Evaluating Mobile-assisted Extensive Reading in EFL Coursework

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This action research project explores mobile-assisted extensive reading (MER) as a component in an English oral communications course for 120 education and psychology majors, sophomores, over a fall semester. In a quasi-experimental design, 6 classes engaged in extensive reading through accessing an online library via their mobile devices. Students read outside of class, and weekly, "in class," for 15 minutes of reading then 15 minutes of small group book discussions. Data analysis of students divided into high-achieving, medium-achieving, and low-achieving groups in terms of the number of words they read over one year showed the relative strengths and weaknesses of MER. Students were also surveyed about their attitudes toward using MER and mobile devices for educational purposes. Structured interviews with selected high and low achieving students indicated students who read the most in each class managed their time effectively, chose books that were easy and interesting to them and set themselves realistic goals.

本プロジェクトでは、教育学と心理学を専攻する120名の学生（2年生）を対象に、1年間にわたり英語オーラル・コミュニケーション授業の一環として、モバイル支援多読（MER）を調査した。準実験的なデザインで、6クラスが携帯端末でオンライン図書館にアクセスし多読に取り組んだ。学生は授業外でも読書をし、毎週15分の授業内読書と、15分の、少人数グループディスカッションを行った。1年間で読んだ単語数の多い順に、学生を高学力、中学力、低学力のグループに分けデータを分析した結果、MERの長所と短所が相対的に明らかになった。また、MERや携帯端末を教育目的で使用することについての学生の意識も調査した。成績優秀者と下位者の構造化インタビューにより、各クラスで最も多く本を読んでいる学生は、時間を効果的に管理し、自分にとって適切で興味深い本を選び、現実的な目標を設定していることが示された。

The benefits of extensive reading (ER) of simplified, graded texts for language learners include (1) efficient vocabulary learning as students encounter words frequently and in a variety of contexts, (2) abundant comprehensible input, (3) an efficient use of a teacher's time and resources (Nation, 2015), (4) increases in students' reading comprehension and reading speed (Beglar & Hunt, 2014), as well as enhanced vocabulary and spelling (Jeon & Day, 2016; Pigada & Schmitt, 2006) and (5) improvement in students' attitudes towards reading in a foreign language (Yamashita, 2013). A meta-analysis by Jeon and Day (2016) of 49 primary studies and a total of 5,919 participants showed the effectiveness of ER in increasing students' reading comprehension, reading speed, and vocabulary recognition.

However, there are numerous obstacles to integrating ER into a curriculum. Renandya et al. (2021) noted that teachers possess limited time to develop an effective ER program, find appropriate reading materials, and assess student efforts and that they often lack administrative support, have limited exposure to ER, and might experience a potential lack of student interest in reading. Also, teachers need a time-efficient means of responding to students' efforts or at least in monitoring their reading and encouraging them.

Mobile-assisted Extensive Reading

One solution may be Mobile-assisted Extensive Reading (MER) where students access digital books from an online library via smart phones, tablets, and laptops. Milliner (2017) reported improvements in students' TOEIC tests after they used MER via an online commercial library of digital books, Xreading (https://xreading.com/), consisting of hundreds of graded readers from ELT publishers such as Cambridge University Press, Compass Publishing, and National Geographic-Cengage Learning. Xreading's learning management system (LMS) enables teachers to view the books that students borrow from the online library, their reading speed, and how many books they complete.

Research in MER has shown mixed results. Strong et al. (2018) investigated MER with 6 classes of sophomore Education and Psychology majors over a 15-week semester and a reading target of 80,000 words and found no statistical differences between the experimental group and a control group of 5 classes on measures of vocabulary, reading comprehension, and reading speed. Following recommendations by the Extensive Reading Foundation (ERF, 2011), MER was integrated into classes through a weekly 15-minute session of in-class reading with students accessing the online library on their smartphones or other mobile devices, and then 15 minutes of book talks in pairs or small groups, and additional out-of-class readings assigned as homework. To motivate students to reach the reading target, MER accounted for 20% of the course grade.

