

# Reading Behaviors of Japanese Learners

## Based on Logs Recorded by Users of Digital Books

Teiko Nakano  
Shobi University  
Saitama, Japan  
email: t-nakano@b.shobi-u.ac.jp

Teruko Harada  
EF International Language Center  
Tokyo, Japan  
email: terukoharada@r7.dion.ne.jp

**Abstract**—In this paper, the reading behaviors of Japanese learners in the upper intermediate level were analyzed according to reading time, amount of reading, dictionary use, the results of pre- and post-vocabulary tests, and the results of a quiz about the book that the learners read. Data on reading time, amount of reading, and dictionary use were collected from the learners' reading logs recorded on *BookLooper*, an application for viewing digital books. Results show that the learners who had read more understood the contents better and read faster than those who had read less. Furthermore, learners appeared to learn vocabulary incidentally in a virtuous circle of reading; once they enter that circle, they need to read books that are appropriate to their vocabulary level.

**Keywords**—extensive reading; reading behaviors; virtuous circle; good reader; incidental vocabulary learning.

### I. INTRODUCTION

Extensive reading is an approach of second language learning that improves language ability in a pleasurable way [1][2]. In particular, extensive reading using graded readers, where learners can repeatedly encounter unknown words, has an effect on learners in which they learn vocabulary incidentally [3]-[6]. Incidental vocabulary learning happens when words are learned by way of guessing because of repeated exposure to them in context while reading. In the process where unknown words become known words, there is a stage where learners recognize they have seen a word even though they do not know its meaning [7].

Day and Bamford [8] suggested that extensive reading can be included in a second language curriculum as an extracurricular activity. If the learners can learn the target language through extensive reading as an extracurricular activity without teachers' support; and if there is an on-line system that substitutes for the teacher, the learners who study Japanese as a second language by themselves can enjoy extensive reading on-line and evaluate and improve their language skills. The authors of this paper have developed Japanese graded readers with their colleagues [9] based on extensive reading and graded readers in English [6][10], and a support system for Japanese extensive reading [11] to benefit learners who cannot have the support of a teacher.

#### A. Good Readers

Extensive reading is a good approach for building vocabulary knowledge; however, as Coady [7] mentioned,

learners are not able to continue reading and learn new vocabulary when they lack the basic vocabulary required to continue reading books. Nuttall [12] called this a vicious circle. That is, learners who find themselves in this circle read slowly, do not feel enjoyment, and do not read more. On the other hand, learners become good readers when they are in a virtuous circle, wherein they understand the content better, they enjoy reading, they read faster, and they read more [12]. Good readers can read quickly and better understand content, and then they read more [12].

#### B. Behavior during Extensive Reading

In contrast to intensive reading, which teachers use as a part of instruction in a general classroom, extensive reading can be done at anytime and anywhere with books that learners choose. However, many of the studies on the effectiveness of extensive reading investigate reading records, comments about books, and questionnaires conducted in a classroom [13]-[15].

In a study on behavior during extensive reading using eye camera, Kumada and Suzuki [16] observed the eye movement of participants while they did extensive reading and found they fixed their eyes on words more often and longer towards the end of the experiments. In addition, Kumada [17] reported on the way readers' attention changed from words to content by analyzing protocol data using the think-aloud method. In these investigations, learners read books that were given to them by teachers during class time.

Nakano [11] evaluated the support system for Japanese extensive reading and found the system was useful for independent learners to engage in extensive reading by choosing books by themselves. From the post questionnaire, the researcher reported the participants of the study evaluated a page called the "Personal Page" on the system positively, because on this page they could confirm by their reading logs what books they had read and how quickly they had read them [11]. The study also showed that those who read more and faster were from the group of participants whose Japanese proficiency level was higher [11]. However, the researcher did not find a relationship between reading speed and motivation. Are these participants who read more and faster good readers in Nuttall's [12] terms? What are the characteristics of their reading behavior? Reading behavior data could suggest ways of supporting learners to become good readers.

