Development of a Support System for Japanese Extensive Reading:

An evaluation of the system by learners

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***Abstract*—This paper reports on a study of a support system for Japanese extensive reading. The purpose of this system is to provide Japanese graded readers and an environment where learners can learn by themselves. The system contains video clips that replace teachers, boards that display other learners' comments, and personal pages that display progress of the learners. From the results of a post-questionnaire and the logs of the system left by participants, the usefulness of the system is analyzed.**

Keywords-online library; Japanese graded readers; reading habits; digital books.

I. INTRODUCTION

Considering that most learners of foreign languages are studying outside the countries where the target language is used, an online library of graded readers is useful for providing learning materials. Such an online library is beneficial for learners who learn abroad from the standpoints of time and cost. Especially, those learners without teachers will find it beneficial. However, currently, there is no system of Japanese extensive reading that is available to independent learners outside the classroom. Therefore, this study has designed and developed a support system for Japanese extensive reading, in which an online library is installed. In the eLmL2017, we reported the extensive reading support system for independent learners of Japanese [1].

Extensive reading is part of an approach for teaching English to speakers of other languages to build vocabulary and develop reading comprehension [2] [3] [4] [5]. Extensive reading has not been a common approach in education programs because it is time consuming and qualitatively different compared with existing reading courses that are typically offered; however, through the development of a module that can hold students accountable for their reading [5], extensive reading outside the classroom has been made possible. The module is used for managing learners' records. As a solution to the problem of teachers who cannot take time to have students read during the class, this study has developed a support system for them in order to be able to make enough time for their students to read study materials on the systems outside of the classroom. In addition to that, we have implemented blended type lessons of extensive reading [7] [8] [9]. Using the system, teachers can have learners read books on the system as homework and can use classroom time for post reading activities. Learners can read books on their devices at any time.

However, considering that learners can choose when and how to learn, extensive reading can be thought of as autonomous learning [10]. Therefore, this study aims to include all learners not only those studying with teachers and has developed a support system for Japanese extensive reading based on the system that supported blended type lessons. On the system, video clips and a comment board were used, and in addition, the progress of all users was displayed anonymously to let the learners who studied independently feel the presence of other learners. The results of a post-questionnaire and the amount of reading done confirmed the usefulness of those facilities.

Moreover, a reading community on Facebook was tested as a post-reading activity. However, it was suggested that membership in the ER FB group was an important indicator of participation in FB discussions. The effect of ER FB group membership on FB commenting and the effect of the comment board of the self-ER support system were almost the same in that they encouraged learners to read by making them aware of the presence of other learners. These results indicate that an ER FB group is not necessary, but that a comment board is useful in the self-ER support system. Therefore, the study concluded that the post-reading activities on Facebook were not essential [1]. Based on feedback from the questionnaire on the eLmL2017, we improved the system and it was released to the public in August 2017. In this current system, a "Personal Page" that shows users' reading histories was added to motivate learners to continue reading, and the way of displaying the results of the "Questions and Questionnaire" was improved.

As an evaluation of the current system, from the results of the post-questionnaire and the logs on the system left by users surveyed by the author, this paper discusses the following questions:

(1) whether the personal page and the improvements were useful in encouraging learners to read,
(2) whether the digital reading materials were useful for learners to read extensively,
(3) whether the extensive reading support system is useful for independent learners on learning Japanese.

In Section II, the design of this system and how it has evolved will be discussed. Then, in Section III, the methodology of this study will be explained. In Section IV,

the usefulness of this system based on the results of a post-questionnaire and the logs on the system left by participants will be examined. In Section V, the study will be concluded.

II. A Support System for Extensive Reading

First, we will introduce the previous study. Then, we will explain the scheme of the current system indicating the points that were improved. Lastly, we will show the information that can be collected from the logs left by users.

A. Outline of Previously Used System

Fig. 1 shows a schematic of the support system for Japanese extensive reading, which has two purposes and functions. First, the system supports blended extensive reading lessons (blended-ER support system), which are designed for teachers who provide such lessons [7] [8] [9]. Second, it is a support system for learners who study by themselves (self-ER support system) [1]. This system was designed to facilitate learning outside the classroom, and provides an online library of Japanese graded readers (hereafter referred to as JGR) so that learners can learn autonomously. The function that the two systems have in common is called "ER Lab," which is mainly composed of "Libraries" and "Questions and Questionnaire". When users submit their replies to the "Questions and Questionnaire", the system recognizes that the users have read the books and displays their scores of the "Questions" and their replies to the "Questionnaire" on the "Progress" page under their IDs. Moreover, the system calculates the amount read by the users and displays the top three users on the top of the "Progress" page. Also, their replies to the "Questionnaire" are aggregated and the average scores are calculated. Then, on the "Evaluation" page, these scores are displayed in the form of the choices available on the questionnaire on each title (for example, a score of 3.8/5 may be "This book is interesting").