However, with the same pedagogy and measures, Allen-Tamai et al. (2018) found 4 classes of English majors accessing MER over a 12-week semester showed a statistically significant difference in vocabulary growth when compared to a control group of 6 classes. In both studies, although students enjoyed the easy access that MER provided, a large minority preferred paper books to digital ones. Teachers noted MER's convenience, particularly its LMS in monitoring student efforts. Both studies also suggested that effective implementation of MER required more teacher instruction and student familiarity with it.

MER over Two Semesters

In the current study of MER with 6 classes of sophomore Education and Psychology majors, students had already accessed the virtual library for 1 semester, so they were more familiar with its operation than in earlier studies. Furthermore, students were given a reading target of 200,000 words over two semesters, a target suggested by Beglar and Hunt (2014), who observed that their students improved their reading speed and comprehension over 1 year. The current study also included a secondary target of 100,000 words as proposed by McLean and Rouault (2017) whose students improved their reading speed. The department in which the study was conducted gave permission for this research and the participants gave permission for their data to be used anonymously.

Research Questions

RQ1 Will a high-achieving group of students that read 200,000 words or more show significant improvements in their reading comprehension and reading speed compared to a medium-achieving group reading between 100,000 to 200,000 words and a low-achieving group reading up to 100,000 words?

RQ2 Will that same high-achieving group show significant improvements in their vocabulary word recognition compared to a medium-achieving group and a low-achieving group?

RQ3 Will students have positive attitudes, as measured by a survey, towards MER, read effectively from different locations, and prefer digital access to using printed materials?

RQ4 Will selected high-achieving and low-achieving students in each class, as measured by focus group questions, show differences in attitudes that influenced their relative success with MER?

Method and Procedure

Participants

The 120 participants were students in 6 classes of a compulsory year-long 90-minute Oral English class meeting weekly and taught by 6 native speakers in English. This sample was chosen partly by convenience, but also to explore extensive reading in other EFL courses besides the reading classes so often used in research (reviewed in Jeon & Day, 2016). Oral English was the students' only English course and they also read and summarized newspaper articles, kept vocabulary notebooks, and made presentations. For analysis, the students were divided into three groups which included a high-achieving group that read 200,000 words or more, a medium-achieving group that read between 100,000 to 200,000 words, and a low-achieving group of students who read less than 100,000 words, five of whom read less than 10,000 words, including the student who read the least, 1,169 words.

Instructors

Six instructors, including one writer of this study, volunteered to use MER in their classes. They conducted the students' pre-tests and post-tests, administered an end-of-semester questionnaire, and interviewed their high-achieving and low-achieving students.

Materials

Xreading's virtual library of more than 1200 digitized graded readers can be accessed by a mobile phone, tablet, or PC. Its LMS tracks student reading in terms of words read per minute, total time spent reading, total words read, and which books students have read. Students are credited with completing each reader after passing a 5-item multiple choice reading comprehension quiz. Students were encouraged to read books of between 500 and 1,000 head words to build their speed and confidence.

Pre-test and Post-test Reading Speed and Comprehension

To create two parallel 20-item tests, A and B, four 550-word reading passages with 10 multiple choice answers each were drawn from Quinn et al. (2007), a source frequently used for testing in foreign language reading research (e.g. McLean & Rouault, 2017). The passages are written with the 1,000 most frequently used words of the General Service List (West, 1953), have similar sentence lengths, and similar readability (e.g. 96 percent of the words found within the first 1,000 words of the British National Corpus and the Corpus of Contemporary English). The A and B parallel forms were randomly assigned to classes for the pre-test and alternated for the post-test.

Vocabulary Size Test

The Vocabulary Size Test (VST) (Nation, 2012) measures a learner's receptive vocabulary size in English, the vocabulary knowledge required for reading. The test has different levels and numbers of items. In this case, the 100-item test was used, measuring knowledge of 20,000 of the most frequently used words in English and with A and B parallel test forms. As with the reading speed and comprehension tests, these were randomly assigned for the pre-test and alternated for the post-test. Test-takers choose the best of four different definitions or translations of each high frequency word from word families in the British National Corpus.

