repetitions during the reading. As Table 7-1 shows, there are two types of gains: absolute learning gains (actual learning gain) and relative learning gains. We looked at relative gains rather than absolute gains when comparing the gains between the pre-and post-tests, because relative learning gains provided accurate gains even with high scores in the pre-test (Webb and Chang, 2015). If learners gained high scores in the pre-test, the margins of the gains were limited to small gains compared to the items with low scores in the pre-test. However, the relative gains reduce the possibility of this phenomenon; therefore, we look at the relative gains when comparing the

gains between the pre-and post-tests. Relative learning gains were calculated using the following formula: [(correct raw post-test score – pre-test score) / (total grammar items tested – correct raw pre-test scores)]. As shown in Table 7-1, while some forms improved well, others did not, especially if the IF values were quite high in the pre-test. Among the items, six items in the black frame in Table 7-1 improved well compared to the other items, with the relative gains ranging from .31 to .78. In addition, the pre-test scores of the six items ranged between .21 and .68. As these items improved incidentally through reading, the scores from .21 to .68 on the other grammatical items in the pre-test were likely enhanced incidentally through reading, similar to the experiments in Chapter 4.

Table 7-1

Item Facilities of Target Grammar Items Used in the Notice Section (To-Infinitives Used as Nouns)

No	Grammar Item	IF (PRE)	IF (POST)	Absolute Gains	Relative Gains
2	I want *to study* Japanese history.	1.00	.89	-.11	.00
22	I found it interesting *to study* Chinese.	.84	.88	.05	.24
14	It is difficult *to write* a long letter in English.	.79	.74	-.05	-.25
26	He decided *to go* camping.	.68	.84	.16	.50
11	*To save* money is not easy	.63	.63	.00	.00
21	It is dangerous *to swim* in the river.	.63	.89	.26	.71
5	*To sing* this song is difficult.	.53	.68	.16	.33
28	He did not like *to play* soccer.	.53	.89	.37	.78
7	We found it hard *to solve* the problem.	.32	.53	.21	.31
18	Mike's hope is *to become* a doctor.	.21	.53	.32	.40
	Average	**.62**	**.75**	**.13**	**.30**

Among the six items, we selected the three that improved the most from the pre- to post-test to identify how many of the same patterns of sentences learners had encountered through the five passages they had read. It was believed that analyzing the encounter rates could provide more detailed information on how many encounters are likely to contribute to learners' acquisition. As Table 7-1 shows, the relative gains on three items—28, 21, and 26—are more than .50, while the relative gains on the other items are less than .50. Therefore, we selected three items for further investigation. These items were categorized into two patterns: items 28 and 26 were categorized in Pattern A (SVO=to infinitives),

and 21 was categorized in Pattern B (It is + adjective + (for~) + to-infinitives). The common point of the two sentences (28 and 26) is that the to-infinitives used as nouns were used as a function of the object after subject and verb in the sentence (SVO=to infinitives). One major difference between the two sentences is that item 26 is an affirmative sentence, whereas item 28 is categorized as a negative sentence. However, there were no negative sentences of to-infinitives used as nouns in the texts. Therefore, we determined two sentences (28 and 26) as having the same SVO patterns of sentences. Regarding item 21, the to-infinitives used as nouns are placed after adjective or adjective + for~ (It is + adjective + (for~) + to-infinitives). Hence, we look at the encounter rates of the two patterns of sentences to identify if the frequency of the same patterns affected learners' grammatical knowledge.

28. He did not like to play soccer. (.78)
21. It is dangerous to swim in the river. (.71)
26. He decided to go camping. (.50)

The number of instances in Pattern A (SVO=to infinitives) and Pattern B (It is + adjective + (for~) + to-infinitives) were counted in the reading passages. The results showed that 25 sentences of Pattern A were found in five reading passages the learners had read, whereas only seven sentences of Pattern B were found in five reading passages (Appendix G). Regarding Pattern A, the encounter rate was significantly higher than that of Pattern B. When looking at only Pattern A, repeated encounters of the same patterns of sentences might have expanded learners' grammatical knowledge. However, considering the gains on item 21, it cannot be concluded that only seven meetings of the same sentence patterns developed their grammatical rules. Rather, it could be assumed that not only the exposure to the same patterns of sentences helped learners notice the grammar rules, but also meeting a variety of sentences of to-infinitives used as nouns allowed them to recognize the use of the construction "It is + adjective + (for~) + to-infinitives." In addition to exposure to a variety of sentence patterns, the words used in the sentences or their accumulated experiences might have influenced learners' L2 acquisition, as suggested by other researchers (Brown, 1993; Gass, 1988). However, the extent to which repetitions help learners improve their interlanguage remains unclear.

As suggested above, the results of the analysis confirmed that repeated encounters with the target grammar items during reading influenced learners' interlanguage on the condition that the IF value on an item is roughly between one-fifth and two-thirds at the initial stage. A range of values (one-fifth and two-thirds) at the initial stage indicates that learners are likely to recognize grammatical rules through reading incidentally. In other words, it is challenging for learners to notice grammatical rules incidentally by reading if they do not completely know the grammar rules. They might be able to guess the meaning of the new words based on the words around them. Regarding grammar, it consists of words, but these words contain propositional information embedded in the language (VanPatten & Cadierno, 199). From this perspective, learners' partial knowledge of the target grammar rules with a range from one-fifth to two-thirds may assist them in conclusively learning these rules incidentally.

Next, we listed the IF values of the distractors to compare them with the IF values of the to-infinitives used as nouns (Table 7-2). This enabled generalizing what other grammatical items are likely to be strengthened incidentally through reading. Table 7-2 describes the IF values of 20 distractors in the notice section. As Table 7-2 shows, the 10 items covered with a black frame have similar difficulty levels as the to-infinitives used as nouns: relative pronoun, present tense, past tense, noun phrase, and gerund. The IF values of these distractors are close to the values of the to-infinitives used as nouns; therefore, these items could be enhanced by repetitions of the target grammar items at the noticed level.

Some grammatical forms are reinforced incidentally by reading. However, it should be cautioned that even though the same grammar forms are used in the sentences, the IF values of some grammar items are high, while others are low. When looking at the particular grammatical form in Table 7-2, four sentences are related to noun phrases (12, 30, 3, and 29) in the distractors ranging from .21 to .95 in the pre-test. This figure indicates that although the same grammatical form is used in these sentences, learners are still confused about the use of the grammar of noun phrases. Therefore, the phenomenon that some items are high while others are not occurs at the initial stage. However, as the repetitions facilitated learning the grammar rules regarding to-infinitives used as nouns, exposure to other grammatical forms repeatedly in a variety of contexts influences learners' interlanguage, improving their grammar knowledge.

Table 7-2

Distractors Used in the Notice Section

No	Grammar Item	Grammar	Pre (IF)	Post (IF)	Gains
1	John *and* I are good friends.	Conjunctions	1.00	.95	-.05
6	My bag is *more expensive* than yours.	Comparison	1.00	.95	-.05
24	Kate cannot run as *fast* as Anne.	Comparison	1.00	.95	-.05
12	She is collecting dolls *made* in Japan.	Noun phrase	.95	1.00	.05
13	We have never *been* to Paris.	Present perfect	.95	1.00	.05
16	I am *older* than your sister.	Comparison	.95	.95	.00
27	She has *visited* the town once.	Present perfect	.89	.68	-.21
8	The robot *is* able to clean the room.	Idiom	.84	.84	.00
10	I enjoyed *swimming* in the lake last Sunday.	Gerund	.74	.84	.11
30	I received a letter *written* in English from Cathy.	Noun phrase	.68	.63	-.05
15	I cannot understand *what* you are saying.	Relative pronoun	.63	.89	.26
20	I *finished* my homework yesterday.	Past tense	.63	.47	-.16
3	The woman *talking* with Kate is my mother.	Noun phrase	.58	.53	-.05
17	He is good at *playing* tennis.	Gerund -ing	.47	.42	-.05
19	Tom *loves* Jane, but she does not like him.	Present tense	.47	.58	.11
23	Thank you for *calling* me.	Gerund	.42	.53	.11
9	How about *playing* beach volleyball?	Gerund	.26	.32	.05
25	Look at the boy *whose* hair is long.	Relative pronoun	.21	.21	.00
29	Look at the picture *painted* by Tom.	Noun Phrase	.21	.16	-.05
4	He is looking forward to *seeing* you.	Gerund	.05	.16	.11
	Average		**.65**	**.65**	**.00**

Note. Testing parts are emphasized with italic

As the findings of this study suggest, comprehensible input through ER improves learners' partially learned L2 knowledge and reading abilities. Similar to previous research on vocabulary (Pigada & Schmitt, 2006; Rott, 1999; Waring & Takaki, 2003), learners are able to improve their partial knowledge of grammatical knowledge through exposure to comprehensible input. It has been claimed that it takes time to observe the effects of ER as the process is said to be slow, fragile, and haphazard (Grabe, 2009; Nation, 2013; Pigada & Schmitt, 2006). However, the evidence of the present study supports the notion that continuous ER slowly but surely contributes to the development of learners' interlanguage. Moreover, regarding the learning process, their partial knowledge is strengthened by repeated encounters of target grammar items in a relatively short period. Essentially, they receive

comprehensible input through reading, which means they are likely to encounter the words or grammar items they have partially acquired. However, repeated encounters with the same words or grammar items facilitated their input processing, which enhanced their linguistic knowledge and reading abilities. From this viewpoint, it is concluded that ER instruction is effective in enhancing learners' partial knowledge of vocabulary and grammar; however, it may not be suitable in strengthening completely unknown words or unlearned grammar items from scratch solely through reading input. Furthermore, as the evidence of the experiments in Chapter 3 suggested, learners' reading abilities did not improve through the continuous learning of new grammar items and new words. Rather, the findings showed that their reading abilities developed by strengthening their partial knowledge. It is important for learners to learn new grammar items and vocabulary, but a balanced reading activity by affording slightly more time to activating their ambiguous knowledge is also essential in reinforcing learners' reading abilities.

7.5 The Relation between Reading Fluency and Phonological Awareness Skills

In this subsection, we discuss the relation between reading fluency and phonological awareness skills. In the present thesis reading while listening (RWL) approach enhanced especially low proficiency learners' reading comprehension. In addition, positive attitude toward RWL has been reported from learners in low proficiency group. From this perspective, phonological support are likely to play an important role in text comprehension in RWL mode. Focusing on how learners recognize words by listening and reading may reveal more about the effects of RWL and how their phonological awareness skills contribute to reading fluency development.

As explained in Chapter 6, reading fluency is "the ability to read rapidly with ease and accuracy, and to read with appropriate expression and phrasing" (Grabe, 2009, p.291). According to Kuhn and Stahl (2003), reading fluency comprises (a) accuracy in decoding; (b) automaticity in word recognition; and (c) the appropriate use of prosodic features such as stress, pitch, and juncture. From these definitions, it is understood that fluent readers can read smoothly while maintaining reading comprehension. Automatizing reading fluency skills reduces learners' attentional resources for decoding words, enabling them to pay greater attention to better reading comprehension. It is widely accepted that increasing the

quantity of input learners encounter can enhance their reading fluency efficiently (Grabe, 2009; Nation, 2013).