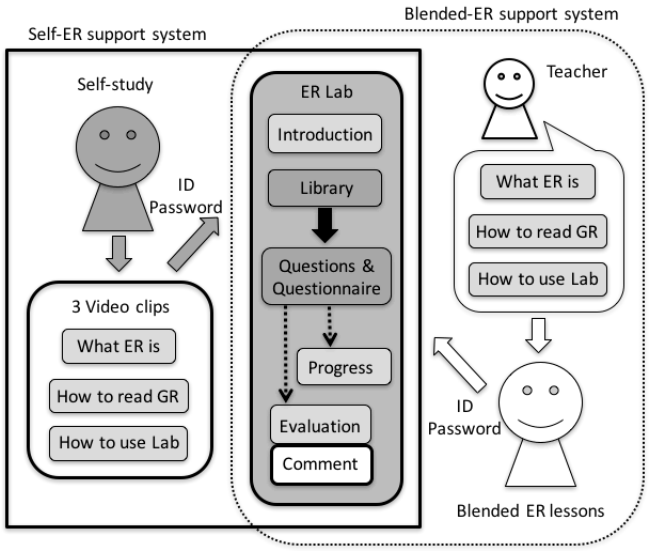

Figure 1. Schematic of a Support System for Japanese Extensive Reading.

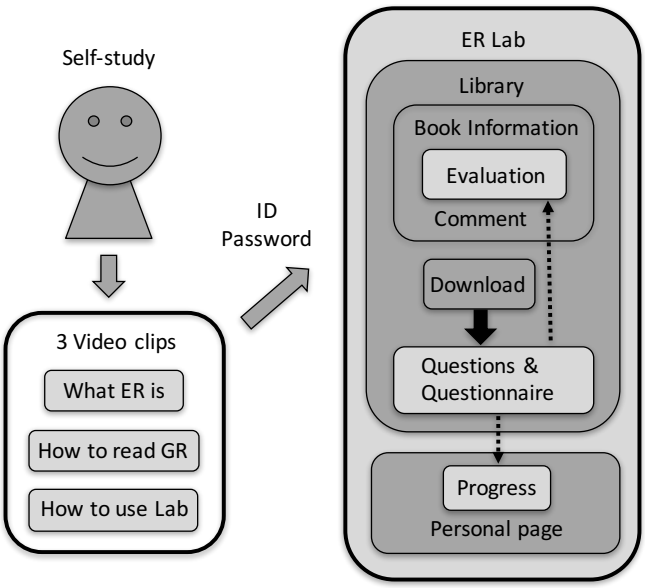

Figure 2. Schematic of a Current Self-ER Support System.

In the blended-ER support system, the teacher explains extensive reading, how to read graded readers, and how to use the ER Lab. The teacher can also provide post-reading activities, such as initiating discussions about the readings. A blended ER lesson using the blended-ER support system was implemented, and the availability of the system was confirmed [7].

In contrast, the self-ER support system was designed for learners to learn independently through the system, without teachers. In this system, video clips are used in place of the teacher's explanation so that learners can receive the same information as students in the blended-ER support system. It is recognized that, despite limitations, Video-Based Learning represents an effective learning method that can replace teacher-led learning approaches [11]. Additionally, a comment board that allowed users to write their impressions of the books that they had read was added to the ER Lab to ensure that learners were aware of the presence of other learners. It was expected that knowing how much other learners had read would promote reading among learners visiting the comment board [12].

B. Current System

Fig. 2 shows a schematic of the current self-ER support system. Before login, users watch three video clips on the "Top" page of the system (see Fig. 3). Video clips are used to teach "what extensive reading is," "how to read graded readers" and "how to use ER Lab". The time required to watch each video clip is around 2 minutes.

The ER Lab is composed of the "Library" and a new page called the "Personal Page" for each user. The "Library" contains *SAKURA,* which is a small collection of JGRs divided into eight levels from A to H (beginner to upper intermediate levels) [13]. A vocabulary level test that judges the appropriate level of *SAKURA* for learners to start reading from is under development [14] [15].

Figure 3. TOP page.