Survey

At Fall semester's end, 116 students from the 6 classes completed an online English questionnaire to measure their attitudes toward accessing MER. The questions included some open-ended questions, and the students' likes and dislikes, which were rated on a 5-point Likert scale (See Appendix 1). Results were analyzed through SurveyMonkey (2022).

Procedure

In class, students had 15 minutes to read their digital books, followed by 15 minutes discussing their books in groups. Students were encouraged to read outside of class time through the course requirement that 20% of their final grade would be based on their reading, with the full 20% given to those reaching a total of 200,000 words by the end of the Fall semester.

Data Collection

In the first class of the spring semester and the last class, instructors administered 10-item reading comprehension tests and 18-item vocabulary tests. Preliminary results suggested that the tests had too few items to plot a range of scores at the end of the year. As described earlier, a 20-item speed and reading comprehension pre-test and a post-test were developed, and a 100-item vocabulary pre-test and post-test were introduced, both administered at the beginning and end of the Fall semester. The tests were administered with teachers using their smartphones or watches to note the elapsed time on the board. For the reading speed and comprehension tests, students recorded the time when they finished, and the tests were marked later in class.

Interviews

To explore the attitudes and behaviors that might account for the differences between high and low achieving students, instructors conducted structured interviews of 22 high achieving students and 19 low achieving students, 34% of the subjects in this study, toward the end of the fall semester. The interviews followed a series of instructions and incorporated eight questions (See Appendix 2). Students were also provided with the questions in advance to consider what they wanted to say. Instructors took handwritten notes of student remarks.

Analysis and Results

The data was analyzed by IBM SPSS Statistics 25 (2020) to examine the effect of MER on the development of reading speed, reading comprehension and vocabulary growth. The participants' data was divided into three groups, high-achieving, medium-achieving, and low-achieving, according to the number of the words read during the treatment. Absences on the date of either the pre-tests or post-tests reduced the numbers, with 98 students examined for speed, 102 students for reading comprehension, 112 for vocabulary, and 116 for the survey. Following Beglar and Hunt, (2014), with a sample of 97 students, a two-way repeated measure ANOVA was conducted, and the scores of each pre-test and post-test were analyzed as within-subject variables and the three groups as a between-group factor to find how the number of words read affected their reading. A Shapiro-Wilk test revealed that the pre-test and post-test reading speeds were normally distributed (pre-tests: high-achieving, $p=.229$, medium-achieving, $p=.969$, low-achieving, $p =.346$; post-tests: high-achieving, $p =.155$, medium-achieving, $p = .060$, low-achieving, $p =.701$).

Table 1
Time Taken to Read 1,100 Words (Expressed in Seconds)

	Pre-test			Post-test		
	Numbers	Mean	Standard dev.	Numbers	Mean	Standard dev.
High achievers	19	641.32	170.84	19	600.32	182.54
Middle achievers	42	645.40	144.96	42	630.52	146.74
Low achievers	37	686.89	204.79	37	631.03	161.51

Results of a two-way mixed ANOVA showed a significant main effect of the treatment on the participants' reading speed ($F (1, 95) = 5.747$, $p = .018$, partial $\eta^2 = .057$). Results of repeated measures ANOVA showed a significant main effect of treatment on the participants' reading speed ($F (2, 95) = .436$, $p = .648$). Participants performed differently between the pre-test (mean = 660.28) and post-test (mean = 624.86). Of note, the low achievers made the largest increase in their reading speed although they read the fewest words over the year. No significant difference was found between the three groups of high, middle, and low achievers. Nor was there a significant interaction between the scores and the groups ($F (2, 95) = .804$, $p = .450$).

Next, all 3 groups showed a decline in reading comprehension over the Fall semester as shown, Table 2.