### C. Study Questions

To find out how the learners of Japanese behave during extensive reading outside the classroom without a teacher's assistance, this study used a *BookLooper* to record learners' reading logs. *BookLooper* is an application for viewing digital teaching materials. Ogata et al. [18] revealed common learning behavior of the first-year university students whose grades went up by analyzing the amount of reading recorded on *BookLooper* and the time of day when they read. With this system, it is also possible to record other reading behavior such as the way that students open books, turn pages, turn back to previous pages, take notes, mark unknown words, and close books.

Therefore, this study examines the following questions:

1. Is there a difference in reading speed between learners who read more and learners who read less?
2. How do learners who read faster and understand content better behave, and how do learners who do not read faster and do not understand content better behave?

In Section II, the purpose and method of this study will be explained. Then, in Section III, the results will be discussed. In Section IV, the study will be concluded. In Section V, the study's limitations and further work will be discussed.

## II. PURPOSE AND METHOD

Here, we will introduce the purpose and the participants and then, explain the methodology of the study and the reading materials, vocabulary tests, questionnaires, and quizzes used. Lastly, we will show the reading logs.

### A. Purpose

The purpose of this paper is to describe the behavior of good readers and to know the way good readers read in a virtuous circle by analyzing reading logs recorded by Japanese learners in the upper intermediate level.

### B. Participants

Six international students (three male and three female) at three Japanese universities independently participated in this study. Their home countries included China (3), Vietnam (2), and Malaysia (1). As for the first language of the participants, four participants spoke languages that use Chinese characters, while two spoke languages that do not. Their Japanese learning experience ranged from 8 months to 30 months (average 23 months). To ascertain participants' Japanese abilities, they were asked to declare their recent Japanese proficiency levels, if they had taken a proficiency

test on Japanese language. In order to assess their present level of Japanese vocabulary, the vocabulary section of a Japanese Language Proficiency Test (JLPT) was administered by the authors of this paper. The results are shown in Table I. The scores were calculated so that a perfect score would be 100.

### C. Method

Participants were required to read reading materials in the three holiday weeks from December 2016 to January 2017. They were then required to answer questions about the book and complete a questionnaire about the reading after they had finished reading each book. Pre- and post-vocabulary tests and questionnaires were conducted within a week before and after the reading. Data collection methods are shown in the following sections.

### D. Reading Materials

As reading materials, a collection of Japanese graded readers [9], which is divided into eight levels from level A to H (beginner to upper intermediate levels), was used. They are written in Japanese using hiragana, katakana and kanji, but all the kanji words have hiragana written beside them to help learners read smoothly. Participants chose the specific titles on their own and read them on their own devices using *BookLooper* which provides reading materials in PDF. Since the titles the learners chose varied according to their interest, and one title read by all the participants was "Bocchan," this study investigates its reading logs. "Bocchan" is an E level reader (intermediate), and consists of 31,000 letters and 128 pages on PDF. PDF pages are fixed and do not reflow like E-Books. This means the contents of a page do not vary depending on the device used by a participant. While the length of English text is counted by words, the length of Japanese text is counted by the number of letters.

### E. Pre- and Post-Vocabulary Test

To investigate whether participants had learned words used in books through reading, a vocabulary test on the collection of the present graded readers was prepared according to the below-mentioned procedure and conducted as pre- and post-vocabulary tests. In order to ensure that participants who do not use *kanji* in their first language were not at a disadvantage, all the test items were written without using *kanji*.

1. Depending on the word frequency in "Bocchan", low-frequency words, medium-frequency words, and high-frequency words were defined as being used 2-3, 4-9, and more than 10 times, respectively. Thirteen words (five low-frequency words, two medium-frequency words, and six high-frequency words) were chosen as test item words.
2. Ten dummy words that were not used in the book used in this study including "Bocchan" were chosen from the vocabulary list developed for writing graded readers [9]. Participants were asked to answer according to the following choices.

[a] This is the first time I have seen this word.

TABLE I. JAPANESE PROFICIENCY OF PARTICIPANTS

ID	First Language	JLPT	Vocabulary
1	Chinese	N2	73
2	Chinese	-	61
3	Vietnamese	N2	80
4	Chinese	N2	86
5	Chinese	-	59
6	Vietnamese	N2	64

[b] I have seen this word before, but I do not know its meaning.