When practicing ER for the purpose of developing reading fluency in a whole-class setting, it is essential for teachers to help reduce learners' cognitive burden, especially for beginner readers. Reducing these burdens will allow them to focus more on comprehension. There are many ways to approach reading fluency, such as repeated readings (Chang & Millet, 2013), timed reading (Serrano & Huang, 2018), narrow reading (Chang & Millet, 2017), and RWL (Brown, Waring, & Donkaewbua, 2008). Although teaching approaches differ, common among these approaches is that learners gain exposure to a large quantity of comprehensible input to enhance their reading fluency skills. Among these approaches, the present study examined whether the RWL approach assists learners' reading comprehension, and if so, what levels of learners benefit most from this approach.

One main reason this study investigated the effects of RWL and RO was that they allow learners to strengthen the connection between the form and meaning of the words by listening to audio recordings (Brown, Waring, & Donkaewbua, 2008). As a form-meaning connection is an important part of word recognition processing (Grabe, 2011; Pigada & Schmitt, 2006), listening to audio recordings while reading helps learners, especially those struggling to decode written words into phonologically appropriate sounds. Another reason is that simultaneous reading and listening is effective in improving bottom-up reading processing skills, leading learners to gradually acquire natural reading behaviors (Amer, 1997). Since it reduces learners' attentional resources in decoding words, they can also pay attention to reading comprehension. Last, learners can hear the sound effects while listening to the audio recordings, which may help them enjoy reading more than using other reading fluency approaches such as repeated reading, timed reading, and narrow reading. This study revealed that the effects of the RWL approach differ depending on learners' proficiency. Low-proficiency learners benefited from the RWL approach. Compared to high-proficiency learners, low-proficiency ones demonstrated a preference for simultaneous reading and listening rather than reading without audio support. From this perspective, it could be assumed that phonological support may have reduced low-proficiency learners' cognitive burden to some extent when reading.

To explore the effects of phonological awareness skills in reading, the word recognition process was examined, that is, how learners process received input and comprehend it in listening and reading modes (Figure 7-3). According to Kadota (2001), in the case of listening comprehension, learners recognize the meanings of words or phrases only by processing the auditory input that they receive (Route 1). However, regarding reading comprehension, there are two ways of visual input processing: (1) learners recognize words or phrases by processing visual input into phonologically appropriate sounds by themselves (from Route 2 to Route 1), and (2) they recognize the meaning of the written words without phonological processing (Route 3). One significant difference between the word recognition process in (1) and (2) is whether learners process visual input into phonologically appropriate sounds on their own. However, learners need to process visual input by themselves when reading. It is believed that processing speed improves with increased L2 proficiency and exposure to a large amount of input (Kadota, 2001; Koda, 1998; Muljani, Koda, & Moates, 1998). Moreover, with increased L2 proficiency, more words are accessible through Route 3 by skipping the process of decoding words into appropriate sounds.

Exposure to a large amount of input enables learners to process received input faster, which leads to better reading comprehension (Muljani et al., 1998). However, if learners struggle to decode written words into appropriate sounds when reading, they might face difficulty in understanding texts. Noro (2000) argues that it is difficult for learners to improve their phonological awareness skills exclusively through silent reading by themselves from an incidental vocabulary learning perspective. He also mentioned that activities such as the RWL approach or reading aloud might help learners improve their phonological awareness skills. Japanese is a non-alphabetic language; therefore, it is difficult, especially for beginner learners of English, to process visual input by themselves. It has also been reported that L1 orthographic systems influence L2 word recognition, but exposure to a large amount of input also facilitates learners' word recognition skills (Muljani et al., 1998). Reducing the cognitive burden on input processing enables learners to focus on reading comprehension and enhance their confidence in reading, even though they depend on audio-assisted reading. Nuttall (2005) suggests that successful reading experiences at the beginning of practice help enhance learners' confidence in independent

reading. Accumulated experiences even with the aid of audio support may contribute positively to becoming autonomous readers in the future.

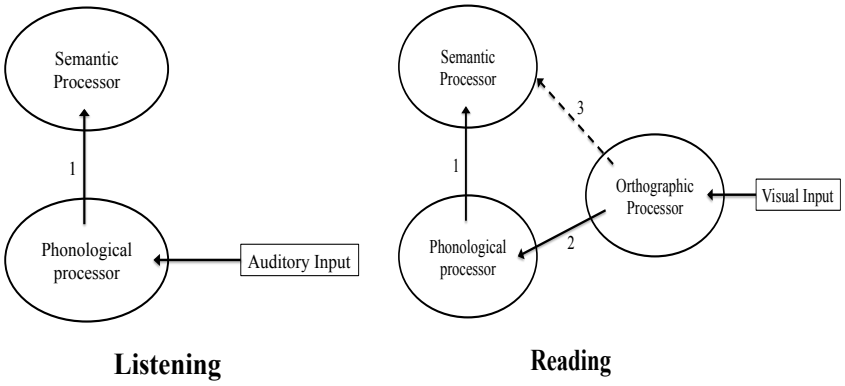

Figure 7-3. Word recognition process by listening and reading
Adapted from *How the Mind Works in EFL Reading*, by Kadota, 2001, p.199.

7.6 Pedagogical Implications in the L2 Classroom

In this subsection, how to implement ER in the L2 classroom is discussed, especially in the initial stage of ER instruction. We propose using ER instruction in the current English classes, as it strengthens learners' L2 knowledge by providing them with a large quantity of comprehensible input. It is highly recommended to include ER instruction even in a brief period of 10 to 15 minutes in regular classes (Day & Richard, 1998; Fujita & Noro, 2009; Noro, 2002). Fujita and Noro (2009) note that even a 10-minute ER instruction in a regular class reinforces learners' reading speed and motivation to learn English. They also argue that 10 minutes of ER instruction can be conducted without interfering with regular classes in high schools.

It is necessary to carefully consider a balance of English classes, especially when implementing ER in high schools in Japan, as these are conducted within a tight schedule. According to the curriculum guidelines of MEXT (2018), high school teachers need to teach four areas of skills in a good balance in the limited hours of the English classes: reading, listening, speaking, and writing. Furthermore, MEXT (2018) emphasizes that high school learners need to become accustomed to a variety of genres of reading materials. As learners are required to learn areas of skills other than reading fluency skills in the

limited hours of English classes, Kadota, Noro, and Shiki (2010) argue that the benefits of ER will be determined by how qualitative input is provided to them in a short period. Since English input is limited in L2 classrooms, it is important to consider not only a quantity perspective (i.e., how much reading is necessary for learners), but also a qualitative perspective (i.e., how effectively high-quality input should be given to learners) when conducting ER in high schools in Japan. They further highlight that the input that induces their attention to language forms through reading helps language acquisition.

As mentioned, teachers must consider a qualitative perspective when conducting ER in high schools in Japan. VanPatten (1996) explains what linguistic forms learners are likely to pay attention to while reading by providing the following principles of L2 input processing:

Principle 1. Learners process input for meaning before they process it for form.

P1(a). Learners process content words in the input before anything else.

P1(b). Learners prefer processing lexical items to grammatical items (e.g., morphological markings) for semantic information.

P1(c). Learners prefer processing "more meaningful" morphology before "less" or "nonmeaningful morphology"

Principle 2. For learners to process form that is not meaningful, they must be able to process informational or communicative content at no (or little) cost to attention. (VanPatten, 1996, pp.14-15)

According to these principles, learners pay attention to linguistic forms or words if they are semantically important for them to understand passages while reading. The present study observed the developmental process of one specific grammatical form, namely to-infinitives used as nouns, to examine whether learners could learn grammatical rules incidentally through reading. Through the principles, VanPatten (2007) points out that learners process more lexical than grammatical items; however, this study revealed that the grammatical rules of to-infinitives used as nouns were learned incidentally. As discussed in subsection 7.3, frequency helped learners notice the linguistic form, but another possibility is that the target grammar used in this study was a semantically important grammar

item in the texts as well. According to VanPatten (1996), learners process content words to understand their reading passages. A noun is a content word, and to-infinitives used as nouns function as nouns and are placed where nouns are used in a sentence. As such, to-infinitives used as nouns are a possibly meaningful item. Therefore, learners could pay attention to linguistic forms while reading.

However, it is still difficult to determine what linguistic forms are more meaningful for learners than other linguistic forms. The present study employed as participants *Kosen* students, who are considered equivalent to high school freshmen. Considering their English proficiency, the grammatical items taught in junior high school would be candidates for the next target grammar items. Partially learned grammatical items in junior high school need to be reinforced by repeated encounters through incidental learning. According to VanPatten (1996), learners are more likely to invest their effort in understanding content words. Since adverbs and adjectives are also categorized as content words, to-infinitives used as adverbs and adjectives would probably be enhanced incidentally through reading. On the other hand, it may be difficult for learners to learn detailed grammatical rules such as plural-s or third-person singular present where it gets the suffix –s or –es only through incidental learning. Thus, learners might need explicit instruction that will facilitate their learning of grammatical rules. Some grammatical rules are reinforced by incidental learning, while others are not. Only to-infinitives used as nouns were analyzed in this study. Therefore, it may be difficult to generalize the idea to other grammatical items. Continuous research on other grammatical items may reveal more about the mechanisms of incidental grammar learning through ER.

To explore how efficiently teachers can provide learners with a large amount of comprehensible input in the L2 classroom, we need to know what skills are reinforced by ER and what skills will be difficult to strengthen through ER. As mentioned, learners pay attention to comprehension in ER; therefore, learners may not be able to learn detailed information through ER. For instance, it may be difficult for them to learn text structures through incidental learning. As shown in Chapter 5, different types of texts affect learners' reading comprehension. The findings of the analysis of the narrative and expository texts revealed that expository texts place heavy cognitive demands on learners since the sentences used in the texts are longer than the narrative ones and more information is embedded in a longer sentence. To reduce learners' cognitive burden, it is desirable to teach them text structures

through explicit instruction. Explicit instruction for learners may help them comprehend expository materials and reduce their cognitive burden.

In addition to explicit instruction, teachers need to provide learners with opportunities to practice reading expository materials after teaching the structures of these materials. Persistent practice using the same genres of texts will also familiarize learners with text structures. As noted, there are several forms of reading fluency approaches other than RWL that improve learners' linguistic abilities while reducing their cognitive burden. For instance, in narrow reading, learners read work on a single topic or from a single author consistently for an extended period (Chang, 2019; Krashen, 1996). Topic familiarity is believed to be helpful in reducing learners' cognitive burden, enabling them to pay more attention to reading comprehension (Chang, 2019). As the name implies, repeated reading is when learners repeatedly read specified reading materials to increase their sight vocabulary and phrases, which results in increased fluency and reading comprehension (Taguchi, Takayasu-Mass, & Gorsuch, 2004). It is highly recommended to conduct ER that allows learners to read books according to their interests. However, if we are to implement ER in the L2 classroom within the limited hours of English classes, whole-class reading activities with a teacher's intervention are necessary, especially at the initial stage of instruction. As the learning style differs between learners, such activities will improve their experiences of a variety of reading fluency approaches in the L2 classroom. Learners may be able to look for their favorite ways of learning English outside of English classes, which will eventually lead them to become autonomous readers in the long term.