Table 2
Scores for Reading Comprehension

	Pre-test			Post-test		
	Numbers	Mean	sd	Numbers	Mean	sd
High achievers	19	17.37	2.43	19	16.11	2.60
Middle achievers	44	16.91	2.18	44	16.70	1.89
Low achievers	39	16.13	2.36	39	15.31	3.17

The results of a two-way mixed ANOVA revealed a significant negative effect on the participants' comprehension ($F (1, 99) = 6.893$, $p = .010$, partial $\eta^2= .065$). Participants performed differently in the pre-test (mean = 16.70) and post-test (mean = 16.06). There was a significant difference among the three groups of high-, middle-, and low-achievers ($F (2, 99) = 3.376$, $p = .038$, partial $\eta^2 = .064$), and the post-hoc test revealed a significant difference between the medium achievers (mean = 16.81) and low achievers (mean = 15.72) ($p = .048$). There was no significant interaction between the scores and the groups ($F (2, 99) = 1.13$, $p = .327$).

However, the pre-test and post-test scores were not normally distributed. A Wilcoxon signed rank test revealed that the post-test scores ($Md = 17$, $IQR = 3$) were significantly lower than pre-test scores ($Md = 17$, $IQR = 3$), $z = -2.17$, $p = .03$, with a small effect size, $r = -.22$. A Kruskal-Wallis test showed that there was not a statistically significant difference in the pre-test across the three groups, $\chi^2 (2, N =113) = 5.73$, $p = .057$. But a statistically significant difference was found in the post-test across the three groups, $\chi^2 (2, N = 130) = 10.27$, $p < .05$. A pair-wise comparison between the groups revealed that there was a statistically significant difference between group 2 and 3 ($p < .05$).

Lastly, all three groups of students showed a gain in vocabulary over the Fall semester, Table 3, but no differences between the groups. A Shapiro-Wilk test indicated that the vocabulary pre-test and post-test scores were normally distributed (pre-tests: high-

achieving, $p = .065$, medium-achieving, $p = .437$, low-achieving, $p = .461$; post-tests: high-achieving, $p = .631$, medium-achieving, $p = .432$, low-achieving, $p = .711$). Results of a two-way mixed ANOVA showed a significant main effect of the treatment on the participants' vocabulary learning ($F (1, 109) = 5.344$, $p = .023$, partial $\eta^2 = .047$). Participants performed differently between the pre-test (mean = 42.84) and post-test (mean = 44.43).

Table 3
Vocabulary Words Learned

	Pre-test			Post-test		
	Numbers	Mean	Standard dev.	Numbers	Mean	Standard dev.
High achievers	21	42.05	7.31	21	44.67	7.73
Middle achievers	49	43.31	5.84	49	44.27	6.12
Low achievers	42	42.69	8.42	42	44.50	7.75

But there was no significant difference among the three groups of high-, middle-, and low-achievers ($F (2, 109) = .039$, $p = .962$). Nor was there a significant interaction between the scores and the groups ($F (2, 109) = .370$, $p = .692$).

Student Survey

The survey explored the extent of students' access of Xreading. This ranged from 3,473 words to 242,919 with 71% reading more than 80,000 words, including 8% who read more than 200,000.

Students were split in their attitudes toward using Xreading in class time with 4% liking it very much, 17% liking it, 30% somewhat liking it, 29% somewhat disliking it, 12% disliking it, and 8% disliking it very much. Outside of class, students liked it even less with 0% liking it very much, 8% liking it, 25% somewhat liking it, 29% somewhat disliking it, 23% disliking it, and 15% disliking it very much.

Most students primarily accessed Xreading through their smartphones (82%), some using PCs (11%); a smaller number, tablets (4%), and 2% using all these. Many students primarily used Xreading on their train commutes to the university (56%), others at home (26%), on campus (16%), with a small number dividing their access between these places (2%).

Students reported using their smartphones daily for class-related and non-class related purposes, from 1 hour or less to 10 hours or more. Many used their devices between 2 and 4 hours each day (54%), but spent little time on Xreading. Sixty-five percent of students reported using Xreading for 1 hour weekly with 22% who reported spending 2 hours and 6% spending 10 hours or more with this app. Weekly, 50% of the students reported using their smartphones for up to one hour for other courses; 21% spending between 1 and 3 hours; 13%, 3 hours or more.

Further, the survey showed that the majority of students believed Xreading had improved their English skills although only 7% strongly agreed; 30% agreed; and 48%, somewhat agreed. For the others, 6% somewhat disagreed, 6% disagreed, and 5% who strongly disagreed. Unsurprisingly, most respondents thought it most positively influenced their reading (98%), although some thought it positively impacted their other three skills, too [writing (7%), listening (2%), and speaking (5%)].