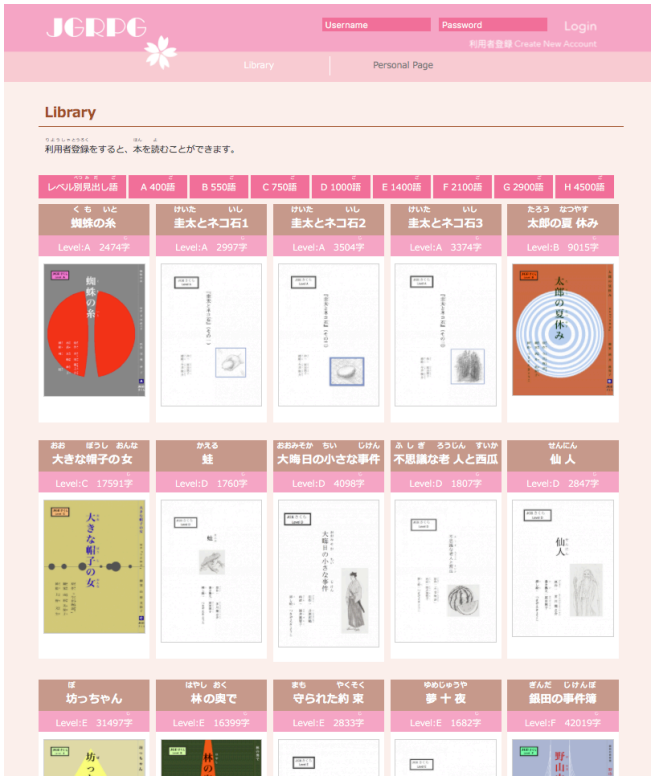

Figure 4. Library

Figure 5. Book Information Page on each Title

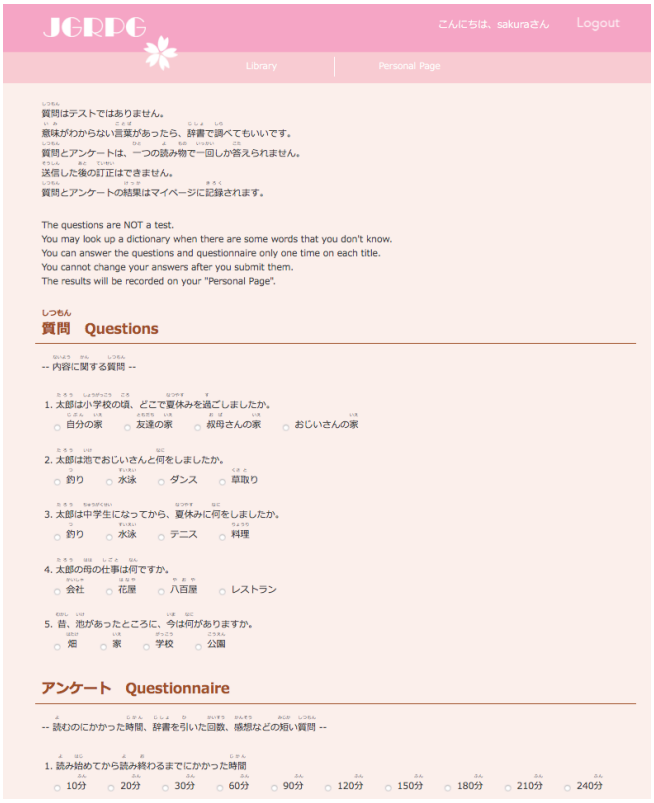

Figure 6. Questions and Questionnaire

In the library, the cover of each title is lined up with the number of letters (Chinese characters and Japanese phonetic alphabet) starting from the easiest level (see Fig. 4). By clicking the cover of the book, an information page on each title will appear (see Fig. 5). On the right side of the cover, the author, the original book, and the number of letters are displayed. Below this information, the page provides recommendation stars (1-5), which represent how interesting other users felt the book to be. Also, a brief introduction written by the rewriter of the book that was displayed separately in the former system is included here.

Below this information, the download button is displayed. Users can choose from three types of digital book; "ePub", "mobi", or "html". If users choose "html", they can read the book on the page. After downloading the digital file, a "Questions and Questionnaire" button will appear so that users cannot see the questions before they read the story.

Figure 7. Comment Board

The "Questions and Questionnaire" page consists of "Questions" about the stories and a "Questionnaire" about their reading experience (see Fig. 6). In the "Questions" part, participants are required to answer five questions about the book they had read. Each question has four answer choices to gauge their reading comprehension. In the "Questionnaire" part, participants are required to complete a questionnaire. Therein, they evaluate the length, difficulty, contents of the story and illustrations, and are asked to report the frequency of dictionary usage using a five-point Likert scale. Besides these questions, users are asked how long they had spent reading and which device they had used to read. In the final part of the "Questionnaire", there is a space where users can write their impressions about a given story if they choose to.