7.7 Study Limitations and Future Studies

As with many studies, this one has both strengths and weaknesses. Recommendations for future research are based on the discussion of the limitations of this study.

In this study, the learning process of a single grammatical item, namely to-infinitives used as nouns, through ER was observed. One main purpose of the study was to determine whether learners are able to improve their grammatical knowledge in a way similar to incidental vocabulary learning. The findings of the study showed that frequency of exposure enabled learners to notice and learn more about

the grammatical item incrementally, but more encounters are necessary for grammar items to be noticed than in incidental vocabulary learning. Considering that only a few studies have examined grammar acquisition through reading, this study made a new discovery, namely that learners can notice and learn grammatical rules incidentally through reading. However, it may be difficult to generalize the findings of the study to other grammatical items because of a lack of research on grammar acquisition through ER. As discussed in section 7.5 (pedagogical implications), to-infinitives used as nouns are one semantically important grammatical item; therefore, the rules were learned incidentally with frequent exposure to the same grammatical items. Further research, for instance, on the learning process of other grammar items, will uncover grammatical items that are semantically important and learned incidentally as opposed to those that are not. Subsequent research on observing the learning process during reading will elucidate the role of ER in the L2 classroom.

Chapter 6 investigated the effects of audio support on reading comprehension. The findings of the study revealed that low-proficiency learners benefited from audio-supported reading, while medium- and high-proficiency learners scored high in both the RWL and RO modes. It has been reported that simultaneously reading and listening helps learners focus on reading comprehension and improves their reading fluency skills (Chang & Millet, 2015; Cheetham, 2017). However, this study was not able to confirm when learners are able to read texts independently without audio support. The role of audio support in reading is to assist learners in becoming independent readers who can read independently without this support. Possibly, relying too much on audio support may prevent learners from becoming autonomous readers. Future research should examine whether the persistent practice of RWL training will enable learners to read texts independently without audio support. If so, the length of the training period needed to improve their reading fluency skills in the L2 classroom must be determined. Including learners' reading speed and comprehension together may show how the RWL approach contributes to developing reading fluency

In this research, a series of studies were conducted on ER in high schools in Japan. As mentioned, the study has some weaknesses, although it should still contribute positively to our understanding of ER in the L2 classroom. For instance, research on the learning process of one grammatical item revealed that learners gradually learned the rules through repeated encounters with the same grammatical items in

texts. Moreover, the findings of the text analysis indicated that the cognitive burden on learners is different from that stemming from the types of texts, even when they consist of high-frequency words. In addition, simultaneous reading and listening may be an effective reading fluency approach that improves reading fluency skills. More research on EFL high school learners is needed. Accumulating information from high school learners may also reveal more about the possibility of ER in the L2 classroom.

Chapter 8

Conclusion

In this research, four studies were conducted to examine whether ER instruction is beneficial for *Kosen* students, who are considered equivalent to high school freshmen, in terms of improving their reading ability at the initial stage of ER instruction. This study focused on *Kosen* students for two reasons: (1) the number of ER studies has been increasing yearly; however, few studies focus on high school learners compared to university learners; and (2) English language exposure in traditional government-authorized textbooks is inadequate for improving learners' reading fluency skills. For these reasons, we conducted four experiments considering how ER can be implemented in high schools in Japan.

The results of the studies showed that ER enhanced *Kosen* students' overall reading abilities in an incremental way. As shown in Chapter 3, a one-year ER program confirmed that reading about 115,000 words within learners' linguistic abilities strengthened their linguistic knowledge and reading abilities. Specifically, the ER group of learners scored higher on both sections of the test (reading and language knowledge sections) than the grammar instruction group. It can be assumed that learners encountered their partially learned grammatical items and vocabulary repeatedly during ER, which improved their reading abilities. Chapter 4 also verified the gradual improvement of learners' linguistic abilities during ER. Specifically, repeated encounters of the same grammatical item through reading led to the accumulation of knowledge of a grammatical item. Based on the findings reported in Chapters 3 and 4, ER can be considered effective, especially in developing partially learned language items.

In addition to the studies above (Chapters 3 and 4), we also explored how efficiently teachers can provide learners with as much comprehensible input as possible in the L2 classroom (Chapters 5 and 6). It was found that learners face more difficulties reading expository texts than narrative texts because of the cognitive burden on language processing. The findings of the text analysis on narrative and expository texts showed that factors such as increasing the number of words per sentence and a small

portion of word overlaps in expository texts may influence learners' reading comprehension. To reduce the cognitive burden on learners, Chapter 6 also examined the effects of the RWL approach and whether it facilitates learners' reading comprehension considering ER implementation in a whole-class setting in the L2 classroom. It was found that simultaneous reading and listening facilitated the reading comprehension of low-proficiency learners.

Based on the findings of this study, it can be concluded that ER is effective in improving *Kosen* students' reading abilities. Continuous reading practices within their linguistic abilities reinforce their knowledge of language items, which allows them to process words used in texts faster and more accurately. These improvements also contribute positively to their reading abilities. Considering these improvements, it is highly recommended to implement ER even within the limited hours of English classes in high schools in Japan. As the experiments verified, it can provide learners with opportunities to activate what they learned in junior high school. Learning new language items is important, but spending more time on reading fluency training such as ER in the L2 classroom is also needed. In the L2 classroom in Japan, most high school students have few opportunities to read independently within their linguistic abilities as more time is devoted to language-focused learning.

It is not easy for high school teachers in Japan to implement ER that allows learners to choose books according to their interests, since teachers need to follow the curriculum guidelines by MEXT. However, the persistent practice of a whole-class ER setting with a teacher's intervention may be possible if the purpose of ER is to improve learners' reading fluency skills. For instance, as shown in Chapter 6, the simultaneous reading and listening approach, one of the whole-class ER trainings, reduces learners' cognitive burden in terms of language processing, which enables them to focus more on reading comprehension. This study only investigated the effects of RWL on reading comprehension, but there are other forms of reading fluency training such as narrow reading, repeated reading, and timed reading. It would be ideal to enable learners to experience a variety of reading fluency approaches in the L2 classroom. This will provide them with opportunities to find their favorite ways to learn English outside the English class. Learners are not able to choose books according to their interests, but as shown in the experiments, reading short passages together in the L2 classroom increases their reading fluency skills and confidence in L2 reading. However, research on high school learners is limited.

Therefore, we would be delighted to increase the number of studies on high school learners. Considering the small number of studies on high school learners compared to university learners, this study contributes positively to the area of ER research.

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Appendices

Appendix A

Grammar Test used in Chapter 4 (Sections 1 & 2)

Section 1 (notice): Choose one correct answer among the four choices.

1. John (1. and 2. but 3. or 4. because) I are good friends.
2. I want (1. study 2. studying 3. to studying 4. to study) Japanese history.
3. The woman (1. talking 2. talked 3. has talked 4. talks) with Kate is my mother.
4. He is looking forward (1. to see 2. seeing 3. to seeing 4. seen) you.
5. (1. Sing 2. To singing 3. To sing 4. The singing) this song is difficult.
6. My bag is (1. expensive 2. more expensive 3. expensiver 4. most expensive) than yours.
7. We found it hard (1. solving 2. to solving 3. to solve 4. solved) the problem.
8. This robot (1. is 2. are 3. am 4. to be) able to clean the room.
9. How about (1. play 2. playing 3. played 4. to play) beach volleyball?
10. I enjoyed (1. swim 2. swimming 3. to swim 4. swam) in the lake last Sunday.
11. (1. Save 2. To save 3. Saved 4. To saving) money is not easy.
12. She is collecting dolls (1. made 2. making 3. to make 4. make) in Japan.
13. We have never (1. be 2. been 3. being 4. to be) to Paris.
14. It is difficult (1. write 2. to writing 3. to write 4. wrote) a long letter in English.
15. I cannot understand (1. who 2. which 3. what 4. whose) you are saying.
16. I am (1. old 2. older 3. more old 4. oldest) than your sister.
17. He is good at (1. play 2. played 3. playing 4. to play) tennis.
18. Mike's hope is (1. to become 2. becoming 3. become 4. became) a doctor.
19. Tom (1. is loving 2. is loved 3. love 4. loves) Jane, but she does not like him.
20. I (1. am finishing 2. finished 3. finish 4. was finishing) my homework yesterday.
21. It is dangerous (1. swim 2. to swimming 3. to swim 4. swam) in the river.
22. I found it interesting (1. studying 2. to studying 3. to study 4. studied) Chinese.
23. Thank you for (1. call 2. calling 3. called 4. to call) me.
24. Kate cannot run as (1. fast 2. faster 3. more faster 4. fastest) as Anne.
25. Look at the boy (1. who 2. which 3. what 4. whose) hair is long.
26. He decided (1. go 2. going 3. to go 4. gone) camping.
27. She has (1. visiting 2. visited 3. visit 4. to visit) the town once.
28. He did not like (1. play 2. to play 3. plays 4. played) soccer.
29. Look at the picture (1. painting 2. painted 3. paint 4. was painted) by Tom.
30. I received a letter (1. writing 2. written 3. wrote 4. write) in English from Cathy.

Section 2 (notice and manipulate): Rearrange the words into the correct order.

1. How (you / do / name / your / spell)?
2. Please (on / put / picture / this) the wall.
3. His (to / dream / is / be) a movie star in Hollywood.
4. Are (buy / you / to / going / clothes) today?
5. (he / us / some / showed) pictures.
6. (is / book / on / there / a) the table.
7. (want / study / English / I / to).
8. Her wish (the girl / is / meet / to) again someday.
9. I (during / summer / my aunt / visited / the) vacation.
10. (New York / for / left / they) this afternoon.
11. Mrs. Smith's hobby (to / flowers / grow / is) in the garden.
12. (nine / begins / school / in / at) the morning.
13. (wait / we / for / should / him) until noon.
14. (catch / you / many / can / fish / in) this lake?
15. (to / is / study / it / important) English every day.
16. My (has / come / brother / just / home) .
17. (my / soccer / favorite / is) sport.
18. I (who / have / son / a / is) a scientist.
19. (to / the / in / sea / swim) is sometimes dangerous.
20. Math (more / English / difficult / is / than) for me.
21. (the moon / go / to / to / was) our dream for a long time.
22. (most / is / the / she / famous / singer) in this country.
23. (pictures / these / taken / were) in Paris.
24. My (the garden / to / is / clean / job).
25. (this / the movie / which / is / won) the prize.
26. Are you (take / a / going / to / bus) to the airport tomorrow?
27. Did (that TV show / you / last night / see) ?
28. I (easy / answer / found / it / to / the question).
29. (eat / shall / lunch / we) together?
30. Mr. King (drink / likes / coffee / to).