When asked what they thought of doing other tasks besides discussions related to their reading, 37% chose nothing in particular; 25%, making a PowerPoint presentation or speech; 23%, a book report or essay; 18%, a poster; while 12% indicated that like a voice actor, they would like to read their books aloud, and 10% chose reading aloud with other students, 9% chose acting out a scene with others, 5% making a video of the scene with others.

For student reading of English books outside this course, 59% of the students read none; 6% read one; 14% read two; 9% read three; 4% read four. Students read more Japanese books, with only 22% who read none; 15%, one; 19%, who read two books; 13%, three books, and 8% reading four books.

When asked if they would like to access hard copies of the books that they were reading through Xreading, more than half of the respondents, 57%, answered affirmatively, with 27% not interested, and the remaining students unsure. In terms of student prior experience of reading digital books, of the 23% who had experience, 13% strongly disliked them, 6% disliked them, 19% somewhat disliked them, 42% somewhat liked them, 10% liked them, and 0% strongly liked them. While commuting, 62% of the students expressed a preference for reading the books in print with only 36% opting for reading on a smartphone or other mobile device on the train. Most comments under that survey item, however, argued for the greater convenience of using mobile devices.

The survey also looked at students' perceptions of the maximum daily time for smartphone use. The majority (54%) answered less than 1 hour to 3 hours with a sizable minority (46%) who felt it acceptable to use the device from 4 to 10 hours per day, for

class or otherwise. Eighty-seven percent of students expressed no objection to using their smartphones for class with 4% liking it very much, 17% liking it, 30% liking it somewhat, 29% disliking it somewhat, 12% disliking it, and 8% disliking it very much. Most did not feel that by doing Xreading, they were using their smartphones too much.

Student Interviews

The interviews showed major differences between the 22 high-achieving students and the 19 low-achieving ones. The high-achieving students seemed to think about time management and planning, maximizing their time by reading on the trains, setting themselves goals and choosing books that were interesting and easy to read. When they did encounter trouble, they complained of the vocabulary, of difficult English, and of remembering fictional characters. They had problems with their Internet connection and difficulty going back to review chapters and pages in a digital book. Their advice to other students was to select books that they enjoyed. Those high-achievers who had liked reading English books before, said they liked reading now while less than half of the low achievers felt this way.

Both high- and low-achieving students stressed that to become successful at reading in the course, a student needed to read daily, read on the train to school, and choose interesting and enjoyable themes. Many low-achieving students said they could not achieve the course reading goals because they were too busy, read too slowly, found the English too difficult, had trouble using the program on their smartphones, thought Xreading uninteresting, or sometimes couldn't pass the reading comprehension tests to gain credit for reading their books.

Conclusion

As for the first research question, in terms of their speed, neither the high-achieving nor medium-achieving groups showed a statistically significant improvement even compared to the low-achieving group. This may have been a result of only testing the three groups in the Fall semester. A more important factor may be that the student groups in the current research were at the upper intermediate level of English ability. Notably, the low-achieving group in the study improved more than the two higher groups. Altogether, the students in the current study had much higher mean words per min (wpm) reading rates (114 wpm) than those in the Beglar and Hunt study (2014), at 97 wpm, or students in the McLean and Rouault (2017) study, at 77 wpm. Similarly, Nishizawa et al. (2009) reporting on a four-year study of the correlation between ER and

higher TOEIC scores in their Engineering students, found that their weaker students who read a minimum of 300,000 words, showed a greater gain than their students with higher abilities who read between 490,000 to as high as 12,000,0000 words.

All three groups in the current study showed improvement in their reading speed, especially the low-achieving group which improved the most although this group had read the least over the year. This again suggests a "floor and ceiling effect" for MER where students at lower levels of English ability benefit the most and that there is a limit to this improvement.