Users may leave comments on each story. At the bottom of the information page on each title, these comments are displayed under their ID, not their name, together with the users' responses to the questionnaire on length, difficulty, and interest (Fig. 7). To prevent users knowing the end of a story before reading it, they can only see other users' comments after they have submitted their replies to the "Questions and Questionnaire".

Fig. 8 shows the "Personal Page". On the Personal page, users' registration data (nickname, place of residence, first language, date of registration) is displayed at the top. Below

Figure 8. Personal Page

the registration data, both their rank among all users regarding the number of letters they had read, and also their average reading speed are displayed. It is because "to read quickly" is one of the important points of extensive reading [16]. Reading speed is calculated from their answers to the questionnaire and the number of letters in the book they had read. A list of the books they had read is displayed at the bottom. When users click the books displayed in their list of books read, their answers to the questions and the correct answers to the questions on each book will appear. Also, the replies to the "Questionnaire" are displayed on the "Personal Page".

As mentioned in chapter 1, in this study, the way of displaying the answers to the "Questions and Questionnaire" has been improved. The "Progress" page that shows the ranking of the amount that users have read has been eliminated. Instead, on the "Personal Page", each user can see where he or she is ranked according to how much they have read. In the previous study [1], some participants were motivated to read more by seeing how much progress others had made. However, some participants did not want to see how much other participants had read or how well they had answered the questions about the books. Therefore, in the current system, this data remains private. Moreover, their average reading speed, that is calculated from their answers to the questionnaire, is displayed simultaneously. It was considered that showing a user's progress would motivate them to continue reading.

C. Logs Left by Users

The administrator can collect the records or logs left by users when they registered, which contain the following data:

1) Registration data: Users' nickname, first language, place of residence, and self-assessment of their Japanese level (beginner, intermediate, advanced)

2) Date and time the file was downloaded and kind of the file (ePub, mobi, html)

3) Date and time the answers were submitted

4) Moreover, the administrator can collect the data below from users' questions and questionnaires:

a) Five questions about the books that they had read. Each question has four answer choices to gauge their reading comprehension

b) Users' evaluation, using five-point Likert scale, of the length (short 1 – long 5), difficulty (easy 1- difficult 5), contents of the story (boring 1 – interesting 5) and illustrations (not helpful 1 – helpful 5)

c) Frequency of dictionary usage（never, 1 – 3 times, 4 -6 times, 7 -9 times, 10 times or more）

d) How long users had spent reading（10 minutes, 20 minutes, 30 minutes, 60 minutes, 90 minutes, 120 minutes, 150 minutes, 180 minutes, 210 minutes, 240 minutes, 300 minutes, 360 minutes）

e) The type of device they had used to read（PC, Smartphone, Tablet, Other）

f) Their impressions of the stories

TABLE I. PARTICIPANTS' JAPANESE PROFICIENCY

		Average	Standard Deviation
Vocabulary	Upper	84	4.7
	Lower	63	11.5
Grammar	Upper	87	7.5
	Lower	67	10.5

III. METHOD

In this section, first, we will introduce the participants and then, explain the methodology of the study. Lastly, we will show the post-questionnaire.

A. Participants

Nineteen international students (8 male and 11 female) at a Japanese university participated in this study. Their ages ranged from 20 to 31 (average 22.7). Their home countries included China (8), Vietnam (5), Malaysia (2), Korea (2), Hong Kong (1), and Nepal (1). As for the first language of the participants, 11 participants spoke languages that use Chinese characters, while 8 spoke languages that do not. To ascertain participants' Japanese abilities, the Simple Performance-Oriented Test (SPOT) and a vocabulary assessment were administered. SPOT was used to assess grammar [17]. A vocabulary part of a Japanese language proficiency test was used to assess vocabulary. The results of these tests are shown in Table I. In both columns, the upper group represents nine participants, the lower group, ten participants. The participants on the lower group had widely different scores. Although participants who do not use Chinese characters tend to get lower scores in vocabulary, six participants in the upper group of both in vocabulary and grammar (SPOT) were the same individuals. Therefore, in chapter 4, participants are divided into upper group (nine persons) and lower group (ten persons) by total scores of vocabulary and grammar.