Appendix B

Reading Passages used in Chapter 4 (Reading Passages 1 to 10).

Note: The reading passages are from *Reading for Speed and Fluency* (1 and 2) by Nation and Malarcher (2007).

Reading Passage 1

Cats and Dogs

You may have noticed that cats and dogs learn differently. For example, you can train dogs to roll over for a piece of food. It is a lot harder to train cats to do tricks. But that does not mean that cats are not as smart as dogs. It also does not mean that dogs learn faster than cats. Dogs and cats simply learn differently. Their learning styles influence the types of things that you can teach these animals to do. For example, it takes no time for cats to learn to use a special box for their bathroom. However, dogs take more time to learn where and when they should go to the bathroom.

Why are these animals different? You have to think about how these animals act in the wild. If something is natural for an animal to do, it is easier for the animal to learn. But why can people teach dogs to sit but not cats? Cats and dogs both sit in the wild, after all. This actually has to do with how dogs live in groups in the wild, but cats live alone. In a group of wild dogs, there is one male that is the boss. All of the other dogs work to please this "boss." When a dog comes into a person's house to live, the person in the house becomes the boss. Your dog naturally wants to please you so that you will let it live with you.

Cats are different. Cats do not live in groups with a boss. When a cat comes to live at your house, it sees you as an equal. Therefore, it will not try so hard to please you. So, cats and dogs have different reasons to learn the things they do.

1. What does this reading mainly discuss?
   a. The difference between cats and dogs
   b. Why cats and dogs learn differently
   c. How cats and dogs act in the wild

2. Cats and dogs learn differently because:
   a. of how they act in the wild
   b. one is more intelligent than the other
   c. neither of them is very intelligent

3. Which of the following is true?
   a. Cats take longer to learn where to go to the bathroom.
   b. Cats quickly learn to do tricks.
   c. A dog treats a person as the leader of a group.

4. In a group, dogs:
   a. are all equal
   b. have a different bosses
   c. have a single boss

5. The word "boss" in the passage means:
   a. coworker
   b. friend
   c. leader

Reading Passage 2

Learning to Play Music

Parents like to sign up their kids for music lessons. Some parents think that music lessons will make their children smart. Others want their children to play music as a job in the future. Either way, parents may choose to put their children into music classes while their children are young. What is the best instrument for young children to play? It depends on the age of the child.

Many music teachers think that 5 or 6 is a good age for children to start learning to play music. At this age, the most popular instruments for children are the violin, the cello, the guitar, and the piano. Of these instruments, the piano is the hardest instrument to play. It takes a long time for children to learn to play the piano well. Children can learn to play the violin or the guitar a little faster. The hardest part about learning to play an instrument with strings is learning where to put your fingers. A child has to listen carefully to get the sound right. In any case, all of these instruments are good for your children.

Children who are a little older can learn to play other instruments. By the age of 10, a child can learn to play the flute or the trumpet. A child must blow into these instruments to play them. That is why they are better for older children. Very young children cannot blow hard enough to play these instruments well.

By the age of 12, a child is old enough to play an instrument such as the saxophone. Like the flute, a child has to blow into the saxophone in order to play it. But saxophones have lots of keys to press. That is why they are a little harder to learn than a flute or a trumpet.

1. The reading is about:
   a. the different instruments people should play
   b. the best instruments for children to learn
   c. music teachers

2. The writer says parents often put their children in music class:
   a. because it can make them smarter
   b. because their children have a lot of free time
   c. because the classes are not expensive

3. Which of these should be learn after age 10?
   a. the flute
   b. the piano
   c. the violin

4. What does "blow into" in this sentence mean?
   A child must **blow into** these instruments to play them.
   a. push
   b. put air into
   c. put into your hands

5. According to the writer, which statement is true?
   a. Most teachers think that eight is the youngest age to start an instrument.
   b. The flute is more difficult to learn than any other instrument mentioned.
   c. The piano is one of the first instruments a child can start to learn.

Reading Passage 3

Step by Step Learning

From the minute babies open their eyes, they start learning. Learning is an important part of growing up. Learning about your family, your school, the world: you just cannot help learning. There is so much learning to do! People say that for a happy life you must try and learn at least one new thing every day. Do you learn something new every day?

Sometimes learning can be easy, but sometimes you may feel like it is too hard to learn certain things. That may be because you are trying to learn them the wrong way. If you try to learn a big thing all at once, you will get confused. It is better to try and learn something new in small steps.

Take learning English, for example. No one can learn everything about English quickly at one time. Different pieces of English need to be learned slowly over time. First, a student needs to learn about the sounds and letters of English. Then with these sounds and letters, the student can start to learn useful words for common things. Next, the student can learn to say short sentences using the words that he or she has learned. It may take a long time to learn about all the parts of these short sentences. After the student knows lots of short sentences well, he or she can learn about longer, more difficult sentences.

The idea of learning something new in small pieces, one step at a time, is useful for more than just learning English. So, the next time you are having trouble learning something, try to look at one small piece at a time. Learn each piece well before you try to learn another piece. Step by step, you will end up learning the whole thing!

1. What is the reading about?
   a. How to learn things quickly
   b. Useful ways of learning information
   c. Learning English in school

2. According to the reading, an effective way to learn something big is to:
   a. learn it very quickly
   b. learn it piece by piece
   c. study for a long time every day

3. According to the writer, English should be learned:
   a. one part at a time
   b. through talking to people who speak English
   c. in a different country

4. Which statement is true?
   a. The writer thinks people should learn English in school.
   b. Most things can be learned the same way.
   c. In English, students need to learn the words first.

5. What does the word "confused" in this sentence mean?
   If you try to learn a big thing all at once, you will get **confused**.
   a. clear
   b. a good result
   c. mixed up

Reading Passage 4

Marketing

Many people think that marketing is another word for advertising. But it is so much more. Advertising is a big part of marketing. But there is a lot more to marketing than the ads you see on television or in magazines.

Marketing includes all of the things that are part of selling a product or service. It starts with asking questions. Companies need to find out what people want. Once a company knows what people want, it tries to provide it for them. That means creating the product or the service that the company is going to sell. The company also needs to figure out a good price for its product or service. How much money is this product or service going to cost? To figure out the price, a company needs to work out how much it will cost to make the product. Then, the company has to figure out how much people are willing to pay. Hopefully, people will be willing to pay more than it costs to make a product. If so, the company will make money.

After a company makes a product that people want and decides how much to sell it for, the company has to find people to buy it. The company also has to figure out how to get the product or service to these people. So, the company needs to decide where it is going to sell the product. The company needs to decide how it is going to let people know where they can buy it.

If everything works out well, the company will make money. But companies want to keep making money, so they have to make sure that they keep their customers. They must always try to improve their products or service to keep their customers happy.

1. The reading is about:
   a. advertising
   b. how to sell a product or service
   c. starting an advertising company

2. The writer says that:
   a. advertising is part of marketing
   b. marketing is more difficult to do than advertising
   c. marketing is mostly about advertisements on TV

3. Which of the following is true?
   a. In marketing, a company first creates a service.
   b. In marketing, a company first finds what people are looking for.
   c. In marketing, a company does not need to worry about the price for its service.

4. All of the following are mentioned in the passage EXCEPT:
   a. the need to find a place to sell a product
   b. the need to find a way to get the service to people
   c. the need to offer extra services to customers

5. What does the word "improve" in this sentence mean?
   They must always try to **improve** their products or service.
   a. change
   b. make better
   c. advertise

Reading Passage 5

Cars in America

Many big cities in the United States have city buses. However, not many people in the United States like to take city buses. Buses in the Unites States are not popular because Americans like to have their own cars.

Owing a car is very easy in the United States. Cars are not very expensive there, so most families can buy at least one. A small new car will usually cost less than $20,000 in America. People pay much more for a new car in other countries. Also, gas is not expensive in the United States. Gas usually costs less than $1.00 for a liter. In Europe, gas can be almost $2.00 a liter. On top of this, most Americans roads do not have expensive taxes. In Europe, you must pay taxes every time you use the road. So you can see, cars are much cheaper to have in the United States.

Americans love their cars not just because cars are cheap. Cars are part of the American dream. To Americans, the car has always been a sign of freedom. With a car, you can go anywhere you want. If you want to go to another city, you can do it easily. But to ride the bus between cities, you have to wait. Sometimes the bus or train or subway does not go where you want to go. All of these things take longer than traveling in your own car. In some countries, the roads are small and there are too many cars. So, traveling by subway or train may actually be faster in these countries than traveling by car. But this is not the case in America. Only in big, crowded city like New York would it be faster to take the subway than to go in your own car.

1. The reading is about:
   a. choosing a car
   b. owing a car
   c. how cars changed

2. The writer says that people in the US:
   a. like traveling by bus
   b. think it is difficult to own car
   c. like the freedom of owing a car

3. According to the reading, which of the following is NOT true?
   a. Car prices in America and other countries are quite similar.
   b. Road tax in America is very cheap.
   c. Cars and car costs in Europe are quite expensive.

4. According to the writer, traveling:
   a. by train in some countries can be faster than traveling by car
   b. by train in the US can be faster than traveling by car
   c. by car is usually faster in big cities

5. What does the phrase "not the case" in this sentence mean?
   But this is **not the case** in America.
   a. true
   b. not true
   c. not certain

Reading Passage 6

Penguins

Penguins are very interesting birds. They cannot fly, but they are good at swimming. Penguins spend most of their time in the water. However, they are birds, so they cannot breathe underwater. They can hold their breath for a long time, but at some point, they have to come up for air. Sometimes penguins swim slowly on top of the water to get air. But when penguins are chasing fish, they can jump out of the water. As they swim fast, penguins will jump out of the water, take in a breath of air, and go back underwater. Penguins can also jump out of the water onto a flat piece of ice if they are tired of swimming.

Most penguins live in cold places. How do penguins deal with it? Well, for one thing, they have two layers of special feathers that keep them warm. They also produce a special oil that they rub over the feather. This oil keeps water and wind out. So when penguins are swimming, the water does not get through the layer of feathers, and the penguins' bodies do not get wet. When they are out of the water, penguins are protected from the wind, too. Penguins also have a lot of fat under their skin. Along with their feathers, the fat helps to keep them warm. But if that does not work, they can always use body heat. Penguins are warm blooded, just like people. So, if they get cold, they can stand close together and share their body heat.

Penguins live in cold places where all the fresh water is frozen. So, what do penguins drink? They drink salt water from the ocean. In a penguin's mouth, the salt is taken out of the water and goes out through holes in the penguin's bill.

1. The reading is mainly about:
   a. what penguins eat
   b. where penguins live
   c. how penguins stay warm

2. Penguins spend a lot of their time:
   a. in the water
   b. flying
   c. keeping themselves warm

3. Which of the following is NOT a reason penguins can stay warm?
   a. They have extra layers of feathers.
   b. They stand close together.
   c. They hide in holes in the ice.