[c] I know the meaning of this word.

Referring to Coady [7], Grabe and Stroller [19], and Paribakht and Wesche [20], participants were asked to write the meaning in their first language when they chose [c]. To judge whether the meanings from [c] were correct, one of the authors and a translator whose first language was the same as that of the participant compared the answer to the previously prepared translation made by the translator.

#### F. Pre- and Post-Questionnaire

A questionnaire was administered before and after the research. In the pre-questionnaire, participants were asked about the following: self-assessment of their reading ability, difficulties in reading, interest in reading graded readers preferred language to read in (Japanese or one's first language), average reading amount in a month, and devices they usually use for reading digital books. Also, both in Japanese and their first language, they were asked whether they like to read and the genre of books they read. In the post-questionnaire, participants were asked which devices they had used to read in this study, their preference between paper and digital when reading, the effects of graded readers, and a comparison between graded readers and authentic books: (see Appendices A and B for complete versions).

#### G. Quizzes

To ascertain participants' understanding of the content, they were asked to answer five questions on each title using an online system [21]. Each question had four choices for answers and was used to gauge their reading comprehension. The system displays correct answers and the rate of correct answers after participants submit their answers.

#### H. Reading Logs

The following logs left by participants were collected by *BookLooper*.

1. Date and time of using specific functions: open (to open PDF file), close (to close PDF file), preview (to go back to a previous page), and next (to go on to the next page).
2. Words marked on *BookLooper* as "unknown words" and as "words looked up in a dictionary"
3. Comments inserted by participants when reading the book.

### III. RESULTS

First, we will show the reading logs recorded by the participants and the number of new words they learned through reading. Then, we will discuss the relationship between Nuttall's circle and the behaviors of the participants. Lastly, we will discuss how the unknown words were learned.

#### A. Reading Logs

Table II shows the results of the reading logs. "ID" refers to each participant. "Page" means the number of the last

TABLE II. READING LOG

ID	Page	Open	Preview	Unknown	Dictionary	Time	Time/Page	Variance	Note
1	128	91	142	35	11	285	2.2	4.8	15
2	128	46	21	9	0	263	2.1	3.3	0
3	128	73	55	6	0	229	1.8	1.6	0
4	128	6	47	1	0	233	1.8	2.4	2
5	23	18	12	1	0	92	4.0	16.3	0
6	27	20	29	0	1	49	1.8	4.5	2

TABLE III. RESULTS OF PRE- AND POST-VOCABULARY TEST

ID	Quiz	Words actually used (13)				Dummy words (10)			
		1-1	1-0	0-1	0-0	1-1	1-0	0-1	0-0
1	80	1	0	2	10	0	0	0	10
2	60	0	0	5	8	0	0	0	10
3	80	4	1	1	7	0	1	0	9
4	80	5	0	2	6	0	0	0	10
5	-	1	1	0	11	0	0	0	10
6	40	3	0	2	8	2	0	0	8
Total		14	2	12	50	2	2	0	57

continuous page the participants read. "Open" shows the number of times that participants opened books on their devices. "Preview" refers to the number of times that participants went back to the previous page. When the number of "Open" and "Preview" is higher, it means that the participant more frequently interrupted reading. "Unknown words" refers to the number of words that participants marked as unknown. "Dictionary" shows the number of words that participants marked as words that they looked up in a dictionary. As Day and Bamford [8] encouraged students not to use the dictionary while reading, the authors of this paper also encouraged participants not to use a dictionary unless they found it difficult to understand the passage without knowing the meaning of a certain word. "Time" refers to the total number of minutes spent on reading. "Time/Page" refers to how many minutes it took a student to read one page on average. "Variance" refers to how far a set of numbers are spread out from their average value. A high number tells us that a reader read at widely different speeds. For example, if we look at three participants, ID3, ID4, and ID6, we can see that their average reading speed was 1.8 minutes per page each. However, ID3 and ID6 varied widely in the span of time it took them to read different pages. "Variance" can show us what "Time/Page" cannot show us. Perhaps, ID6 became distracted while reading and this may explain why he/she gave up reading after 27 pages. It can be noted that participants who met many "Unknown" words and often used a "Dictionary" took more time than those who did not. Participants tended to need more time to read a page in the early part of a book compared to later pages. Participants most likely were not accustomed to *BookLooper* and did not have the background knowledge needed for the book in the first half. "Note" shows the frequency that participants inserted comments such as "it is interesting," "I was impressed," and "I do not understand" while reading.