B. Procedure

The procedures were as follows:

1) After watching the video clips on the "Top" page and registering as users of the system, participants could log into the ER Lab using their user IDs and passwords.

2) Participants read books from the library on their devices. They were recommended to start reading from the lower level of SAKURA. ER Lab was used for a week.

3) Participants answered questions about the story that they had read, and completed a questionnaire to evaluate the book. They were then invited to write their comments about the story.

4) Participants answered the post-questionnaire on the last day of reading.

C. Post-Questionnaire

In the post-questionnaire, participants were asked as follows:

1) Did you feel the video clips were useful?

If yes, please choose your reason from A, B and C (You can choose any number).

a) I could understand the explanation without reading.

b) The video clips motivated me to read the books because they were amusing.

c) Other（Please write a comment）

If no, please write your reason.

2) Did you feel the five questions about the books in the "Library" were useful?

If yes, please choose your reason from A, B and C (You can choose any number).

a) I could check my understanding about books.

b) Aiming for a high score in the questions motivated me to understand the story.

c) Other（Please write a comment）

If no, please write your reason.

3) Did you feel it was useful to display "Other users' comments" in the Library?

If yes, please choose your reason from A, B and C (You can choose any number).

a) Knowing other users' opinions was interesting.

b) Knowing other users' opinions motivated me to read more.

c) Other（Please write a comment）

If no, please write your reasons.

4) Did you feel it was useful to display the "Ranking" on the "Personal Page"?

If yes, please choose your reason from A, B and C (You can choose any number).

a) Knowing my rank was enjoyable.

b) Knowing my rank moivated me to read more.

c) Other（Please write a comment）

If no, please write your reason.

5) Did you feel it was useful to display your "Reading Speed" on the "Personal Page"?

If yes, please choose your reason from A, B and C (You can choose any number).

a) Knowing my speed of reading was fun.

b) Knowing my speed of reading motivated me to read more.

c) Other（Please write a comment）

If no, please write your reason.

6) Did you feel "A List of the Books you had read" was useful?

If yes, please choose your reason from A, B and C (You can choose any number).

a) I will not forget the books I had read

b) The list motivated me to read more.

c) Other（Please write a comment）

If no, please write your reason.

7) Which devices did you use most to read digital books?

a) PC

b) Smartphone

c) Tablet

d) Other（Please write a comment）

8) Do you prefer paper books or digital books and why? Please choose one from A, B or C.

a) Paper books

b) Digital books

c) I do not mind

Please write why you chose A, B, or C.

9) Were there any differences in your reading habits regarding the time or place you read digital books compared to when you read paper books in the past?

10) If you answered "yes" in (9), how it affected your reading habits regarding time and place. Which is the most frequent when you read on paper books.

a) Time of day： 6:00-12:00, 12:00-18:00, 18:00-22:00, 22:00-5:00

b) Place： home, in the train, outside of home, university (includes library), a public library

c) If there is another difference, please write in detail.

11) What time of the day and where you read the digital books on the ER Lab.

a) Time of day： 6:00-12:00, 12:00-18:00, 18:00-22:00, 22:00-5:00

b) Place： home, in the train, outside of home, university (includes library), a public library

12) What do you think the strong points of the graded readers is? (You can choose more than two)

a) I can read books without a dictionary.

b) I can read quickly.

c) Kana is written on the right side of the kanji.

d) Japanese literature is rewritten in easy Japanese.

e) I think that it helps to improve my reading ability.

f) Other（Please write a comment）

13) What do you think the weak points of the graded readers is? (You can choose more than two)

a) Vocabulary is too repetitious.

b) The stories are too long.

c) The stories are too short.

d) The stories are too simple.

e) Other（Please write a comment）

14) If there is something that you prefer to have or to improve, please write.

IV. RESULTS AND DISCUSSION

From the results of the post-questionnaire and the logs left by participants, here we will discuss the research questions. First, we will discuss the functions of the current self-ER support system. Next, we will discuss the usefulness of digital books. Lastly, we will discuss the usefulness of this system on learning Japanese.

A. Usefulness of the Current Self-ER Support System

From the results of questions (1) to (6) of the post-questionnaire, we will discuss the usefulness of the functions of the current self-ER support system.

1) Video Clips

All the responses to question (1) "Did you feel the video clips were useful?" were positive. Fourteen participants chose "I could understand the explanation without reading" and five participants chose "the video clips motivated me to read books because they were amusing". To understand the explanation without reading is important for beginners. Since all users must watch video clips before they log into the ER Lab, reading on the ER Lab that the video clips are amusing will encourage them to read.

