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Investigating Effective Instructional Approaches for Vocabulary Expansion through Extensive Reading: Emphasizing Volume or Focusing on Unknown Words?

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ABSTRACT

Extensive Reading (ER) emerges as a promising approach for acquiring a foreign language, allowing for a large amount of language exposure. However, the influence of supplementary activities within ER programs has yet to be thoroughly investigated, despite previous studies suggesting their potential effectiveness. This research investigated the effects of ER combined with supplementary instructional approaches on vocabulary acquisition and reading strategies among university EFL students in Japan. Two supplementary instructional approaches were implemented within ER programs of equivalent duration, learner proficiency levels, and grade levels: one emphasizing reading volume and the other focusing on directing attention to unknown words while and after reading. The results revealed that directing learners' focus to unknown words led to more pronounced growth in vocabulary size. However, when attention was directed towards unfamiliar words, students were less inclined to infer their meanings from context and more likely to resort to using dictionaries.

Conversely, placing emphasis on increasing reading volume increased the likelihood of students encountering engaging books and series, and reading materials at a specific readability level. These findings indicated that supplementary activities within ER programs influenced learning outcomes and reading strategies. Consequently, when integrating supplementary activities into the ER program, educators should carefully consider the program's objectives and incorporate suitable activities accordingly.

Keywords: extensive reading, vocabulary learning, reading strategy, supplementary activity

Introduction

Extensive Reading (ER) is delineated as "a pleasurable reading situation where a teacher encourages students to choose what they want to read for themselves from reading materials at a level they can understand" (Brown et al., 2008, p. 137). It emerges as a promising approach for acquiring a foreign language, as it allows for a significant increase in exposure to the target language (Nation & Waring, 2019). Given the emphasis on the volume of target language input in second language acquisition research (Shirai, 2008), ER proves to be especially valuable in English as a Foreign Language (EFL) settings such as Japan, where opportunities for English exposure outside the classroom are scarce.

Numerous empirical studies have illustrated the effectiveness of ER programs in foreign language acquisition (Leung, 2002; Pigada & Schmitt, 2006; Rodrigo et al., 2004). Specifically, ER has exhibited beneficial impacts across diverse skills and areas, including reading comprehension, reading speed, vocabulary, grammar, spelling, writing, motivation, and scores on English proficiency tests (Takase, 2010). However, the findings and effect sizes reported in previous studies demonstrate heterogeneity (Nation & Waring, 2019). This variability may stem from ER's nature as a long-term learning activity (Takase, 2010), wherein the influence of language input beyond ER may impact the outcomes (Pigada & Schmitt, 2006). Additionally, this variability can be attributed not only to the diversity of program structures but also to instructional methodologies and learner-related factors, such as learners' age and proficiency levels in the target language (Waring, 2001). Thus, ER research involves numerous variables that require careful control, presenting challenges in formulating a robust research design for ER studies (Nation & Waring, 2019).

As an illustrative case highlighting the diverse outcomes observed in ER research, inquiries into ER's impact on incidental learning of new words have indicated significant variability in the number of exposures (Chen & Truscott, 2010; Rott, 1999; Saragi et al., 1978; Waring & Takaki, 2003; Webb, 2007). One potential explanation for this divergence is the influence of numerous factors in these studies. These factors include not only program-related factors such as the duration and frequency of ER (Day, 2015), but also learner-related variables such as age, proficiency level, motivation, and whether they consciously attend to unfamiliar words while reading (Nation & Waring, 2019). Additionally, teacher-related variables, such as guidance on selecting reading materials and strategies for dealing with unknown words, have not been sufficiently stated in many studies (Waring, 2001), potentially leading to a wide range of outcomes. Consequently, a comprehensive investigation into the impacts of not only program content but also learner and teacher-related factors in conjunction is warranted in ER research.