Another factor that explains the lack of statistically significant results in the current study is that Beglar and Hunt (2014) and McLean and Rouault (2017) incorporated reading tests as part of their experimental treatment. Students became accustomed to taking reading tests and presumably became better at taking them. Furthermore, Beglar and Hunt (2014) used a 40-item reading comprehension test which would have been a much more sensitive gauge of reading comprehension than the 20-item one in the current study.

The perplexing decline in reading comprehension for all three groups may simply have been caused by the students becoming fatigued with MER and with testing in general. Robb and Kano (2013) observed this fatigue in their students after administering their year-long treatment. As for the second research question of the effect of MER on vocabulary, once again, given the higher English language ability of the students in the current study, there might not have been enough room for a statistically significant improvement in their vocabulary growth, especially over a single semester.

In terms of the third research question, students did not have positive attitudes towards MER. The convenience of reading on their mobile devices anywhere and at any time was not that attractive. They tended to read most on their train commute to school or at home and they preferred reading printed books. They liked using mobile devices in class, or at least they enjoyed the discussion that followed their reading, but they disliked the homework. Likely, the students expected little or no reading in an Oral English class, particularly reading homework. These findings have negative implications for the use of MER in EFL courses other than reading classes.

As for the fourth research question, the differences in attitudes and behaviors between high-achieving students and low-achieving students, these proved similar to the differences between stronger and weaker students in general. Stronger students are better organized and plan their time effectively. Despite the features of MER that offer students their choice of materials and of reading easier texts, the weaker students in this study still felt frustrated and unsuccessful.

Broadly speaking, the survey showed that students are becoming accustomed to using their mobile devices for academic purposes. This likely includes messaging classmates, referring to online dictionaries and other Internet resources, reading PDFs, or even writing. For many students, their smartphones are a sort of educational Swiss Army knife. Going forward, teachers need to monitor shifting patterns of student acceptance of smartphones in the classroom. At the same time, teachers need to caution their students to use their phones appropriately, for example, employing their "do not disturb" features while reading to avoid becoming distracted by instant messages and media alerts.

As for future applications of MER, teachers might try a hybrid approach, using digital books when convenient and hard copy versions in class and at other times. Given the relatively small amount of time students spent reading in the current study, teachers may need to provide more class time for reading, greater incentives such as more bonus marks, and possibly developing an ER component for several different courses though as mentioned earlier, there may be student resistance to reading in other courses.

Finally, as regards research into extensive reading as a whole, much of the research in ER tends to involve small groups and often researchers studying their own classes. More studies should be undertaken with larger groups of students, with a variety of abilities, and using more precise measures.

Bio Data

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Appendix 1

Survey Questions

	Like very much	Like it	Like Somewhat	Dislike it Somewhat	Dislike it	Dislike very much
1) How do you feel about using your smartphone for doing Xreading in class? (n=120)	4.17% 5	16.67% 20	30% 36	29.41% 35	11.67% 14	8.33% 10
2) How do you feel about using your smartphone for doing Xreading outside of class? (n=119)	.89% 1	5.88% 7	23.53% 28	33.61% 40	21.85% 26	14.29% 17
3) How do you feel about using your smartphone for class-related purposes in general (Not just for our Oral English class)? (n=119)	0% 0	11.76% 14	36.97% 44	32.77% 39	12.51% 15	5.88% 7

4) How many hours each day do you use your smartphone (personal use and school)? (n=119)										
1 hour or less	2	3	4	5	6	7	8	9	10 or more
13.33% 16	17.50% 20	20.83% 25	15.83% 19	12.50% 15	9.12% 11	5% .6	1.67% 2	.83% 1	3.33% 4

5) How many hours each week do you usually use your smartphone for Xreading? (n=120)										
1 hour or less	2	3	4	5	6	7	8	9	10 or more
65.00% 78	21.67% 26	4.17% 5	.83% 1	.83% 1	.83% 1	.83% 1	0% 0	0% 0	5.83% 7

6) How many hours each week do you usually use your smartphone for work in other classes? (n=120)										
1 hour or less	2	3	4	5	6	7	8	9	10 or more
50% 60	20.83% 25	12.50% 26	.83% 1	3.33% 4	0% 0	0% 0	0% 0	0% 0	5.83% 7