2) Library

All the responses to question (2) "Did you feel the five questions about the books in the "Library" were useful?" were positive. Seventeen participants chose "I could check my understanding about books" and two participants chose "It became the motivation while reading".

In the current system, the comment board was moved inside the library. To question (3) "Did you feel it was useful to display "Other users' comments in the "Library"?", seventeen participants responded positively. Ten participants chose "Knowing other users' opinion motivated me to read more" and nine participants chose "Knowing other users' opinion is interesting". However, one participant commented "Although it is useful to look, it might bother someone who wants to read casually". This participant did not notice that writing comments is optional. The reasons for the response "No" were "There was no comment" and "I did not notice it". Making it easier to see the comments might be beneficial.

3) Personal Page

To question (4) "Did you feel it was useful to display the "Ranking" on the "Personal Page"?", seventeen participants responded positively. Twelve participants chose "Knowing my rank was enjoyable" and four participants chose "Knowing my rank motivated me to read more". Two participants wrote "I could confirm the book I had read". The reason for the response "No" was "I do not care," which is not negative.

All the responses to question (5) "Did you feel it was useful to display your "Reading speed" on the "Personal Page"?" were positive. Fifteen participants chose "Knowing my speed of reading was fun" and five participants chose "Knowing my speed motivated me to read more".

All the responses to question (6) "Did you feel "A List of the Books you had read" was useful?" were positive. Nine participants chose "I will not forget the books I had read", eight participants chose "The list motivated me to read more". Other reasons were "I could confirm the book I read", "It would be convenient to find the book when I read the book again" and "It would be enjoyable".

On the "Video Clips" and the "Library", the above-mentioned positive responses were given by participants the same as in the previous study [1]. On the "Personal page" that was newly added to the current system, there were also no negative responses. Knowing their progress motivated most of the participants to read more. It is considered that displaying the amount the user read and reading speed is useful to make learners be aware of the important points of extensive reading, that is, "read more" and "read quickly".

B. Usefulness of Digital Books for Extensive Reading

From the results of questions (7) to (11) of the post-questionnaire, we will discuss the usability of the digital books.

Table II shows the device and the file format when participants read digital books. "Device" is the answer to

TABLE II. DEVICES, FILES AND PREFERENCES

ID	Device	file	Preference
1	Smartphone	html	Paper
2	PC	html	Paper
3	Smartphone	html	Paper
4	Smartphone	html	Digital
5	Smartphone	ePub	I do not mind
6	Smartphone	html	Paper
7	Smartphone	ePub	Digital
8	Smartphone	html	Digital
9	Smartphone	html	Paper
10	Smartphone	html/ePub	I do not mind
11	Smartphone	html	I do not mind
12	PC	html	Digital
13	Smartphone	ePub	Digital
14	PC	html	Paper
15	Smartphone	html	Digital
16	Smartphone	ePub/html	I do not mind
17	Smartphone	html	Paper
18	PC	html	Digital
19	Smartphone	ePub	Digital

TABLE III. READING HABITS ON PAPER AND DIGITAL BOOKS

ID	Japanese	Reading Habits			Place and Time (%)			
		Preference	Habit	Paper	Home	Train	Univ	Outside
10	104	DP	differ	U	0	100	0	0
4	118	D	differ	U	0	100	0	0
5	125	DP	differ	U	8	33	50	8
16	131	DP	same		57	43	0	0
18	133	D	differ	H	33	67	0	0
7	140	D	same		26	47	27	0
12	140	D	same		100	0	0	0
19	141	D	differ	H	0	100	0	0
17	143	P	same		10	90	0	0
15	147	D	same		100	0	0	0
1	154	P	differ	H	0	67	0	33
8	158	D	same		100	0	0	0
9	160	P	differ	H	44	24	0	31
2	161	P	differ	U	100	0	0	0
11	168	DP	differ	H	0	100	0	0
3	172	P	same		96	0	4	0
13	176	D	same		40	0	60	0
14	179	P	same		100	0	0	0
6	188	P	differ	H	0	100	0	0

question (7). “File” is the results of the logs left by participants. “Preference” is the answer to question (8).

Although all the participants had smartphones, fifteen participants used smartphones and four participants used PCs when they read digital books. For the files to read digital books, fifteen participants downloaded “html”, six participants downloaded “ePub” and no participants downloaded “mobi”. The reason is perhaps that in the video clip instruction, using “html” for reading digital books is recommended if the user had never used “ePub” or “mobi”.