4. Penguins are able to:
   a. jump out of the water
   b. stay under water for as long as they want
   c. run faster than they swim

5. How do penguins find or get water to drink?
   a. They break ice to get to fresh water.
   b. They drink salt water.
   c. They take in water through their skin.

Reading Passage 7

Everybody Loves Music

Everyone loves music. Music can make you happy or sad. Music can tell a story. It can help you work, rest or study. You can listen to music when you are doing nothing. You can listen to music with a friend. You can listen to music at a party. You can also, of course, listen to music and dance.

Even kings and presidents love music. King Bhumibol of Thailand likes to play jazz music. He plays the saxophone. He has played with many famous jazz musicians. He has written 48 songs of his own. His most famous song is called "Falling Rain." He wrote it the same year that he became king. In the US, jazz music was started by poor people. It was made by people who had little power or money. But jazz music is so powerful, even a king can honor it.

King Bhumibol is not the only world leader who enjoys playing the saxophone. One of the past presidents of the United States also plays the saxophone. He played the saxophone on a famous TV show. This made him popular with young people. His name is Bill Clinton.

Prime Minister Koizumi of Japan is also a music lover. He loves to sing Elvis Presley songs. He sings karaoke for other world leaders. He even made a CD of his favorite Elvis songs. In 2006, Koizumi visited Elvis's home, Graceland, and sang a song to US President
George W. Bush. Koizumi says, "Elvis will be remembered forever, so will his songs." The songs of Elvis Presley were always popular with common people. Prime Minister Koizumi is not a common person. He is very powerful. He is the leader of a very rich country. So, we can see that there is something special about music that makes everyone love it.

1. The reading is about:
   a. different types of music
   b. famous people who like music
   c. karaoke

2. The writer says that music:
   a. can make you feel happy
   b. can make famous people feel like common people
   c. is bad for resting

3. Which fact is NOT true about King Bhumibol?
   a. He wrote many songs.
   b. He loved Elvis Presley's music.
   c. He wrote his most famous song around the time he became king.

4. Which is true of King Bhumibol and Clinton?
   a. Both play the saxophone
   b. Both sang Elvis Presley songs on TV
   c. Both visited Graceland

5. The writer thinks that:
   a. powerful people usually do not enjoy music
   b. Prime Minister Koizumi is a common person
   c. music has something that makes everyone enjoy it

Reading Passage 8

Learning and Unlearning Fear

Some people are afraid of things that probably will not hurt them. Sometimes, that fear can cause problems in people's lives. For example, some people are afraid of flying. What if they find a great job, but they will have to travel a lot? They will not able to take the job because they are afraid to fly. This kind of fear is called a phobia. Why do some people have phobias?

Some phobias are learned. Just like everything else that we learn, there are different ways to learn a phobia. For example, people learn from doing something or being in some place. If a little boy was bitten by a dog when he was a child, he might be afraid of dogs as a man. Even though he knows that not every dog will bite him, he is still afraid. He is afraid because of that bad event in his life.

Another way that we learn is by watching others. Children often have the same phobias as their parents. This is because they learn to be afraid of certain things just by watching their parents. For example, a little girl might learn to be afraid of spiders because her mother screamed every time she saw a spider.

But do not worry. Phobias can be unlearned too. When you learn a phobia, you connect some thing or some event with a feeling of fear. So the trick to unlearning the phobia is to connect the thing or event with a new feeling. You do this by facing your fear. Do not let yourself run away. The feeling of fear does not last long. So, if you stay near the thing or event, the feeling of fear will go away. In time, the phobia will go away.

1. This reading is about:
   a. a good way to study about fear
   b. how people learn phobia
   c. things people are afraid of

2. According to this reading, which is NOT a way people learn phobias?
   a. By watching others.
   b. When something happens to someone at a certain time
   c. By listening to people's stories

3. According to the reading, which statement is true?
   a. Most people cannot unlearn phobias.
   b. Children sometimes have the same phobias as their mothers or fathers.
   c. Some people are born with phobias.

4. The writer says that:
   a. some people are afraid of things that cannot hurt them
   b. phobias will go away when a child becomes an adult
   c. a person creates new feelings all the time

5. According to the writer:
   a. phobias do not cause problems with people's lives
   b. a phobia can affect a person's work
   c. phobias are more common in children than adults

Reading Passage 9

Making Money

Money is all around us, every day. We see it, use it, and talk about it. Did you ever stop to think about where the money that you carry around every day comes from?

Making new money is a very special job. It takes as many as 65 different steps. When money gets too dirty and old, it is replaced with new money. The old money is taken from banks and brought to places where it is destroyed. Usually, the money is burned. The burned money is replaced by new paper money.

If old money is being replaced, then it is printed in a place called a mint. Large sheets of special paper are printed with many pictures of some currency. These large sheets are cut into individual bills. The individual bills are then put together in big stacks and sent to banks.

Sometimes the mint will make a new bill with a new picture or a new color. It is not easy for the government to make a new bill. It takes a long time, and there are many steps to go through before a new bill can be sent to banks. First, people in the government decide that a new kind of bill is needed. Then, they ask an artist to design the new bill. A different artist cuts the new picture into a soft piece of metal called a die. The dies are made and put onto large printing machines. Then, very special paper is used, paper which no one but the mint can have. Along with this special paper, the mint also prints currency using special colors. After the new dies print the new currency onto the paper, the bills are cut, stacked, and sent off to the bank.

1. The reading is about:
   a. banks
   b. new money
   c. old money

2. According to the reading, which fact is true?
   a. It takes over 60 steps to make new money.
   b. Old money that is no longer used is stored in a special place.
   c. Banks make new money.

3. The writer says that new money is NOT:
   a. printed in a mint
   b. cut from larger sheets of special paper
   c. sent in small amounts to banks

4. When a country needs a new bill:
   a. it can be made very quickly
   b. the government decides to make it
   c. banks decide to make it

5. What is a die?
   a. A special piece of paper that the money is made from
   b. A piece of metal that puts the picture on the money
   c. A special machine that prints the money

Reading Passage 10

History of Flight

Before the airplane was invented, people dreamed of flying. Early on, they tried to fly like birds. Some people made wings with feathers and put them on their arms. You can guess how that turned out. The muscles in birds' wings are very different from the muscles in our arms. So, such early attempts at flight were not successful.

The first really successful attempt at flight happened in 1783. Two brothers in France realized something interesting. They were experimenting with bags made of paper and cloth. When they put a flame near the opening at the bottom, the bag filled with air. Then the bag lifted into the air. After seeing this, the brothers invented the hot air balloon. First, they sent a balloon up by itself. Then, they sent one up with a sheep, a chicken, and a duck. Finally, they sent up a balloon with some people. That was the first flight by people. The problem with hot air balloons, though, is that you do not have much control. A better way to fly was needed.

A new invention in the 1800s gave people more control when they flew. This invention was called a glider. It was similar to a kite except that a person could ride in it. Like a kite, the glider used the wind for flight. So, the pilot did not have full control. Also, gliders did not have their own power. So, people continued to look for something better. The most important event in the history of flight happened in 1903. That was when the Wright brothers flew the first airplane. On December 17th, one of the Wright brothers flew their airplane for twelve seconds. That does not sound like a long time, but this short flight changed the way the world traveled.

1. The reading is about:
   a. the Wright brothers
   b. people trying to fly
   c. airplanes

2. The writer says that:
   a. some early attempts at flight in the 1200s were successful
   b. people once tried to stick feathers to their bodies in order to fly
   c. humans and birds have similar muscles in parts of their bodies

3. How did the first people discover a successful way to fly?
   a. They made a type of airplane.
   b. They discovered hot air could male things fly.
   c. They built a type of flying animal.

4. Which of the following was made first?
   a. airplanes
   b. gliders
   c. hot air balloons

5. Which is true about the Wright brothers' flight?
   a. It was done in a glider.
   b. It was done in France.
   c. It was less than 1 minute.

Appendix C

A New Vocabulary Levels Test (from McLean and Kramer, 2015) Used in Chapters 5 and 6.

NVLT Part 1 (1,000 Word Level)

1. time: They have a lot of time.
   a. お金
   b. 食べ物
   c. 時間
   d. 友達

2. stone: She sat on a stone.
   a. 石
   b. 腰掛け
   c. 敷物
   d. 枝

3. poor: We are poor.
   a. 貧しい
   b. 幸せに感じる
   c. 興味がある
   d. 背が高い

4. drive: She drives fast.
   a. 泳ぐ
   b. 学ぶ
   c. 投げる
   d. 運転する

5. jump: She tried to jump.
   a. 浮かぶ
   b. 跳ぶ
   c. 駐車する
   d. 走る

6. shoe: Where is your other shoe?
   a. 親
   b. 財布
   c. ペン
   d. くつ

7. test: We have a test in the morning.
   a. 会議
   b. 遠足
   c. 試験
   d. 約束

8. nothing: He said nothing to me.
   a. とても悪いこと
   b. 何もないこと
   c. とても良いこと
   d. 何か

9. cross: Don't cross.
   a. 渡る
   b. 押す
   c. 早く食べる
   d. 待つ

10. actual: The actual one is larger.
    a. 本当の
    b. 古い
    c. 丸い
    d. 他の

11. any: Does she have any friends?
   a. 何人か
   b. 誰もいない
   c. 良い
   d. 古い

12. far: You have walked far!
   a. 長いあいだ
   b. とても速く
   c. 長距離を
   d. あなたの家へ

13. game: I like this game.
   a. 食べ物
   b. 物語
   c. 人の集まり
   d. 遊び

14. cause: He caused the problem.
   a. 引き起こした
   b. 修理した
   c. 説明した
   d. 理解した

15. many: I have many things.
   a. 何もない
   b. 十分な
   c. 少しの
   d. 多くの

16. where: Where did you go?
   a. 何時に
   b. 何の理由で
   c. どこへ
   d. どのように

17. school: This is a big school.
   a. 銀行
   b. 海の動物
   c. 学校
   d. 家

18. grow: All the children grew.
   a. 絵を描いた
   b. 話した
   c. 成長した
   d. 激しく泣いた

19. flower: He gave me a flower.
   a. パジャマ
   b. 腕時計
   c. 花
   d. パン

20. handle: I can't handle it.
   a. 開ける
   b. 思い出す
   c. 処理する
   d. 信じる

21. camp: He is in the camp.
   a. 海
   b. テントを張る所
   c. 病院
   d. ホテル

22. lake: People like the lake.
   a. 湖
   b. 幼児
   c. 指導者
   d. 静かな場所

23. past: It happened in the past.
   a. 過去
   b. 衝撃
   c. 夜
   d. 夏

24. round: It is round.
   a. やさしい
   b. とても大きい
   c. とても速い
   d. 丸い

NVLT Part 2 (2,000 Word Level)