It is noteworthy to highlight that there exist two principal stances regarding the role of ER in language instruction, stemming from differing interpretations of ER's effects. One stance posits that ER alone can enhance all English language competencies (Krashen, 2004). This perspective perceives ER as providing both "necessary" and "sufficient" conditions for English acquisition, thus advocating for the central integration of ER within a language course. Conversely, while acknowledging ER's efficacy, the alternate stance contends that ER alone does not suffice for comprehensive skill enhancement (Nation & Waring, 2000). This viewpoint regards ER as a "necessary" yet not "sufficient" condition for English acquisition, advocating for its integration within a well-balanced language course (Nation, 1996). This stance also emphasizes the incorporation of additional activities alongside ER to enhance its effectiveness (Bamford & Day, 2004).

The present study aligns with the latter stance, as previous studies suggest that integrating additional activities with ER leads to better learning outcomes compared to ER alone (Song & Sardegna, 2014). Furthermore, integrating ER as a central component of a language course may present challenges within a tightly structured curriculum, such as that of Japanese primary and secondary education, which is mandated to adhere to the national Course of Study. Exploring the effects of ER and its supplementary activities can offer more pragmatic educational insights applicable in classroom settings. Building upon this perspective, the current study examines differences in the effectiveness of vocabulary learning through ER by incorporating two distinct instructional approaches.

Specifically, the study delves into discrepancies in vocabulary size growth and reading strategies resulting from two instructional methodologies deployed within ER programs over the course of a semester for two cohorts

of third-year undergraduate EFL students in Japan. One group received instructions to engage in ER outside of class, with the aim of increasing exposure to unknown words, based on previous findings indicating a positive relationship between the frequency of encountering unknown words and the likelihood of acquisition (Brown et al., 2007; Webb, 2007).

Conversely, the second cohort was instructed to share unknown words encountered during English book readings in pairs, thereby intensifying their focus on unfamiliar vocabulary while and after reading. This instruction is grounded in prior research indicating the pivotal role of attention to unknown words during reading for vocabulary learning. Ushiro (2009) argued that vocabulary expansion is hindered if unknown words are consistently overlooked, while Fujii (2020) provided empirical evidence showing that learners who experienced substantial vocabulary development through a year-long ER program felt bothered with encountering unknown words and were less inclined to skip them during reading without actively attending to their meanings compared to those whose vocabulary progression remained stagnant. Furthermore, Webb et al. (2023) indicated that the extent to which learners pay attention to unknown words during reading was positively correlated with learning those words.

The novelty of this study lies in its exploration of ER and its additional instruction as a comprehensive approach intended to elucidate its efficacy. The findings of this research are expected to provide practical insights to teachers, offering suggestions for additional activities to enhance vocabulary learning efficacy and efficiency.

Literature Review

Numerous empirical studies have substantiated the efficacy of ER programs for incidental vocabulary learning. Through repeated exposure to unfamiliar words during meaning-focused reading of comprehensible text, new vocabulary is believed to be acquired incidentally as a natural outcome. These investigations typically align with two primary methodologies, as delineated by Nation and Waring (2019): studies centered on the reading of singular or a limited number of texts (Waring & Takaki, 2003), and those that examine learning outcomes within an ER framework over a defined duration (Rodrigo et al., 2004).

While the primary target language in these studies has been English, some research has focused on other languages such as French (Pigada & Schmitt, 2006), Spanish (Rodrigo et al., 2004), and Japanese (Leung, 2002). Additionally, although traditional paper books have been the primary medium utilized (Rodrigo et al., 2004), more recent investigations have incorporated electronic books (Chen et al., 2013). Webb et al. (2023) conducted a meta-

analysis on incidental vocabulary learning in second language acquisition and found that ER is indeed effective. Thus, the effectiveness of vocabulary acquisition through ER has been extensively documented across various target languages and mediums.