To the question (8) “Do you prefer paper books or digital books and why?”, eight participants chose “digital”, seven participants chose “paper”, and four participants chose “I do not mind”. The reason for choosing digital was “it is convenient”. Other reasons were “Digital book is good for heavy books” and “Paper books do not have functions to display other users’ comments or reading speed”.

The reason for choosing “I do not mind” was “both have good points”. As the participants who downloaded “ePub” prefer digital books, it is considered that the participants who prefer paper had not been accustomed to using digital books. For the reason of preferring paper, “paper is good to memorize contents because I can leave a note on it”, “paper is not bad for one’s eyes”, “paper is good to concentrate on reading” were given. However, most participants gave the same reason they preferred paper.

Next, we will compare paper books and digital books regarding the time or place used. Table III shows reading habits and preference for paper books and/or digital books. The two left hand columns show participant’s information. “Japanese” means Japanese language proficiency and shows total scores of vocabulary and grammar. The three center columns show preference and habits of reading books. In the column “Preference”, “D” means digital book, “P” means paper book, and “DP” means that the participant chose “I do not mind”.

The results of question (9) “Were there any differences in your reading habits regarding the time or place you read digital books compared to when you read paper books in the past?” is shown in the column, “habits”. The results of question (10) “How it affected your reading habits regarding time and place? Which is the most frequent when you read on paper books?” is shown in the column, “paper”. “H” means home. “U” means university that includes university library. The four right hand columns show the rate of the place and time when participants read digital books in this experiment. “Outside” means participants were outside of their homes. The numeral value shows the percentage of the total time spent for reading based on the logs left by participants at each place answered in the results of question (11). Preference shown in Table II is reprinted. The table is displayed in ascending order of Japanese language proficiency.

To question (9), ten participants answered “There were differences between paper and digital in their reading habits regarding time and place”. For the place where the ten participants read books most frequently, six of the ten participants answered “home” and four of the ten participants answered “university”. The participant with ID-2 answered that he usually read at the university library, although he had read at home in this experiment. The participants with ID-4, ID-5 and ID-10 had read in the train or other places outside. From these results, it appears that the most different point in reading habits between paper and digital was place when reading. The time of day for reading tended to differ depending on the place. The participants read in the morning or in the evening at home, and they read outside their home in the day time. On the other hand, the nine participants who answered “There was no difference between paper and digital in their reading habits regarding time and place” usually read digital books. In this experiment, The participants with ID-3, ID-8, ID-12, ID-14, ID-15 and ID-16 read mostly at home, the participant with ID-7 and ID-17 read mostly on the train, and the participant with ID-13 read mostly read at her university.

From this result, it could be said that the learners who usually read paper books at home or university (classroom or library) would have more chances to read digital books with their smartphones anywhere and anytime. Therefore, the participants with ID-4 and ID-5 who usually read at the university library answered that there was an advantage to digital books. A digital library would be more convenient because they could borrow books anywhere.

These results support the usefulness of the current system. Although we need more research on their reading habits, it was interesting that the participants who got higher scores tend to prefer paper over digital in Table III. We suppose that the participants who prefer paper were accustomed to reading paper books. We also suppose that the participants who did not have the habit of reading might read more if they could use digital books.

C. Japanese Extensive Reading on ER Lab

In the previous study [1], the group that scored lower on vocabulary and grammar read more books than the upper group. We suppose that one of the reasons was because the experimenter recommended the participants to start reading from the lower levels. The participants who belonged to the upper group gave some comments like "If I was given something that was appropriate to my level, I would have read more". Therefore, in this study, the experimenter did not recommend participants to start reading from the lower levels, although the video clips recommended users to start reading from the lower level.

Table IV shows the levels of the book that was read by participants based on the logs left by participants. In this study, the higher scoring group (upper group) both on vocabulary and grammar read more books than the lower group. All the participants except ID-16 in the lower group started reading from the lowest level. However, four participants in the upper group did not read the lowest level. Three in the four participants started reading from the fourth lowest level, D. Moreover, the participants in the upper group read the books in F level, which was not read by the lower group. This result supports the method of extensive reading "students select what they want to read" proposed by Day and Bamford [4].