### B. Number of Words Learned

Table III shows the results of pre- and post-vocabulary tests. “1” means that the answer for [c] was correct, and “0” means that the answer for [c] was incorrect. “0” also appears when answers were [a] or [b]. For example, “1-1” shows that participants answered correctly on both the pre- and post-vocabulary tests. In comparison between the words that were actually used and the dummy words, the answer set of “1-1” was found more in words that were actually used. It was to be expected that words that the participants already knew were used in the books, because the books were chosen based on their appropriateness to the vocabulary level of the participants. “1-0” shows that participants answered correctly before reading, and answered incorrectly after reading. There were two such results in this category, both in words that were actually used and in dummy words. “0-1” shows that participants answered incorrectly before reading, and correctly after reading. There were twelve such results in words that were actually used, as opposed to 0 in dummy words. This indicates that the participants learned the meaning of those words through reading.

### C. Virtuous and Vicious Circle of Reading

When dividing participants into good readers (in the virtuous circle) and weak readers (in the vicious circle) based on Nuttall’s [12] theory, ID1, ID3, and ID4 were considered to be good readers and ID5 and ID6 were considered to be weak readers. In addition, we found ID2 to be a reader “on the way to being a good reader.”

The average reading time spent per page for the four participants (ID1, ID2, ID3, and ID4) who finished reading “Bocchan” was around 2 minutes (Table II). From the results shown in Table III, they understood 80% of the content, with the exception of ID2.

ID4 received the highest vocabulary score, 86, in Table I, and gave the highest number of known words (with an answer set of “1-1”), five, words that were actually used, as shown in Table III. Because the number for “Open” is lower, it can be inferred that ID4 concentrated while reading. ID4 also left the comments, “It was interesting,” and, “It was sad.” That is, ID4 had already become a good reader in the virtuous circle because ID4 knew many words, understood well, enjoyed reading, and read at a fast pace.

ID1 and ID3, who finished reading with an appropriate reading rate, were also good readers. It can be inferred that ID1 took more reading time than average because she went back to the previous page and marked many items with “Unknown” and “Dictionary.” It is likely that the variance of ID1 was greater because the time spent on the page where marks were left tended to be longer. ID1 enjoyed the reading, leaving many comments such as “It was interesting,” “I could laugh,” and “I was impressed.”

In contrast to these participants, ID2 lacked necessary vocabulary, receiving 61, the lowest vocabulary score in Table I. ID2’s comprehension was slightly lower than other participants’ because he received a grade of 60 in questions about the book. He opened 46 times, went back to a

previous page 21 times, and didn’t use dictionary. However, ID2 received a mark of 5 in “0-1” in words actually used in Table III, which was the highest. These results suggest that ID2 read by guessing the meaning of unknown words from context without going back to the previous page. Nuttall [12] said that any factor out of speed, enjoyment, and comprehension could provide the key to move students out of the vicious circle and into the virtuous one. ID2 read with appropriate speed and learned unknown words by guessing from their context. ID2’s behavior shows the process of “on the way to being a good reader.”

On the other hand, ID5 and ID6, who did not finish the reading, were considered as being in the vicious circle. These two participants answered “my reading ability is not good” in the pre-questionnaire. ID5 spent 4 minutes per page, which was the longest. ID5 received a vocabulary score of 59; it is likely that she encountered many unknown words while reading. However, she marked only one word as “Unknown,” because she had read only 23 pages. ID5 answered “I prefer paper” to the question “How did you feel about the digital book compared to a paper book?”

ID6 took 1.8 minutes to read a page, which was short. The vocabulary score of ID6 was 64, and she read 27 pages. ID6 never marked “Unknown” and left the comment “I do not understand well” on page 4. Although ID6 had slightly more vocabulary than ID2, either she was not accustomed to reading on digital books or did not enjoy reading the book. ID6 answered the questions about the book although she had not finished it.