One of the primary contributors to vocabulary learning through ER is the repeated encounters with unknown words in contexts where their meanings can be inferred (Webb, 2007). However, existing research presents varied perspectives on the precise number of encounters necessary for learning. For instance, studies have reported acquisition occurring after six encounters (Rott, 1999), at least seven (Chen & Truscott, 2010), approximately ten (Saragi et al., 1978), at least ten (Webb, 2007), and at least eight encounters leading to 50% recognition of unknown word forms after three months, with a 10% to 15% chance that the word's meaning will be remembered without prompt after three months even if it was encountered more than 18 times (Waring & Takaki, 2003). Thus, while a specific threshold number of encounters remains elusive, Lee and Kim (2018, p. 100) noted that "most studies suggest that more than ten encounters of a word would lead to acquisition." Building upon these findings, Nation (2014) undertook a corpus study, assuming that vocabulary is learned after 12 repetitions. Therefore, it can be deduced from prior research that a minimum of ten to 12 repetitions, or more, is generally deemed requisite for acquisition. Furthermore, previous studies widely concur that a greater number of repetitions is associated with an increased likelihood of acquisition (Chen & Truscott, 2010; Webb, 2007), highlighting the importance of repeated encounters for incidental vocabulary learning.

Acknowledging the importance of repetition in incidental vocabulary learning, previous research has also indicated that the number of repetitions alone does not solely determine acquisition (Pigada & Schmitt, 2006; Saragi et al., 1978). This is because the threshold for acquisition can vary depending on the specific aspect of vocabulary being acquired. Even when learning is defined as form-meaning recognition, the number of repetitions required may fluctuate based on program-related factors such as the duration and frequency of the ER program. Additionally, the results can be influenced by learner- and teacher-related factors. For example, if learners engage in reading without actively attending to unfamiliar words, the efficacy of vocabulary learning is likely to diminish as these words are skipped unnoticed (Hulstijn et al., 1996; Lee & Kim, 2018; Ushiro, 2009; Webb et al., 2023). Instruction from teachers directing students to read English texts with an emphasis on unfamiliar words may yield different outcomes compared to scenarios where such guidance is not provided.

Based on the findings of these previous studies, it is suggested that augmenting an ER program with instructions aimed at increasing encounters

with unknown words or directing attention towards them may enhance the efficacy of vocabulary acquisition (Lee & Kim, 2018). Given that the effects of incidental vocabulary learning occur incrementally and requires time (Hulstijn et al., 1996), implementing guidance to enhance the effectiveness of ER appears reasonable, especially considering the limited time within the rigid curriculum framework of English education in Japan and some other Asian countries. Additionally, since teachers are not always permitted to conduct ER programs for consecutive semesters, it is imperative to develop potential instructional packages aimed at enhancing the efficacy and efficiency of ER within the constraints of limited time availability. This is highlighted by Green (2005, p. 309), who suggests that "Assurances of the benefits of extensive reading activities in fostering second language acquisition over the long term may not suffice for many learners' more immediate goals." Therefore, the impact of ER programs supplemented with instructions aimed at enhancing vocabulary learning efficacy and efficiency should be explored. This exploration can provide practical recommendations for designing English courses within limited timeframes and cater to the needs of learners. Additionally, the impact of various activities on reading strategies warrants examination, as they may correlate with the efficacy of vocabulary learning (Fujii, 2020).

Previous studies have lacked empirical investigations in this area; therefore, we have no insights into which activities should be incorporated into ER programs and what effects might result from the inclusion of such activities on students' reading volume, vocabulary size growth, and reading strategies. Addressing this gap in the literature, the present study aims to determine whether there exist disparities in vocabulary size growth and reading strategies within a one-semester (15-week) ER program for third-year Japanese EFL university students. Specifically, we examine the impact of two instructional approaches within ER programs of equivalent duration, learner proficiency levels, and grade levels: one emphasizing reading volume and the other focusing on directing attention towards unknown words.

Methodology

Research Questions

The following two research questions (RQs) were explored in this study: RQ1: What was the effect on vocabulary size growth when learners were encouraged to focus on reading volume compared to when they were directed to pay attention to unknown words in the ER program?

RQ2: Did learners demonstrate different reading strategies when they were encouraged to focus on reading volume compared to when they were directed to pay attention to unknown words in the ER program?

Participants

The participants for this study consisted of 56 third-year undergraduate EFL students in 2019 (referred to as the "Reading Assignment Group (RAG)") and 51 third-year undergraduate EFL students in 2021 (referred to as the "Word Sharing Group (WSG)"). Both the RAG and WSG participants comprised students enrolled in an English course at a national university in Japan. Their major field of study was engineering, and they demonstrated comparable results on the placement test administered at the beginning of their junior year across both groups, with an average English language proficiency level of A2 on the Common European Framework of Reference for Languages (CEFR). Despite the time gap from 2019 to 2021, caused by the unavailability of the ER program and vocabulary size test during the pandemic in 2020, there were no changes in the curriculum or teaching policies during this period.