25. maintain: Can they maintain it?
   a. 維持する
   b. 拡大する
   c. 改良する
   d. 入手する

26. period: It was a difficult period.
   a. 質問
   b. 期間
   c. すべきこと・任務
   d. 本

27. standard: Her standards are very high.
   a. ヒール
   b. 成績
   c. 価格
   d. 基準

28. basis: This was used as the basis.
   a. 解答
   b. 休憩場所
   c. 次の一歩
   d. 基礎

29. upset: I am upset.
   a. 強い
   b. 有名な
   c. 金持ちの
   d. 怒っている

30. drawer: The drawer was empty.
   a. 引き出し
   b. 車庫
   c. 冷蔵庫
   d. おり

31. pub: They went to the pub.
   a. 酒場
   b. 銀行
   c. 商店街
   d. プール

32. circle: Make a circle.
   a. 下書き
   b. 空白
   c. 円
   d. 大きな穴

33. pro: He's a pro.
   a. スパイ
   b. ばか者
   c. 作家
   d. 専門家

34. soldier: He is a soldier.
   a. 実業家
   b. 学生
   c. 大工
   d. 兵士

35. result: They were waiting for the results.
   a. 良い時節
   b. 質問
   c. お金
   d. 結果

36. resist: They resisted it.
   a. 修理した
   b. 二度見た
   c. 熟考した
   d. 反対した

37. lend: She often lends her books.
   a. 貸す
   b. 落書きする
   c. 掃除する
   d. 名前を書く

38. refuse: She refused.
   a. 戻ってきた
   b. 考えた
   c. 断った
   d. 遅くまで残った

39. speech: I enjoyed the speech.
   a. 発表
   b. 全力疾走
   c. 音楽の形式
   d. 食べ物

40. pressure: They used too much pressure.
   a. お金
   b. 時間
   c. 圧力
   d. 汚い言葉

41. refer: She referred to him.
   a. 支援した
   b. 順番を譲った
   c. 引き合いに出した
   d. 答えた

42. army: They saw the army.
   a. 白黒の動物一種
   b. 本棚
   c. 隣人
   d. 軍隊

43. knee: Take care of your knee.
   a. 子ども
   b. ひざ
   c. お金
   d. 持ち物

44. rope: He found a rope.
   a. 長太いひも
   b. 掘削する道具
   c. 財布
   d. はしご

45. brand: This is a good brand.
   a. ダンスパーティー
   b. 初めての試み
   c. 待機室
   d. 銘柄品

46. seal: They sealed it.
   a. 直した
   b. 密閉した
   c. 注意深く調べた
   d. 開いた

47. warn: They were warned.
   a. 押された
   b. 招かれた
   c. 警告された
   d. 召集された

48. reserve: They have large reserves.
   a. 蓄え
   b. オーブン
   c. 借金
   d. 雇用者

49. restore: It has been restored.
   a. 反復された
   b. 譲渡された
   c. 値引きされた
   d. 復元された

50. compound: They made a new compound.
   a. 契約
   b. 複合物
   c. 会社
   d. 予想

51. latter: I agree with the latter.
   a. 牧師
   b. 理由
   c. 後者
   d. 答え

52. pave: It was paved.
   a. ふさがれた
   b. 分割された
   c. 金の縁取りがされた
   d. 舗装された

53. remedy: We found a good remedy.
   a. 改善法
   b. 飲食店
   c. 調理法
   d. 方程式

54. bacterium: They didn't find a single bacterium.
   a. 細菌
   b. 花の一種
   c. ラクダ
   d. 盗品

55. behavior: Look at her behavior!
   a. 観客
   b. 振る舞い
   c. 大金
   d. 島

56. fuel: Do you have any fuel?
   a. 燃料
   b. 痛み止め
   c. 布
   d. 断熱材

57. silk: It's made of silk.
   a. 絹
   b. 黒くて固い木
   c. 毛皮
   d. 輝く金属

58. conceive: Who conceived the idea?
   a. 他人に話した
   b. 説明した
   c. 思いついた
   d. 批判した

59. legend: It is now a legend.
   a. 博物館
   b. 習慣
   c. 伝説
   d. 定期的な行事

60. impose: This was imposed.
   a. 完全に変更された
   b. 真ん中にある
   c. 模倣された
   d. 強制された

61. solution: There is no solution.
   a. 時間
   b. 支援
   c. 問題
   d. 答え

62. celebrate: We have celebrated a lot recently.
   a. 発見した
   b. 検査した
   c. 頑張った
   d. 祝った

63. independence: He has too much independence.
   a. 自立
   b. 孤独
   c. 力
   d. 自慢

64. tunnel: We need a tunnel here.
   a. 山腹を掘り貫いた通路
   b. 棒
   c. ハイフン
   d. カーテン

65. reward: He got a good reward.
   a. 褒め言葉
   b. 家での手伝い
   c. 報酬
   d. 聴衆

66. review: The committee reviewed the plan.
   a. 再検討した
   b. 受理した
   c. 複製した
   d. 破棄した

67. mode: The mode of production has changed.
   a. 方法
   b. 速さ
   c. 態度
   d. 量

68. personnel: I don't like the personnel there.
   a. 椅子
   b. 空調
   c. 従業員
   d. 雇用主

69. competent: She was very competent.
   a. 効率的な
   b. 怒っていた
   c. 有能な
   d. 傷つきやすい

70. devastate: The city was devastated.
   a. 装飾された
   b. 孤立した
   c. 破壊された
   d. 汚染された

71. constituent: This is an important constituent.
   a. 建物
   b. 合意
   c. 考え
   d. 成分

72. weave: She knows how to weave.
   a. 織る
   b. 融合する
   c. 説得する
   d. だます

Appendix D

Reading Passages used in Chapter 5 (Reading Passages 11 to 14)

Note: Reading passages 11 and 12 are from *True Stories, Enjoy Simple English Readers* by Takayama and Stewart (2015) and reading passages 13 and 14 are from *Reading for Speed and Fluency1* by Nation and Malarcher (2007).

Reading Passage 11

Father's Day Present

It was a beautiful October day in a forest in California. Two young children were playing with their dog. Two hunters were walking near them. Suddenly, one of the hunters saw a bird. He shot at the bird. The dog had never heard the sound of a gun before. She was very afraid. The dog ran away and disappeared into the forest. This is the story of a family looking for their lost dog. It's a true story.

The Braun family was camping near a lake in Tahoe National Forest with their dog Murphy. The forest is a wonderful place for camping, but it can be dangerous. There are many animals. There are even black bears! It is very cold in the winter, and there is a lot of snow.

After their dog Murphy ran away, the children and their parents looked for her in the forest. "Murphy! Where are you, Murphy?" "Don't worry, kids. Murphy will come back." But Murphy didn't come back that day. She didn't come back the next day, either. They looked for her all day, but couldn't find her. "I' m sorry, kids. We have to go home now." "But we can't leave Murphy!" "I'll come here tomorrow after work." "Okay ... "

Mr. Braun came back to the forest the next afternoon. He came again and again. The next weekend, the whole family came and looked for Murphy. But they could not find her. The children made posters with Murphy's picture and their phone number. They put the posters on trees in the forest. They put the posters in stores near the forest, too.

Soon winter came. Then, it was summer, and then, winter came again. The Brauns continued visiting the forest whenever they could. But nobody knew anything about Murphy.

Twenty months after Murphy disappeared, a man named Russ Watkins went camping at the same lake. He saw a dog near the trees. "Is that the dog from the posters?" He tried to catch the dog, but couldn't. He looked at a poster of Murphy. Then, he called the Braun family.

The next day, the family came and looked for Murphy, but couldn't find her. They had to go home, but Mr. Braun talked to Russ Watkins. "Mr.Watkins, could I leave this blanket here? Murphy always slept on it." "Sure, Mr. Braun." "Oh, and I'll leave this, too." Mr. Braun took off his hat and put it near the blanket. That night, Mr. Watkins heard a noise. When he looked outside, he saw the dog sleeping on the blanket. The dog's head was on the hat! The next day was Father's Day. Mr. Watkins was happy to make a call to the Brauns.

When the Braun family arrived, Murphy ran up to them. They were all so happy. "This is the best Father's Day present ever!"

1. What is the reading about?
   a. Camping near the lake
   b. A family looking for the lost dog
   c. A family saved by a dog
   d. Children playing with a dog

2. The dog ran away into _____ .
   a. the car
   b. the pond
   c. the forest
   d. the shop near the forest

3. Where did the Braun family put posters?
   a. In school
   b. In stores near the forest
   c. In front of their house
   d. At the police station

4. What was Watkins doing when he saw Murphy?
   a. Swimming in the lake
   b. Hunting in the forest
   c. Driving in the forest
   d. Camping at the lake

5. What did the Braun family do to find Murphy?
   a. They left Murphy's blanket in the forest.
   b. They left Murphy's pictures in the forest.
   c. They left the dog food for Murphy in the forest.
   d. They left their children's pictures in the forest.

Reading Passage 12

A Hero above New York

This story is like a movie, but it is not a movie. It's true. One day, a pilot was flying a big airplane above New York City. Then, both engines stopped.

The name of the pilot is Chesley Sullenberger. Everyone calls him Captain Sully. The plane started at an airport in New York. Three minutes later, there were hundreds of birds in front of the plane. There were so many birds that it was difficult for the pilots to see. Then, the birds hit the engines. One passenger shouted, "The engine is on fire!" A flight attendant said, "It's okay. The pilot will turn it off. He can fly the plane with one engine." Another passenger shouted, "The other engine is on fire, too!"

Suddenly, both engines went quiet. The engines had stopped.

Sully called the airport in New York and told them about the birds. He told them the airplane had to go back. But then, the plane was going down too quickly. Now he knew he could not fly back to the airport.

What could he do? There were buildings everywhere! New York probably has more buildings than any other place on earth. He was near Central Park. There are not many buildings in Central Park, but too many trees. There are some big roads in New York, but there are too many cars. He had to do something soon. The plane was getting lower and lower.

Then, he noticed something on his left. It was the Hudson River! He called the airport one last time, "We're going to be in the Hudson." Then, he turned the plane. There were a lot of boats on the river. He didn't want to hit a boat. So he looked for a place with no boats. But it had to have boats nearby. He wanted boats to come and help them later.

Sully brought the airplane down on the river. It was perfect. The back of the plane touched the water first. Then, the front came down. The flight attendants opened the front doors. They told people what to do. "You people get into the rafts(いかだ)!" "You people go out on the wings and wait for help!"

Now all the passengers were out of the airplane. But the plane was going down in the water. The people on the wings were standing in water up to their knees. The water was only 2 degrees Celsius. The air was even colder. It was minus 7 degrees Celsius. It was dangerous to stay there. But Captain Sully had made the right decision. Three minutes later, the first boat came to help. Many other boats came a little later.

Captain Sully was the last person to get out of the plane. Before he left, he walked up and down the plane twice. One hundred and fifty-five people were on that plane, and all 155 got off the plane. It's like a movie, but it's true!