### D. How the Unknown Words were Learned

To better understand the behavior of a participant who learned words during reading, the words marked on the *BookLooper* among the items of the vocabulary test are shown in Table IV, which shows ID1’s results. The frequency of each word in the book is shown in parenthesis. ID1 marked “Dictionary” on “*shukuchoku* (night duty)” and “*batta* (a grasshopper)” and “Unknown” on “*kinodoku* (sorry).” In the pre-vocabulary test, ID1 answered [b: I have seen this word before, but I do not know its meaning] to “*shukuchoku*,” however, he looked it up in a dictionary and answered correctly in the post-vocabulary test. For “*batta*” and “*kinodoku*,” ID1 answered [a: This is the first time I have seen this word]. However, ID1 did not look them up in a dictionary, and answered [b] in the post-vocabulary test. It can be inferred that he guessed the meaning of the word because the illustration of “*batta*” was in the book. To “*kinodoku*,” ID1 provided the words in his first language, “I am sorry, excuse me” in Japanese. Although the answer was judged to be incorrect through the discussion between one of the authors and the translator, it seems that she guessed a

TABLE IV. RESULTS OF PRE- AND POST-VOCABULARY TEST: WORDS WITH MARKS IN THE READING LOG

ID	<i>shukuchoku</i> (22)		<i>batta</i> (12)		<i>kinodoku</i> (8)	
	pre	post	pre	post	pre	post
1	b	1	a	b	a	0

similar meaning from the context. Although participants who got many “0-0” scores in Table III are considered to not have learned the words through reading, there may be cases similar to ID1, who had guessed a similar (but not exact) meaning from context.

#### IV. CONCLUSION

In this study, participants who finished reading are defined as “learners who read more pages” and participants who did not finish reading are defined as “learners who read fewer pages.” In this section, first, we will discuss study question 1 and study question 2. Then, based on the behavior of ID2, we will discuss who was on the way to being a good reader, ways to support learners as they move into the virtuous circle.

##### A. Amount Read and Reading Rate

In comparison between the learners who read more and the learners who read less, the former took 2.0 minutes to read a page while the latter took 2.9 minutes. It can thus be said that learners who read more take less time to read than do learners who read less. That is, learners who read more read faster.

##### B. Reading Behaviors Shown in the Amount and Rate of Reading

Using the results of questions about books as ways to measure comprehension, it can be said that learners who read more, who gave 75% correct answers on average, understood the content. This, combined with the results of question 1, shows that “learners who can read faster and understand contents” read more. In that case, how did the readers who read slowly, and gave up reading after 20% of the book, understand the contents? The comprehension level of ID5 is unknown, because she did not answer the questions about the book. On the other hand, ID6 answered the questions about the book, and showed a 40% comprehension rate, and, in addition, learned words from the book. However, it may be that a lack of understanding caused her to stop reading because she left the comment “I do not understand well.” Therefore, it can be said that “learners who cannot read faster and do not understand the content” read less.

##### C. Shift to a Good Reader

Among “learners who could read faster and understand the content,” ID2 had a lower vocabulary level than the other learners, who had already become good readers (ID1, ID3, and ID4). Therefore, ID2’s comprehension was slightly lower than that of the others. However, the number of words that he had learned through reading was the highest among participants. This shows that the level of reading material was appropriate for ID2. ID2 read with appropriate speed and learned the meaning of words incidentally by guessing meaning from the context. It has been said that more than 95% of words in the text should be known by readers in order for them to learn the meaning of unknown words by

guessing from context [6][22][23]. The lack of vocabulary is considered to be the reason that ID5 and ID6 could not finish the reading. These results show that there are two categories among the learners who finished reading: learners who have already become good readers and those who are on their way to becoming good readers.

These results suggest that incidental vocabulary learning occurs for learners in the process of getting into the virtuous circle. At the same time, to enter the virtuous circle, learners need to read a book that is appropriate for their vocabulary level. In order to support learners as they move toward the virtuous circle to becoming good readers, providing a tool that can judge learners’ vocabulary level is necessary in order to know the appropriate level of graded readers for them to start reading.