Participants excluded from the study were those who did not participate in the ER program, did not complete either the pre-test or post-test of the vocabulary size test, did not respond to all questions in the questionnaire administered after the ER program, or were fourth-year students who were enrolled in in the English course. International students were also excluded from the study due to the vocabulary size test design, which necessitated some proficiency in Japanese to match English words with their Japanese meanings.

Procedures and Materials

Ethical Approval

Only students who provided verbal consent after receiving a detailed explanation of the study's purpose and the use of their data were included in the study.

Instruction for the Reading Assignment Group (RAG)

During the first term of 2019 (April-July), 15-20 minutes were allocated for in-class ER once a week within a 90-minute English class. A total of 12 sessions were conducted throughout the semester. For the in-class ER sessions, students were instructed to select several books from the

university library, which housed approximately 4,000 ER books, that matched their interests and proficiency levels. Additionally, the author provided approximately 30 ER books from his personal collection, chosen to align with students' interests and proficiency levels, from which students could make selections. The books available, both from the library and those brought by the author, were labeled with word count, series name and level (e.g., CER0 for Cambridge English Readers, Starter Level; OBW2 for Oxford Bookworms Library, Stage 2). The *Yomiyasusa Level* (YL), a readability measure developed for Japanese learners of English, was also provided on the labels, indicating the difficulty level of each book on a scale from YL 0.0 to YL 10.0, with higher values indicating higher difficulty levels (Takase, 2010).

In our approach to conducting the ER program, we adhered to Sakai's (2002) three principles of ER with supplementary guidelines, which included instructing students to: (1) select books that are sufficiently easy to comprehend without the need for a dictionary; (2) infer the meaning of unfamiliar vocabulary from context, and if understanding remains elusive, it is permissible to skip the word or phrase; and (3) if a book proves uninteresting or too challenging, students should opt for a different book. The use of a dictionary was not prohibited; however, students were encouraged to limit dictionary use to instances where they genuinely wished to clarify the meaning of a word, with the caveat that it should not significantly impede their reading progress. Nonetheless, if encountering an excessive amount of unfamiliar vocabulary, students were advised that the book's difficulty level might not be suitable, and they should consider switching to a different book. The classes were conducted in a face-to-face format, during which RAG students exclusively utilized printed ER books.

To promote students' engagement with independent reading, ten assignments were allocated, requiring students to read a minimum of three books or 3,000 words suited to their English proficiency level and personal interests. If participants were at the stage where they were reading easy, short books, we advised them to undertake a reading assignment comprising a minimum of three books. Conversely, if they were adept at reading more challenging, longer texts, we recommended they aim for a reading volume of at least 3,000 words. Additionally, students were instructed to compose 50-100 words in English reflecting on their impressions or summarizing the storyline of one of the books they read.

For the remaining 70-75 minutes following an ER session, intensive reading instruction using an English textbook for university students was administered. During this time, students primarily participated in reading activities, concentrating on grammar and vocabulary, and also engaged in reading the text aloud.

Instruction for the Word Sharing Group (WSG)

The in-class ER for the WSG was conducted in the same manner as it was for the RAG. During the first term of 2021 (April-July), 15-20 minutes of in-class ER were dedicated once a week within a 90-minute English class, totaling 11 sessions throughout the semester. The guidance provided for book selection, reading methods based on Sakai's (2002) three ER principles with supplementary guidelines, and instructions regarding dictionary usage mirrored those given to the RAG.