1. What is the reading about?
   a. One engine stopped because of the lack of gasoline.
   b. Birds died because of the engine in an airplane.
   c. Birds in the Central Park.
   d. Both engine stopped while a pilot was flying a big airplane.

2. The engines stopped because _____.
   a. some birds hit the engines
   b. the pilot could not see the front window well
   c. the pilot could put enough gasoline
   d. Many birds were in front of the plane

3. What was happening while the pilot was calling the airport?
   a. Some birds hit the window again.
   b. The airplane was going down.
   c. The airplane was getting better.
   d. The pilot found the birds.

4. The pilot landed on _____.
   a. A big road in New York city
   b. An airport near Hudson River
   c. the Central Park
   d. The Hudson River

5. How was the place where the pilot landed?
   a. There were many trees.
   b. There were some buildings.
   c. There were some boats nearby.
   d. There were many roads.

Reading Passage 13

The History of Telephones

About 130 years ago, people started to use telephones in their houses. The first telephones had one part that people held to their ears and another part they talked into. There were no numbers on these telephones. People just talked to anyone who had a telephone. The big problem was that it was expensive to have and use a telephone, so not many people had them.

As more and more people got telephones, telephone companies started using operators to connect people. With operators, people had to tell the operator the name of the person they wanted to call. Then the operator would connect the caller to the other person. It sometimes took a long time to make a call.

In 1892, in Indiana in the United States, the first telephone system that did not need an operator was built. This was the first time people just called a certain number to get the person they wanted. This was when telephones started to have numbers on them.

The new system was easy to use, so more people wanted telephones in their homes. Telephones also became less expensive, so more people bought them. By 1970, nearly every house in the United States had a telephone. In fact, people thought it was strange if a house did not have a telephone in it. There were also telephones for people to use on the street, in stores, and in office buildings.

Today, things are changing again. Now, some people do not want telephones in their homes. Why? It is because they have cell phones. Today, some people say that they do not need an "old style" telephone. With a cell phone, people can call anyone from anywhere. As cell phone services become less expensive, people see fewer and fewer reasons to keep a telephone in their homes.

1. The reading is about:
   a. who made the first telephone
   b. how telephones changed
   c. companies that made telephones
   d. how people connected telephones

2. When did people first use telephones in their homes?
   a. In the late 1800s
   b. After 1900
   c. In 1970
   d. Before 1800

3. The first telephone that did NOT need an operator was built in:
   a. Indiana
   b. New York
   c. German
   d. Japan

4. The writer says that:
   a. the first telephones were very heavy and broke easily
   b. when there were operators, people gave the operator a person's number
   c. there were numbers on old style telephones
   d. by 1970 it was strange for a person not to have a phone

5. According to the writer, which of the following is true?
   a. It is easier to be an operator today because of computers
   b. These days, there are fewer reasons to keep "old style" telephones
   c. When telephones were first used, they had numbers
   d. Today people prefer an old style telephone to a new style

Reading Passage 14

The Secrets to a Long Life

Why is it that some people live to be over a hundred, while most of us die much sooner? Well, if your parents and grandparents lived a long time, you have a good chance of living a long time, too. How long you live also depends on where you live. A person who lives in a city in Australia will probably live longer than a person who lives in a poor part of Africa.

We have no control over our past relatives, and most people have little control over where they live. So, what can you do to add more years to your life? You can make healthy choices. That means eating healthy foods and getting enough exercise. Being overweight may make your life shorter because you have a higher chance to have health problems. So, you can start by changing what you eat. Eat less red meat. Instead, eat chicken or fish. Fish is really good for helping you live a longer life. You should also eat lots of vegetables and make sure you are getting all of the vitamins you need. And, of course, do not eat too much junk food.

You also need to get enough exercise. There are different types of exercise. Some exercise is good for the heart. If you get out of breath when you exercise, it is good for your heart. Other types of exercise are good for making you stronger. Lifting weights is a good example. You should try to exercise for about thirty minutes every day.

Along with taking care of your body, you also have to take care of your mind. Don't work too hard. Try to relax and do something fun each day. If you follow these simple rules, you have a good chance of living a long time.

1. The reading is about:
   a. eating better food
   b. getting more exercise
   c. taking balanced food
   d. living longer

2. The writer says that:
   a. a person whose relatives are old may live longer
   b. most people can control where they live
   c. people cannot usually choose to live a healthy life
   d. most people cannot control what they eat

3. In order to live longer, we should _____.
   a. get exercise more than one hour every day
   b. take vitamins with water every day
   c. exercise our body by running
   d. change what we eat

4. Which of the following does the writer NOT suggest?
   a. Eat chicken or fish
   b. Eat more red meat
   c. Eat more vegetables
   d. Eat no junk food

5. The writer says that when exercising:
   a. it is good to get out of breath
   b. lifting weights is not good for getting stronger
   c. don't exercise for more than twenty minutes a day
   d. don't exercise every day

Appendix E

Reading Passages used in Chapter 6 (Reading Passages 15 to 18)

Note: The reading passages are from *True Stories, Enjoy Simple English Readers* by Takayama and Stewart (2015).

Reading Passage 15

An Amazing Pig

These days, many people in the United States have pigs for pets. It is said that pigs are smarter than dogs and cats. There was a very smart pig named Lulu. She saved a woman's life. This is a true story.

Lulu lives with Jo Ann Altsman, her husband Jack and their dog. Jack bought Lulu as their daughter's 40th birthday present. But their daughter didn't really want a pig. So Lulu started to live with the Altsmans. Later, they became very happy she lived with them.

Jack and Jo Ann have a vacation home near a lake. It has a fence around it, so it is a good place for a pig. Most weekends, the Altsmans take Lulu and their dog to their vacation home. One day, Jack went fishing. Jo Ann stayed home with their dog and Lulu.

Suddenly, Jo Ann's left arm hurt. She was having a heart attack! This was her second heart attack. She knew she had to go to a hospital right away. "Somebody, help me! Please call an ambulance!" No one came.

Jo Ann threw an alarm clock at the window. The window was broken. She called again, but no one came. Jo Ann's dog barked and barked. Still, no one came.

Lulu came over and looked at Jo Ann. The pig tried to help her get up. But Jo Ann couldn't get up. Then Lulu started crying. The pig knew something was wrong. Lulu ran to the door. The door had a small doggy door. It was too small for Lulu, but she tried to go through it. It was very difficult, but Lulu didn't give up. Finally, she got through the doggy door! Then, she went to the gate. Lulu had never gone out the gate alone before. But pigs are smart. She opened the gate herself!

Lulu went to the road and waited. Then, a car came, and Lulu went into the middle of the road. She lay down in front of the car! But the car did not stop and passed by. Lulu went back to look at Jo Ann. Then, the pig ran back to the road. She waited for another car and lay down in front of it. Lulu did it again and again. Finally, a car stopped. "Is this pig alright?"

Lulu ran back to the vacation home. The driver followed Lulu and called to Mrs. Altsman. "Lady, your pig has a problem!" "I have a problem, too. Please call an ambulance!"

The man called 911. An ambulance came, and the ambulance men put Jo Ann inside. At the hospital, the doctors helped Mrs. Altsman. "You almost died. Your pig saved your life!" The Altsmans gave Lulu a jelly doughnut. She was a very smart pig.

1. What is the story about?
   a. How to help pigs in the United States.
   b. The relationship between human and pigs.
   c. A woman saved by a smart pig.
   d. The woman's 40th birthday.

2. Jack bought a pig because _____.
   a. his daughter loved the pig
   b. his daughter got sick
   c. his daughter stayed home alone
   d. it was his daughter's birthday

3. What did Jo Ann do to ask for help?
   a. She called an ambulance(救急車)by herself.
   b. She broke the window with an alarm clock.
   c. She threw something on the door.
   d. She screamed on the road.

4. How did the pig stop a car?
   a. The pig screamed many times.
   b. The pig lay down on the road.
   c. The pig called 911.
   d. The pig pushed the car.

5. After following the pig, the driver noticed _____ .
   a. Jo Ann was sick
   b. someone went into Ann's house
   c. the pig needed food
   d. the car was broken by somebody

Reading Passage 16

Father's Day Present

It was a beautiful October day in a forest in California. Two young children were playing with their dog. Two hunters were walking near them. Suddenly, one of the hunters saw a bird. He shot at the bird. The dog had never heard the sound of a gun before. She was very afraid. The dog ran away and disappeared into the forest. This is the story of a family looking for their lost dog. It's a true story.

The Braun family was camping near a lake in Tahoe National Forest with their dog Murphy. The forest is a wonderful place for camping, but it can be dangerous. There are many animals. There are even black bears! It is very cold in the winter, and there is a lot of snow.

After their dog Murphy ran away, the children and their parents looked for her in the forest. "Murphy! Where are you, Murphy?" "Don't worry, kids. Murphy will come back." But Murphy didn't come back that day. She didn't come back the next day, either. They looked for her all day, but couldn't find her. "I' m sorry, kids. We have to go home now." "But we can't leave Murphy!" "I'll come here tomorrow after work." "Okay ... "

Mr. Braun came back to the forest the next afternoon. He came again and again. The next weekend, the whole family came and looked for Murphy. But they could not find her. The children made posters with Murphy's picture and their phone number. They put the posters on trees in the forest. They put the posters in stores near the forest, too.

Soon winter came. Then, it was summer, and then, winter came again. The Brauns continued visiting the forest whenever they could. But nobody knew anything about Murphy.

Twenty months after Murphy disappeared, a man named Russ Watkins went camping at the same lake. He saw a dog near the trees. "Is that the dog from the posters?" He tried to catch the dog, but couldn't. He looked at a poster of Murphy. Then, he called the Braun family.

The next day, the family came and looked for Murphy, but couldn't find her. They had to go home, but Mr. Braun talked to Russ Watkins. "Mr.Watkins, could I leave this blanket here? Murphy always slept on it." "Sure, Mr. Braun." "Oh, and I'll leave this, too." Mr. Braun took off his hat and put it near the blanket. That night, Mr. Watkins heard a noise. When he looked outside, he saw the dog sleeping on the blanket. The dog's head was on the hat! The next day was Father's Day. Mr. Watkins was happy to make a call to the Brauns.

When the Braun family arrived, Murphy ran up to them. They were all so happy. "This is the best Father's Day present ever!"

1. What is the reading about?
   a. Camping near the lake
   b. A family looking for the lost dog
   c. A family saved by a dog
   d. Children playing with a dog

2. The dog ran away into _____ .
   a. the car
   b. the pond
   c. the forest
   d. the shop near the forest

3. Where did the Braun family put posters?
   a. In school
   b. In stores near the forest
   c. In front of their house
   d. At the police station

4. What was Watkins doing when he saw Murphy?
   a. Swimming in the lake
   b. Hunting in the forest
   c. Driving in the forest
   d. Camping at the lake

5. What did the Braun family do to find Murphy?
   a. They left Murphy's blanket in the forest.
   b. They left Murphy's pictures in the forest.
   c. They left the dog food for Murphy in the forest.
   d. They left their children's pictures in the forest.