#### V. LIMITATIONS AND FURTHER WORK

In this study, to describe the reading behavior of Japanese learners outside the classroom, logs on digital books recorded by participants were analyzed. From the results, the behavior of learners both in the virtuous circle and in the vicious circle, as defined by Nuttall [12], could be seen. In addition, the reading behavior of the learners with a lower vocabulary level, who continued reading by guessing the meanings of unknown words from context, shows that the process of moving into the virtuous circle can include incidental vocabulary learning. However, the results of this study cannot be generalized because of the small number of participants. Furthermore, participants’ Japanese ability was assessed on the basis of vocabulary alone, but not in general. To improve the support system for Japanese extensive reading, a larger-scale study with more participants is needed to reveal the details of the virtuous circle of reading and the effect of vocabulary learning through extensive reading. This can be done by collecting more data from participants and giving a general assessment of their Japanese ability.

#### ACKNOWLEDGMENT

This work was supported by JSPS KAKENHI Grant Number 18K00694.

#### REFERENCES

- [1] I. S. P. Nation, *Teaching ESL/EFL reading and writing*. New York, NY: Routledge, 2009.
- [2] S. D. Krashen, “Does free voluntary reading lead to academic language?,” *Journal of intensive English studies*, 11, pp. 1-18, 1997.
- [3] K. Mikami and T. Harada, “Exploring the possibility of incidental vocabulary acquisition through extensive reading: From results based on extensive reading and vocabulary tests of Japanese graded readers,” *Japan Foundation Nihongo Kyoiku Kiyo*, 7, pp. 7-21, 2011.
- [4] R. Waring, “Why extensive reading should be an indispensable part of all language program?” *The Language Teacher*, 30 (7), pp. 44-47, 2006.

- [5] M. Pigada and N. Schmitt, "Vocabulary acquisition from extensive reading: A case study" Reading in a Foreign Language, 18 (1), pp. 1-28, 2006.
- [6] I. S. P. Nation, Learning vocabulary in another language. Cambridge University Press, 2001.
- [7] J. Coady, L2 vocabulary acquisition through extensive reading. In J. Coady and T. Huckin (Eds.), Second language vocabulary acquisition (pp. 225-237). Cambridge University Press, 1997.
- [8] R. R. Day and J. Bamford, Extensive reading in the second language classroom. Cambridge University Press, 1998.
- [9] B. Reynolds, T. Harada, M. Yamagata, and T. Miyazaki, "Towards a framework for Japanese graded readers: Initial research findings," Papers of the Japanese Language Teaching Association in honor of Professor Fumiko Koide, 11, pp. 23-40, 2003.
- [10] I. S. P. Nation, Teaching and learning vocabulary. Rowley, MA: Newbury House, 1990.
- [11] T. Nakano, "Development of a support system for Japanese extensive reading: An evaluation of the system by learners," International Journal on Advances in Intelligent Systems, 10 (3&4), pp. 423-433, 2017.
- [12] C. Nuttall, Teaching reading skills in a foreign language. Oxford, UK: Macmillan, 2005.
- [13] M. Awano, K. Kawamoto, and M. Matsuda, Nihongo kyoshi no tameno tadoku nyumon. Tokyo, JAPAN: Ask, 2012.
- [14] S. Matsui, K. Mikami, and Y. Kanayama, "A report on extensive reading in the basic and intermediate Japanese classes," The Research Center for Japanese Language Education International Christian University annual bulletin, 9, pp. 47-60, 2012.
- [15] R. Ninomiya and M. Kawakami, "Effects of extensive reading on JSL learners' motivation," Journal of Global Education Hitotsubashi University, 3, pp. 53-65, 2012.
- [16] M. Kumada and M. Suzuki, "The effectiveness of extensive reading on learners at the intermediate level of Japanese," Bulletin of Japanese Language Center for International Students Tokyo University of Foreign Studies, 39, pp. 31-48, 2013.
- [17] M. Kumada, "Practice of extensive reading: Change in reading identified by talks," Bulletin of Japanese Language Center for International Students Tokyo University of Foreign Studies, 42, pp. 111-122, 2016.
- [18] H. Ogata, C. Yin, M. Oi, F. Okubo, A. Shimada, K. Kojima and M. Yamada, "Analyses of learning behavior of active learners using logs of digital teaching materials," Bulletin of KIKAN Education Kyushu University, 2, pp. 48-60, 2016.
- [19] W. Grabe and F. L. Stoller, "Reading and vocabulary development in a second language: A case study. In J. Coady and T. Huckin (Eds.), Second language vocabulary acquisition (pp. 98-122). Cambridge University Press, 1997.
- [20] T. S. Paribakht and M. Wesche, "Vocabulary enhancement activities and reading for meaning in second language vocabulary acquisition," In J. Coady and T. Huckin (Eds.), Second language vocabulary acquisition (pp.174-200). Cambridge University Press, 1997.
- [21] T. Nakano, "Introduction of blended type extensive reading lessons using electronic reading materials," Shobi Journal of Policy Studies, 17, pp. 137-144, 2013.
- [22] B. Laufer, "What percentage of text-lexis is essential for comprehension?," In C. Lauren and M. Nordman (Eds.), Special language: From humans thinking to thinking machines (pp.316-323). Clevedon, UK: Multilingual Matters, 1989.
- [23] B. Laufer, "The lexical plight in second language reading: Words you don't know, words you think you know, and words you can't guess," In J. Coady and T. Huckin (Eds.), Second language vocabulary acquisition (pp.20-34). Cambridge University Press, 1997.