In contrast to the RAG, the WSG engaged in a distinct activity following each in-class ER session. This involved a five-minute exercise where pairs shared unfamiliar vocabulary encountered in their books during the ER session, along with their corresponding meanings, either inferred or looked up in a dictionary. This activity was conducted after each in-class ER session, totaling 11 times during the semester. By incorporating this activity, students were encouraged to read attentively, focusing on unfamiliar words during ER sessions. While extracurricular ER was encouraged by the instructor, it was not mandatory, and there were no reading assignments. The classes were conducted in a hybrid format, blending face-to-face and remote modes of instruction as a precautionary measure against COVID-19. Throughout this period, WSG students were given the option to utilize either printed or electronic books provided and could attend classes either in person or online. Given that certain students participated remotely, the Breakout Room function on Zoom, an online video conferencing platform, was utilized for the word sharing activity.

For the remaining 65-70 minutes following an ER session and word sharing activity, intensive reading instruction was conducted in the same manner as with the RAG.

Vocabulary Size Test

The increase in receptive vocabulary was assessed by administering a vocabulary size test at the outset (April) and conclusion (July) of the ER program. The vocabulary size test utilized was developed by Mochizuki (1998) specifically for Japanese learners of English. This test comprises seven levels, ranging from 1,000- to 7,000-word levels, each containing 26 questions. The test format entails selecting the English word that corresponds to the meaning of two Japanese words from a set of six options. There are 13 sets of questions for each level, totaling 26 questions for each level. This test was chosen for its perceived validity in assessing participants' English vocabulary size, particularly in comparison to vocabulary size tests where

English definitions are provided, given the participants' average proficiency level at A2 on the CEFR.

In this study, tests ranging from the 1,000-word level to the 6,000-word level were administered, selected according to the estimated English proficiency level of the participants. There are three versions of the test, all of which possess identical difficulty levels (Mochizuki, 1998); two versions were administered for the pre- and post-tests for both the RAG and WSG. At the onset of the ER program (April in 2019 and 2021), VST11 (Vocabulary Size Test, 1,000-word level, version 1) through VST61 (6,000-word level, version 1) were utilized as pre-test, totaling 156 questions (26 questions × 6 levels). At the conclusion of the ER program (July in 2019 and 2021), VST12 (1,000-word level, version 2) through VST62 (6,000-word level, version 2) were administered as post-test, also comprising 156 questions (26 questions × 6 levels). To prevent the potential for recall of pre-test content during the post-test, different versions of the test were utilized.

The duration for both the pre- and post-tests was set at 25 minutes. To ensure the accuracy of vocabulary size measurement, participants were instructed to leave blank any words they had never encountered before, thereby avoiding accidental correct responses due to guesswork. Additionally, participants were advised to approach the test seriously, as it would provide valuable feedback for their learning assessment. The collected tests were scored based on one point per correct answer, and the vocabulary size was determined by applying the total correct answers to the formula outlined by Mochizuki (1998). Participants received their vocabulary size scores after each test for feedback purposes.

Questionnaire

Based on the author's prior research (Fujii, 2020), a questionnaire comprising 27 items for the RAG and 22 items for the WSG was developed and administered at the post-test stage (July in 2019 and 2021). This questionnaire aimed to explore prior ER experience, reading strategies, preferences toward ER, and perceived effectiveness of ER. The difference in the number of questions between 2019 and 2021 primarily resulted from the inclusion, solely in 2019, of an additional inquiry regarding the perceived effectiveness of ER. All questions were structured to be responded to using a five-point Likert scale with 5 = *strongly agree* and 1 = *strongly disagree* (see Table 3 for the questions). In this study, 15 question items related to reading strategies were analyzed, as these items remained consistent across both groups.

Analysis

Initially, unpaired *t*-tests were conducted to assess the discrepancy between the two groups regarding the quantity of words read and the number of books completed during the ER program. In instances of unequal population variances, Welch's *t*-tests were utilized. Cohen's *d* was utilized as the effect size measure. While the outcomes of this comparative analysis do not directly correspond to the RQs, the analysis was carried out to provide a basis for discussing the two RQs

For the exploratory analysis of RQ1, the vocabulary size test results (pretest and posttest) were scrutinized to identify significant differences between the two groups using unpaired *t*-tests. Cohen's *d* was utilized as the effect size measure.

For the exploratory analysis of RQ2, the questionnaire outcomes were analyzed to ascertain significant differences between the two groups using the Mann-Whitney *U* tests.

Results and Discussion

Number of Words and Books Read

The disparities in the quantity of words and books read during a semester between the two groups are shown in Table 1.