TABLE IV. LEVELS OF THE BOOKS PARTICIPANTS READ

ID	Japanese	A		B	C	D				E				F		
10	104	■		■		■										
4	118	■														
5	125	■	■	■		■	■	■				■				
16	131					■	■			■						
18	133	■	■			■										
7	140	■	■	■	■	■						■	■			
12	140	■		■	■	■	■									
19	141	■					■									
17	143	■	■	■												
15	147	■				■	■									
1	154	■	■													
8	158	■				■				■						
9	160	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2	161	■	■													
11	168						■								■	
3	172			■	■	■	■	■		■	■	■			■	■
13	176	■				■	■	■	■	■						
14	179					■				■						
6	188					■	■			■	■		■			

TABLE V. ADVANTAGES OF JGR

Japanese proficiency					Strong points of JGR				
ID	Kanji-use	Grammar	Vocabulary	Speed	Quick	Kanji	Literature	Dictionary	Ability
14	not	92	87	69	○				
16	not	81	51	75		○	○	○	○
19	not	81	60	107	○	○	○		
7	not	90	49	115				○	
8	use	78	80	118	○	○	○		
13	use	91	84	147		○	○	○	
18	not	75	58	157	○	○	○	○	○
11	use	86	82	161		○		○	
3	use	83	89	174			○		○
15	not	86	61	201		○			○
17	not	87	55	214		○		○	
4	use	59	59	247	○		○		
12	use	69	71	297	○		○		
2	use	79	82	309		○	○		
9	not	84	76	334	○	○		○	
5	use	57	69	368	○			○	
1	use	73	81	412	○		○		
10	use	51	53	442	○	○			
6	use	98	89	565	○			○	

Next, the results of question (12) "What do you think the strong points of the graded readers is?" is shown in Table V with the participants' information. "Speed" shows the number of letters read per minute. It was calculated by the number of the letters in the book they read and the time they spent for reading the books from the logs left by them. The data in Table V is shown in ascending order of reading speed. In the five right hand columns, "Quick" represents "I can read quickly", "Kanji" represents "Kana is written on the right side of the kanji", "Literature" represents "Japanese literature is rewritten in easy Japanese", "Dictionary" represents "I can read books without a dictionary", and "Ability" represents "I think that it helps to improve my reading ability". In the five left hand columns, "Kanji-user" represents whether they use Kanji in their first language.

The participants with lower reading speed tended to be those who do not use Kanji in their first language. The participants with higher reading speed tended to choose "I can read quickly". The participants who chose "Kana is written on the right side of the kanji" included both participants who use Kanji and who do not use Kanji in their first language. This result found that JGRs are also useful for the participants who use Kanji in their first language because the pronunciation of Kanji in Japanese is different from that in Chinese. Moreover, from the result that the number of the participants who chose "Japanese literature is rewritten in easy Japanese" was ranked third, we could find the beneficial point of graded readers that are rewrites of literature whose copyright has expired. Three of the four participants who chose "I think that it helps to improve my reading ability" were those who do not use Kanji in their first language and belonged to the lower group.

For the results of question (13) "What do you think the weak points of the graded readers are?", nine participants chose "Vocabulary is too repetitious", six participants chose "It was too simple". These are the character of graded readers. One participant answered "there is no weak point". On the other hand, three participants answered "it was not user-friendly on a smartphone" and "it would be convenient if I could read it on some application instead of "html"". To trace these problems, some improvement might be needed in the explanations in the video clips that recommended "html" if the user had never used "ePub" or "mobi".

To question (14) "If there is something that you prefer to have or to improve, please write", the following responses were given:

> "It is wonderful that Japanese literature was rewritten in easy Japanese for learners." (ID-8)
> "I would like to read some interesting stories that are written in more advanced vocabulary and grammar." (ID-3)
> "I would like to improve my reading ability using this system." (ID-15)
> "It would be better if there are a few more questions in "Questions" about the stories." (ID-14)
> "It would be better if the story had been written horizontally (especially on smartphones)." (ID-8, ID-15)

Although most of the books are written horizontally, novels in Japanese are written vertically. Going forward, we need to consider whether writing JGR horizontally would be more learner friendly.

V. CONCLUSION

In this study, the current self-ER support system was evaluated from the results of the post-questionnaire and the logs on the system left by users surveyed by the author. Knowing one's progress on their personal pages helped participants to enjoy reading and motivated them to read more. The advantage of the self-ER support system is that it can provide digital books for learners outside the classroom at minimal cost and no waiting time. The online library of JGRs has the potential to provide the opportunity to make time to read for learners who cannot find the time to read. Moreover, the results confirmed that independent learners without teachers could start Japanese extensive reading by using the system. Further work is needed to increase the number of JGRs and to add a vocabulary level test that can judge the appropriate level of JGR for learners to start reading from.

ACKNOWLEDGMENT

This work was supported by JSPS KAKENHI Grant Number 15k02650.

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