7) What do you think is the maximum hours each day a person should use a smartphone? (n=120)										
1 hour or less	2	3	4	5	6	7	8	9	10 or more
18.33% 22	21.67% 26	14.17% 17	14.17% 17	14.17% 17	5.83% 7	5.00% 6	0.83% 1	0.83% 1	5.00% 6

8) Do you have any objection to using your smartphone for class-related purposes?	Yes	No
n=120	13.33% 16	86.67% 104

9) Do you think you are using your smartphone too much now because of Xreading?	Yes	No
n=120	19.17% 23	80.83% 97

Strong, Dias, Andrade, & Allen-Tamai: *Evaluating Mobile-assisted Extensive Reading in EFL Coursework*

	None	1 book	2 books	3 books	4 books	5 books	6 books	7 books
10) How many books did you read in English for pleasure in the Fall semester? (n=119)	58.47% 69	5.93% 7	13.56% 16	8.47% 10	3.39% 4	4.24 5	1.69% 2	0% 0
11) How many books did you read in Japanese for pleasure in the Fall semester? (n=119)	22.22% 26	15.38% 18	18.8% 22	12.82% 15	7.69% 9	9.40 11	3.42 4	.85 1

	Yes	No
12) Imagine you could read a book on your smartphone and also have a paperback copy of the same book to read. Would you like to be able to use both?		
n=120	22.50% 27	77.50% 93
13) Before starting Xreading last April, did you have any experiences reading e-books?	Yes	No
n=120	22.50% 27	77.50% 93

n=119	Like very much	Like it	Like Somewhat	Dislike it Somewhat	Dislike it	Dislike very much
14) If you answered "Yes" to the previous question, did you like reading e-books before you began using them on Xreading? [Skip if you answered "No" to the previous question.]	0.00% 0	7.56% 9	25.21% 30	29.41% 35	22.69% 27	15.33 18
15) How do you feel about using Xreading?	0.00% 0	7.56% 9	25.21% 30	29.41% 35	22.69% 27	15.13% 18
16) In general, how do you feel about reading e-books now?	0.84% 1	10.08% 12	33.73% 40	27.73% 33	21.01% 25	6.72% 8

17) Which do you prefer reading, a paperback or an e-book?	Paperback	e-book
n=120	73.33% 88	26.67% 32

n=119	Strongly agree	Agree	Somewhat agree	Somewhat disagree	Disagree	Strongly disagree
18) Xreading has helped to improve my English skills.	6.67% 8	30.00% 36	47.50% 57	5.83% 7	5.83% 7	4.17% 5

	Reading	Writing	Listening	Speaking
19) If you think that Xreading has helped you improve your English skills, which of them have gotten better? [You may choose more than one.] (n=16)	98.20% 114	6.9% 8	1.72% 2	5.17% 6

20) Rank the following from 1 to 3. Select "1" for the type of device you used the MOST to access Xreading, and "3" for the type of device you used LEAST. Click on N/A (for "not applicable") if you never used that kind of device for Xreading.

	1st choice	2nd choice	3rd choice	N/A
Smartphone (n=117)	82.05% 96	11.97% 14	4.27% 5	1.71% 5
Tablet (for example, iPad) (n=115)	4.35% 5	15.65% 18	16.52% 19	63.48% 73
PC (n=116)	11.21% 13	47.41% 55	14.66% 17	26.72% 31

21) Which would you prefer while commuting, reading a paperback book or reading on your smartphone?   (n=118)

	Paperback	Smart phone
	65.25% 77	34.75% 41

22) Outside of class time, where do you use Xreading? Rank these 6 locations in order of how frequently you used them. [Mark N/A ("not applicable") if you never accessed Xreading from that location.]