Table 1

Number of Words and Books Read

	Words Read			Books Read		
	M (SD)	*Max*	*Min*	*M (SD)*	*Max*	*Min*
RAG (*n*=56)	60,676.8** (38,914.5)	223,476	21,570	57.9** (30.3)	194	21
WSG (*n*=51)	34,463.9** (20,957.0)	101,500	3,039	21.2** (9.7)	43	2

** $p < .01$

The RAG read 26,212.9 more words and 36.7 more books than the WSG. The disparities between the two groups in both word count (t (86.0) = 4.39, p = .000, d = .83) and book count (t (67.7) = 8.61, p = .000, d = 1.60) were statistically significant, with large effect sizes.

The reading assignment mandated that RAG students read at least three books or 3,000 words, and this task was given 10 times. While this is an estimate owing to variations in individual reading tendencies, it can be

inferred that the RAG collectively read approximately 30 books or 30,000 words outside of class as a result of this assignment. The discrepancies in quantity between the two groups generally correspond with these approximations, suggesting that the reading assignments substantially augmented the amount of reading undertaken.

Vocabulary Size

Table 2 displays the pre- and post-test results for vocabulary size.

Table 2

Vocabulary Size Test Results

	Pre-test (April)			Post-test (July)			
	M (SD)	*Max*	*Min*	*M (SD)*	*Max*	*Min*	*Gain M (SD)*
RAG (*n*=56)	3,013.7 (620.2)	4,461.5	1,923.1	3,359.9* (597.0)	4,846.2	2,230.8	346.2 (−23.2)
WSG (*n*=51)	3,165.2 (504.2)	4,076.9	1,192.3	3,602.6* (550.9)	4,730.8	2,115.4	437.4 (46.7)

* $p < .05$

There was no significant difference in vocabulary size between the two groups in the pretest (t (105) = 1.38, p = .171, d = .27). However, a significant difference emerged between the two groups in the posttest (t (105) = 2.18, p = .032, d = .42). The RAG exhibited an average increase of 346.2 words from pretest to posttest, whereas the WSG demonstrated a greater gain of 437.4 words, resulting in a significant disparity.

One plausible explanation for this discrepancy could be attributed to the efficiency of vocabulary learning resulting from the varied instructional approaches. While RAG students were likely to encounter a higher number of unfamiliar words through their ER compared to the WSG due to their greater reading volume (Table 1), their acquisition rate was lower. This suggests a diminished efficiency in vocabulary acquisition compared to the deliberate learning approach adopted for the WSG.

Previous research has suggested that incidental vocabulary learning is not highly efficient and occurs incrementally (Hulstijn et al., 1996; Webb et al., 2023). Despite the RAG reading 26,212.9 more words than the WSG, likely due to the impact of the assignments, this volume equates to encountering approximately 1,311 tokens or 524 tokens of unfamiliar words in the scenario where RAG students were reading texts with 95% or 98%

coverage of known words during a semester. Given that unfamiliar words encountered by learners are usually at a higher lexical level and occur less frequently in the text compared to known words (Nation & Waring, 2019), the quantity of words with an adequate number of repetitions for incidental learning (typically ten to 12 times or more) would be rather limited. Furthermore, if learners consistently bypassed unfamiliar words without giving them due attention while reading, they might not have grasped them even after encountering them multiple times (Ushiro, 2009). The instruction given to the RAG increased reading volume, but it did not guarantee the students' focus on unfamiliar words while reading. Therefore, it is considered that this surplus volume of reading over one semester may not have resulted in particularly high effectiveness of incidental vocabulary learning.

Conversely, the instruction offered to the WSG, where they shared the meanings of unfamiliar words encountered in their ER books in pairs, not only encouraged learners to pay attention to unknown words during reading but also facilitated reviewing and looking up the meanings of these unfamiliar words after reading. Additionally, this activity offered students an opportunity to learn new words from their peers. Furthermore, the instruction given to the WSG ensured that all participants were provided with these learning opportunities, which may have contributed to a greater average increase in vocabulary size as a group. Thus, this activity provided an opportunity for deliberate vocabulary learning by specifically targeting unfamiliar words from ER books, which could prove to be efficient in terms of acquiring new vocabulary.