Reading Passage 17

The Daily Marathon

Have you ever run a marathon? A marathon is 42.195 kilometers long. Imagine running a marathon one day, and then, another one the next day. And then, another one the next day. Imagine doing that for months. A young Canadian ran a marathon every day for over four months. His name was Terry Fox, and he only had one leg. This is a true story.

The important thing to understand about Terry is he was not special. He was like everyone else, and then, suddenly, his life changed.

Terry played basketball on his university team. One day, his right knee started to hurt. He waited until the basketball season was finished, and then, went to the doctor. The doctors found cancer in his leg. They cut the leg off to save his life. It was in 1977.

For the next 16 months, Terry had to take strong medicine to fight the cancer. In the hospital, he met many other people with cancer. Some of them died soon after he met them. Many of them were sure they were going to die of cancer. There were not many good ways to help people with cancer at that time. Terry decided to do two things. One was to give people with cancer hope. The other was to collect money for cancer research. Terry wanted to collect one million dollars.

Terry made a plan to run across Canada with only one leg. If he did it, that would give hope to people with cancer. And people would hear his message that more money was necessary for cancer research. He called it the Marathon of Hope. Terry started running from the east part of Canada to the west. The goal was 8,000 kilometers away.

Every day, Terry ran a marathon. At first, not many people knew he was running. But he continued to run. After a few months, more and more people heard about the young man running across Canada with only one leg. When he ran near a town, people were waiting on the roads to cheer for him. Terry's friend drove behind him in a car, and people gave money for Terry's dream. Newspaper started to write about his message of hope.

After 115 days, Terry had run across half of Canada. Day after day, he ran marathon after marathon. More and more people were learning about his message. More and more money was coming in. Terry had wanted to collect one million dollars. But now he thought he could collect 10 million dollars. Terry continued to run, but he started to become very tired every day. Then, after 5,373 kilometers, he felt too sick and went to the hospital. He had cancer again.

Everyone in Canada was shocked. Terry talked to the newspapers and told them he had to stop running. He said, "Even if I don't finish, we need others to continue. It's got to keep going without me." Terry died less than a year later in 1981. He was only 22 years old. As he wished, people still continue to give money for cancer research.

1. What is the reading about?
   a. A young boy who ran every day for 10 years.
   b. A young boy with one leg who ran a marathon.
   c. A young runner who hurt his legs during the marathon race.
   d. A young runner who saved a child with cancer.

2. Terry went to the doctor because _____.
   a. his right knee started to hurt
   b. he felt sick during playing basketball
   c. he had a stomachache
   d. he was hurt during basketball game

3. The doctor decided _____.
   a. to collect money for the research
   b. to give people hope
   c. to continue to play basketball
   d. to cut off Terry's leg

4. What did he want to do to help people with cancer?
   a. Terry wanted to run with people with cancer.
   b. Terry wanted to research on cancer.
   c. Terry wanted to collect money for the research.
   d. Terry wanted to join a marathon team.

5. Terry told the newspaper that _____.
   a. he would stop running
   b. he would have another operation
   c. he would continue running two more years
   d. he would finish cancer research

Reading Passage 18

A Hero above New York

This story is like a movie, but it is not a movie. It's true. One day, a pilot was flying a big airplane above New York City. Then, both engines stopped.

The name of the pilot is Chesley Sullenberger. Everyone calls him Captain Sully. The plane started at an airport in New York. Three minutes later, there were hundreds of birds in front of the plane. There were so many birds that it was difficult for the pilots to see. Then, the birds hit the engines. One passenger shouted, "The engine is on fire!" A flight attendant said, "It's okay. The pilot will turn it off. He can fly the plane with one engine." Another passenger shouted, "The other engine is on fire, too!"

Suddenly, both engines went quiet. The engines had stopped.

Sully called the airport in New York and told them about the birds. He told them the airplane had to go back. But then, the plane was going down too quickly. Now he knew he could not fly back to the airport.

What could he do? There were buildings everywhere! New York probably has more buildings than any other place on earth. He was near Central Park. There are not many buildings in Central Park, but too many trees. There are some big roads in New York, but there are too many cars. He had to do something soon. The plane was getting lower and lower.

Then, he noticed something on his left. It was the Hudson River! He called the airport one last time, "We're going to be in the Hudson." Then, he turned the plane. There were a lot of boats on the river. He didn't want to hit a boat. So he looked for a place with no boats. But it had to have boats nearby. He wanted boats to come and help them later.

Sully brought the airplane down on the river. It was perfect. The back of the plane touched the water first. Then, the front came down. The flight attendants opened the front doors. They told people what to do. "You people get into the rafts(いかだ)!" "You people go out on the wings and wait for help!"

Now all the passengers were out of the airplane. But the plane was going down in the water. The people on the wings were standing in water up to their knees. The water was only 2 degrees Celsius. The air was even colder. It was minus 7 degrees Celsius. It was dangerous to stay there. But Captain Sully had made the right decision. Three minutes later, the first boat came to help. Many other boats came a little later.

Captain Sully was the last person to get out of the plane. Before he left, he walked up and down the plane twice. One hundred and fifty-five people were on that plane, and all 155 got off the plane. It's like a movie, but it's true!

1. What is the reading about?
   a. One engine stopped because of the lack of gasoline.
   b. Birds died because of the engine in an airplane.
   c. Birds in the Central Park.
   d. Both engine stopped while a pilot was flying a big airplane.

2. The engines stopped because _____.
   a. some birds hit the engines
   b. the pilot could not see the front window well
   c. the pilot could put enough gasoline
   d. Many birds were in front of the plane

3. What was happening while the pilot was calling the airport?
   a. Some birds hit the window again.
   b. The airplane was going down.
   c. The airplane was getting better.
   d. The pilot found the birds.

4. The pilot landed on _____.
   a. A big road in New York city
   b. An airport near Hudson River
   c. the Central Park
   d. The Hudson River

5. How was the place where the pilot landed?
   a. There were many trees.
   b. There were some buildings.
   c. There were some boats nearby.
   d. There were many roads.

Appendix F

Questionnaire Items Regarding the RWL and RO Modes in Chapter 6

Note: Original questions were in Japanese only; English translations are provided only for the dissertation.

Q1. 「CD あり」と「CD なし」ではどちらの方が内容を理解しやすいですか？
(Which mode do you prefer when reading a passage; reading with audio support or without audio support?)

a. CD あり	b. CD なし
(Reading with audio-support)	(Reading without audio-support)

1-1 「CD あり」の方が良い理由を教えてください。
(Please explain why you prefer the RWL mode to the RO.)

1-2 「CD なし」の方が良い理由を教えてください。
(Please explain why you prefer the RO mode to the RWL.)

Q2. CD のスピードは適切でしたか？
(In your opinion, was the audio speed appropriate to adequately follow?)

a. とても遅い (Very Slow)
b. 少し遅い (A bit slow)
c. ちょうど良い (Appropriate)
d. 少し速い (A bit fast)
e. とても速い (Very fast)

Q3. CD ありの場合、どの程度内容を理解することができましたか？
(In your opinion, to what extent would you understand the passages with audio support?)

a. 100% b. 80% c. 60% d. 50% e. 20% f. 0%

Q4. CD なしの場合、どの程度内容を理解することができましたか？
(In your opinion, to what extent would you understand the passages without audio support?)

a. 100% b. 80% c. 60% d. 50% e. 20% f. 0%

Appendix G

A List of To-Infinitives Used as Nouns in Chapters 4 and 7

Note: An experimental group encountered 40 to-infinitives used as nouns in the reading passages from 1 to 5, whereas a control group encountered 10 to-infinitives used as nouns in the reading passages from 6 to 10.

Reading Passage 1: Cats and Dogs

1. It is a lot harder to train cats to do tricks.
2. Their learning styles influence the types of things that you can teach these animals to do.
3. For example, it takes no time for cats to learn to use a special box for their bathroom.
4. If something is natural for an animal to do, it is easier for an animal to learn.
5. But, why can people teach dogs to sit but not cats?
6. Your dog naturally wants to please you so that you will let it live with you.

Reading Passage 2: Learning to Play Music

7. Others want their children to play music as a job in the future.
8. Either way, parents may choose to put their children into music classes while their children are young.
9. What is the best instrument for young children to play?
10. Many music teachers think that 5 or 6 is a good age for children to start learning to play music.
11. It takes a long time for children to learn to play the piano well.
12. Children can learn to play the violin or the guitar a little faster.
13. Children who are a little older can learn to play other instruments.
14. By the age of 10, a child can learn to play the flute or the trumpet.
15. That is why they are a little harder to learn than a flute or a trumpet.

Reading Passage 3: Step by Step Learning

16. Sometimes learning can be easy, but sometimes you may feel like it is too hard to learn certain things.
17. That may be because you are trying to learn them the wrong way.
18. If you try to learn a big thing all at once, you will get confused.
19. It is better to try and learn something new in small steps.
20. Different pieces of English need to be learned slowly over time.
21. First, a student needs to learn about the sounds and letters of English.
22. Then with these sounds and letters, the student can start to learn useful words for common things.
23. Next, the student can learn to say short sentences using the words that he or she has learned.
24. So, the next time you are having trouble learning something, try to look at one small piece at a time.
25. Learn each piece well before you try to learn another piece.

Reading Passage 4: Marketing

26. Companies need to find out what people want.
27. Once a company knows what people want, it tries to provide it for them.
28. The company also needs to figure out a good price for its product or service.
29. To figure out the price, a company needs to work out how much it will cost to make the product.
30. Then, the company has to figure out how much people are willing to pay.
31. Hopefully, people will be willing to pay more than it costs to make a product.
32. So, the company needs to decide where it is going to sell the product.
33. The company needs to decide how it is going to let people know where they can buy it.
34. But companies want to keep making money, so they have to make sure that they keep their customers.
35. They must always try to improve their products or service to keep their customers happy.

Reading Passage 5: Cars in America

36. However, not many people in the United States like to take city buses.
37. Buses in the United States are not popular because Americans like to have their own cars.
38. If you want to go to another city, you can do it easily.
39. Sometimes the bus or train or subway does not go where you want to go.
40. Only in big, crowded cities like New York would it be faster to take the subway than to go in your own car.

Reading Passage 6: Penguins

1. The fat helps to keep them warm.

Reading Passage 7: Everyone Loves Music

2. King Bhumibol of Thailand likes to play jazz music.
3. He loves to sing Elvis Presley songs.

Reading Passage 8: Learning and Unlearning Fear

4. They will not be able to take the job because they are afraid to fly.
5. This is because they learn to be afraid of certain things just by watching their parents.
6. For example, a little girl might learn to be afraid of spiders because her mother screamed every time she saw a spider.

Reading Passage 9: Making Money

7. It is not easy for the government to make a new bill.
8. Then, they ask an artist to design the new bill.

Reading Passage 10: History of Flight

9. Early on, they tried to fly like birds.
10. So, people continued to look for something better.