## APPENDIX A

### Pre-Questionnaire

1. How would you describe your reading comprehension level? Why do you think that?
  - a) Very good
  - b) Good
  - c) Fair
  - d) Not good
  - e) Bad
2. What is difficult for you when you read in Japanese? (you can choose more than two)
  - a) Unknown words
  - b) Pronunciation of *kanji*
  - c) Grammar
  - d) Other (please write in detail.)
3. Would you like to read graded readers?
  - a) Would very much like to read
  - b) Would like to read
  - c) Yes and no
  - d) Have no interest
4. Do you like to read? Please answer regarding both Japanese and your first language.
  - a) Yes
  - b) No
  - c) I do not mind
5. What genre do you read? Please answer regarding both Japanese and your first language (you can choose more than two)
  - a) Newspaper
  - b) Novels
  - c) Magazine
  - d) Manga
  - e) Other (please write in detail)
6. Which language do you read in the most?
  - a) Japanese
  - b) Your first language
  - c) Almost the same
7. How many books do you read in a month on average? Please answer regarding both Japanese and your first language.
  - a) 0
  - b) 1-2
  - c) 3-4
  - d) 5-6
  - e) 7-9
  - f) more than 10
8. Which devices do you use when you read a digital book?
  - a) Tablet
  - b) Smartphone
  - c) PC
  - d) Other

## APPENDIX B

### Post-Questionnaire

1. Which devices did you use to read digital books? (you can choose more than two)
  - a) Tablet
  - b) Smartphone
  - c) PC
  - d) Other
2. Do you prefer paper books or digital books and why? Please choose one from A, B, or C. Please write why you chose A, B, or C.
  - a) Paper books
  - b) Digital books
  - c) I do not care
3. Do you think that graded readers will be effective in improving your reading comprehension, if you continue extensive reading?
  - a) It really helps to improve my reading ability.
  - b) It helps to improve my reading ability a little bit.
  - c) My reading ability will not change.
  - d) Other (Please write a comment)
4. If you answered a) or b) in 3, what do you think the effect of ER is? (you can choose more than two)
  - a) Extensive reading helps me to learn words.
  - b) Extensive reading helps me to learn how to read *kanji*.
  - c) Extensive reading helps me to understand contents without a dictionary.
  - d) Other (please write a comment.)
5. Could you read graded readers with the same ease as stories written in your first language?
  - a) I could read graded readers with the same ease as stories written in my first language.
  - b) I could read graded readers more easily than stories written in my first language.
  - c) I read graded readers with more difficulty than stories written in my first language.
  - d) Other (please write a comment)
6. Do you prefer graded readers or general books written for native Japanese people? Please explain.
  - a) Graded readers
  - b) Books written for native Japanese people
  - c) I do not care
  - d) Other (please write a comment)