Questionnaire

The results of the questionnaire are shown in Table 3. The questions were originally written in Japanese and were translated into English by the author. Cronbach's *a* was .75 in the RAG and .78 in the WSG. According to Takeuchi and Mizumoto (2014), *a* values of 0.7 or higher are considered acceptable for a questionnaire-based psychological scale, indicating a minimum level of internal consistency.

Table 3

Questionnaire Results (5 = strongly agree; 1 = strongly disagree)

#	Question items	RAG	WSG	*U*	*p*
1	I encountered an interesting book.	4.11	3.67	1030.50	.006**
2	I enjoyed ER.	4.04	3.98	1365.50	.758

3	I think ER is a good way for me to learn English.	3.84	3.67	1266.50	.277
4	I found a series that I liked.	4.14	3.63	948.00	.002**
5	I read books that I could read fluently.	3.93	3.88	1391.50	.800
6	I read books in a specific series.	4.27	3.98	1268.50	.281
7	I read books with specific readability (YL).	3.93	3.51	1109.50	.038*
8	I read books wherein I could understand more than 70% of the content.	4.29	4.16	1326.00	.725
9	I was bothered when I encountered unknown words while reading.	4.34	4.27	1367.50	.679
10	I did not feel comfortable skipping unknown words.	3.48	3.43	1385.00	.781
11	I guessed the meaning of unknown words while reading.	4.27	3.90	1099.00	.022*
12	I looked up the unknown words in a dictionary.	2.71	3.49	935.00	.002**
13	I tried to remember the words encountered while reading the book.	3.50	3.37	1303.00	.815
14	I found interesting words or expressions in the book.	3.84	3.88	1397.00	.208
15	I encountered many unknown words through ER.	4.43	4.10	1124.00	.038*

* $p < .05$ ** $p < .01$

Significant differences were observed between the two groups in six out of the 15 questions (#1, 4, 7, 11, 12, and 15); RAG students were notably more inclined than WSG students to indicate encountering an intriguing book and series (#1, 4). A plausible interpretation of this finding could be that RAG students, who read a larger number of books (Table 1), were more likely to come across books and series that aligned with their interests. Moreover, once they discover a series they enjoy, they are more inclined to engage in "series reading" (Renandya et al., 2018), where they consistently read books from the same series. Considering that titles at the same level within the same series are basically assigned the same YL readability score (Takase, 2010), it is conceivable that if more students discover their favorite series and engage in series reading, the proportion of students reporting reading books with identical YL scores would increase (#7).

There was also a disparity in how the two groups responded to encountering unfamiliar words: WSG students were less inclined than RAG students to guess the meaning of unknown words (#11) and instead tended to resort to looking up the meaning in a dictionary (#12). A possible explanation for this outcome could be that WSG students were in anticipation of the subsequent activity where they shared new words with their peers. This

activity may have strengthened their reliance on the dictionary instead of inferring the meaning from context, as they may have aimed to convey a precise meaning obtained from the dictionary rather than an uncertain meaning derived from guesswork in the activities that follow. Conversely, since RAG students were not required to share the unknown vocabulary through ER, it can be inferred that they did not feel compelled to consult a dictionary but rather relied on inferring the meaning of unknown words from context and continued reading. This approach to reading adopted by RAG students may have facilitated uninterrupted engagement and resulted in differences in the level of reading involvement, which could serve as another factor contributing to a higher proportion of students finding ER books interesting (#1).

RAG students reported encountering a greater number of unknown words compared to WSG peers (#15). This suggests that the higher volume of reading led to encountering more unknown words, a factor reflected in their responses.

These findings suggest that learners' reading strategies adapt based on the supplementary activities or assignments incorporated with ER. ER instructors must take into account this finding that the activities they employ to achieve the objectives of their ER programs could impact students' reading strategies and learning outcomes, even if the programs have the same duration. While students have the responsibility to engage in reading, teachers also hold the responsibility of providing effective and efficient guidance aligned with the objectives of the ER program.