	1st	2nd	3rd	4th	5th	6th
At home (n=119)	26.05% (31)	37.82% (45)	20.17% (24)	4.20% (5)	3.36% (4)	8.40% (10)
On campus, not in class (n=116)	15.52% (18)	36.21% (42)	28.45% (33)	2.59% (3)	0.86% (1)	16.38% (19)
On the train (n=117)	56.41% (66)	17.95% (21)	16.24% (19)	0.00% (0)	1.71% (2)	7.69% (9)
In a café, restaurant, etc. (n=115)	0.00% (0)	2.61% (3)	7.83% (9)	28.70% (33)	2.61% (3)	58.26% (67)
While walking (n=115)	0.87% (1)	0.87% (1)	5.22% (6)	7.83% (9)	15.65% (18)	69.57% (80)

23) What other tasks related to your reading would you like to do besides discussing books?	n=120
Nothing in particular	31.67% (38)
PowerPoint presentation or speech	25% (30)
Write a book report or essay	23.33% (28)
Make a poster including illustrations, text, and pictures	18.33% (22)
Read aloud with emotion like a voice actor by yourself	11.67% (14)
Read aloud with emotion like a voice actor together with other students	10% (12)
Act out a scene with other students (mini-drama in class)	9.17% (11)
Act out a scene with other students (make a video)	5% (6)

Appendix 2

Interview Questions

INTERVIEW QUESTIONS FOR <u>HIGH</u> ACHIEVERS

Instructor's Sheet

Instructor_____ Course_____

Student ID_____ Name_____

First, say something positive about their participation, performance, etc. to establish a positive atmosphere or rapport.

1. I can see from your Xreading data that your "Words Read" is far above the standard. You have read about much more than your classmates. Congratulations! How were you able to read so much? What advice do you have for other students so they can read a lot like you? Did you have trouble understanding the books you read on Xreading?

    ☐ Yes   ☐ No   ☐ Sometimes

2. If you had trouble understanding the books, why?
    (*As with low achievers, please give students time to think of the following responses. Afterward, you can mention some suggestions, particularly if the student can't think of*

any answers. Use the following categories to code the student's answers.)

☐ The English was too difficult.

☐ I didn't know the vocabulary.

☐ The letters were too small to read on my smartphone

☐ Others [ ] _____

3. Did you like reading English books before using Xreading?

☐ Yes ☐ No ☐ Sometimes

4. If you didn't like reading English books before, why not?

5. If you didn't like reading English books before, do you like reading them now?

6. If you answered "Yes," why do you like reading English books now?

7. What advice do you have for your juniors (*kohai*) who will use Xreading next year?

INTERVIEW QUESTIONS FOR <u>LOW</u> ACHIEVERS
Instructor's Sheet

Instructor_____ Course_____

Student ID_____ Name_____

First, say something positive about their participation, performance, etc. to establish a positive atmosphere or rapport.

1. I can see from your Xreading data that your "Words Read" is far below the standard. You have read about ( ) words. At this point, you should have read about 160,000 words. What happened?
   (*Please give students time to think of responses. Afterward, you can mention some suggestions, particularly if the student can't think of any answers. Use the following categories to code the student's answers.*)

Check one or more of the following reasons:

☐ Xreading is not interesting.

☐ Xreading is difficult to do on my smartphone.

☐ I have been too busy doing other homework for this class (News Discussions, etc.).

☐ I have been too busy studying for other classes.

☐ I have been too busy with club activities.

☐ I have been too busy with my part-time job.

☐ I have been sick.

☐ Others [   ] _____

2. Did you have trouble understanding the books your read on Xreading?

☐ Yes ☐ No ☐ Sometimes

3. If you had trouble understanding the books, why?

☐ The English was too difficult.

☐ I didn't know the vocabulary.

☐ The letters were too small to read on my smartphone

☐ Others [ ] _____

4. Did you like reading English books before using Xreading?

☐ Yes ☐ No ☐ Sometimes

5. If you didn't like reading English books before, why not?

☐ My vocabulary was poor.

☐ The English was too difficult.

☐ The topics were not interesting.

☐ I read too slowly.

☐ Others [   ] _____

6. If you didn't like reading English books before, do you like reading them now?

☐ Yes   ☐ No   ☐ Sometimes

7. If you answered "Yes," why do you like reading English books now?

☐ Xreading is convenient to use.
☐ Xreading books are easy to read.
☐ Xreading topics are interesting.
☐ My English is better than before.
☐ I can read faster now.
☐ Others [   ] _____

8. What advice to do you have for your juniors (*kohai*) who will use Xreading next year?