Conclusion

The current study examined the impact of additional activities or assignments incorporated with semester-long ER on vocabulary size and reading strategies among Japanese university EFL students. The findings and discussions of this study offer the following responses to the two RQs:

RQ1: Vocabulary size growth was more pronounced when learners were directed to pay attention to unknown words while and after reading compared to when they were encouraged to focus on reading volume.

RQ2: Yes. Learners were more inclined to come across engaging books and series and to read materials at a specific readability level when the focus was on increasing reading volume compared to when they were directed to pay attention to unknown words. Conversely, learners were less inclined to infer meanings from context and more likely to resort to dictionary use when they were directed to attend to unknown words compared to when they were encouraged to focus on reading volume.

These findings suggest that explicit vocabulary learning opportunities, such as sharing unknown words, may function as effective and efficient supplementary activities rather than endeavors to boost reading volume, particularly when the aim of the ER program is to augment vocabulary size within a restricted timeframe, such as in a one-semester ER program. The increased effectiveness of vocabulary learning in ER programs resulting from deliberate learning has been demonstrated in previous studies (Meganathan et al., 2019; Webb et al., 2023), with this study reinforcing their findings.

However, concerning reading English for pleasure, integrating activities that highlight unfamiliar words may potentially impede learners' immersion in the narrative world due to attention to certain vocabulary and an increased reliance on dictionaries. This could detrimentally impact long-term autonomous engagement with ER, as learners may be unable to fully experience the pleasure of reading. While the deliberate vocabulary instruction may enhance vocabulary size growth efficiency in a short-term ER program, the discovery of preferred books or series may promote sustained engagement in ER over the long term, driven by pleasurable reading experiences. This approach is more closely aligned with the objective of fostering autonomous English learning habits, consistent with reading for pleasure as outlined by Krashen (2004). Furthermore, it has the potential to facilitate increased exposure to English and enhance vocabulary acquisition through repeated encounters with unfamiliar words over an extended period. Therefore, it is crucial to incorporate suitable activities into the ER program according to its duration and objectives.

While this study generated findings related to ER and its supplementary activities, which can be emphasized as the novelty of this study, it is essential to acknowledge several limitations inherent in this research. Firstly, the ER instruction in this study comprised only 15 to 20 minutes within a 90-minute class, with the remainder primarily dedicated to intensive reading. Consequently, the impact of vocabulary acquisition from this intensive reading component should be considered in the research outcomes.

Secondly, the results must be interpreted based on the assessment using the vocabulary size test. Vocabulary learning encompasses various facets, including meaning, spelling, collocations, and the ability to produce the vocabulary through writing or speaking. Some researchers suggest that ER is effective in reinforcing partially known words, rather than solely focusing on acquiring new vocabulary (Nation & Waring, 2019; Waring & Takahashi, 2000). Therefore, more comprehensive investigations are necessary to capture the complete landscape of ER's effects on vocabulary learning.

Thirdly, while RAG students exclusively utilized printed books in a face-to-face class format, WSG students had the option to choose either printed or electronic books in a hybrid class format. This study primarily examined the effects of variances in supplementary activities within ER programs. However, as differences in book medium and class format may affect reading behaviors, further comprehensive analysis is necessary, controlling for book medium and class format. Regrettably, this control was not feasible due to the constraints imposed by COVID-19.

Fourthly, the values of Cronbach's *a* in the questionnaire were not particularly high, although they surpassed the minimum acceptable level (Takeuchi & Mizumoto, 2014). Future studies should refine questionnaire items to further enhance the reliability of exploring learners' reading strategies.

Finally, the validity of the word sharing activity conducted in this study, in line with the essence of "ER," must be examined. The original ER approach emphasizes reading for pleasure and fluency (Bamford & Day, 2004; Krashen, 2004; Sakai, 2002), and diverting learners' attention to unknown words may diminish their reading enjoyment and slow down the reading process. Whether this reading approach can be classified as "ER" and whether this activity is suitable for facilitating ER should be carefully examined.

Educators should implement suitable and effective guidance in accordance with the objectives and duration of the ER program, taking into consideration the impact of supplementary instructional content on learners' reading behaviors and outcomes.

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