Article

Researching EFL Learner Reading Speed Gains

Malcolm Ross Swanson*, Paul Collett**

＜Abstract＞

Helping language learners to develop effective reading skills is an important step in developing English ability. In particular, Extensive Reading (ER) is seen as potentially contributing to increased vocabulary, faster reading speeds, and improved English grammar. However, if students lack the necessary levels of reading speed and comprehension required to read the long texts used in an ER course, it is unlikely learners will benefit from the course. Assessing initial levels of these basic indices of fluency, and working to improve them where lacking, would seem to be a logical first step in an ER course. In this study, students in two separate, but parallel ER courses were tested and compared to see whether classes which focused on increasing student reading speed would achieve positive gains in reading fluency.

Keywords: Extensive Reading, reading speed, reading fluency

Introduction

Helping language learners to develop effective reading skills is an important step in developing a strong all-round English ability. Especially with learners of English as a foreign language (EFL), in environments where there may be few opportunities to use the target language in spoken interactions, the circumstances in which they may encounter English in their daily lives will likely be via reading either printed or online materials. Developing effective reading skills is also potentially useful for learners' future careers; not only will it be beneficial for situations where they may be tested on their language ability—the majority of which involve a reading component—but also when they enter the workforce where a large amount of contact with the foreign language is likely to be via the printed word.

Extensive Reading (ER) is seen as an effective way to increase learners' English ability. It is seen as potentially contributing to increased vocabulary, faster reading speeds, and improved English grammar. Adding an extensive reading component to a language course is recommended as an effective way to foster language development in students. More practically, for students looking at careers with an external English test (e.g., TOEIC, TOEFL) requirement, there are also indications that strong participation in extensive reading programmes does lead to improvements in test scores (Storey, Gibson, & Williamson, 2006). However, some students entering an ER course may lack the necessary levels of reading fluency to engage with the required reading, which could contribute to a lack of motivation and unwillingness to read. To ensure students

* Department of English, Faculty of Humanities, Seinan Jo Gakuin University
** Shimonoseki City University

will be able to gain the benefits offered by an ER course, helping students increase their initial reading speed and comprehension should perhaps be a necessary first step in an ER course, especially when working with lower-level learners.

In this study, students in two separate, but parallel ER courses were tested and compared to see whether classes which focused on increasing student reading speed would achieve greater gains in reading literacy than those that didn't. While it seems a logical conclusion that this would be the case, our results were, in fact, inconclusive. Further, by focusing on increasing reading speed, student comprehension of reading passages did actually suffer. However, while quantitative results point to potentially negative outcomes, other findings give a more positive indication of course outcomes.

Extensive Reading and Reading Fluency

There is a strong consensus on the benefits of extensive reading (ER) for improving reading ability, with the overall view being that ER helps learners develop vocabulary, reading proficiency, and a more positive attitude towards reading in general (Day & Bamford, 1998; Nation, 2001; Hunt & Beglar, 2005; Grabe, 2009). It is also believed that ER can help to increase reading rates (Beglar, Hunt & Kite, 2012; Huffman, 2014), although there is less compelling empirical evidence to support this claim than that for the general benefits of ER (Huffman, 2014).

Fluency is a complex cognitive process, and in the case of reading it has been defined as "the ability to read rapidly with ease and accuracy…text comprehension is an expected outcome of fluent reading" (Grabe, 2009, p. 291). Fluency, at least in the case of reading, develops as the reader becomes able to automate cognitive processes involved in understanding the text, and reduce cognitive load. This allows more resources to be allocated for higher-level information-processing tasks, such as recognising relationships within the text being read or linking text content to other knowledge. In other words, the reader is able to move beyond simple recognition of the text to being able to adequately comprehend what is being read.

Increasing fluency, or the ability to read rapidly with ease and accuracy, should then be an important aim of an (extensive) reading programme, but in order to help students improve their reading ability overall, perhaps helping develop reading fluency through faster reading will better help them develop as motivated, capable readers. Fluency also requires that the readers are able to comprehend the text as they read it. Beglar, Hunt, and Kite (2012) note that "the combination of faster reading rate and adequate textual comprehension is a well-accepted approach to measuring fluency" (p. 668) and the operationalisation of fluency as reading rate is common in related research.

To improve fluency, evidence suggests that learners need to read large amounts, with "large" being seen as upwards of 150,000 words annually (McLean, 2014). Sakai (2002, in Nishizawa, Yoshioka, & Fukuda, 2010) put forward 1,000,000 words as a level Japanese EFL learners should aim for in developing as independent learners; Nishizawa, Yoshioka, and Fukuda (2010) reported from their research with secondary and university-aged EFL learners, using data from a four-year reading programme, that 300,000 words was "the threshold where many students started to show significant increases in TOEIC scores" (p. 637). Obviously, these levels are difficult to achieve in the short term, and so one key task is to ensure students are able to maintain their motivation to read over the time period required for an ER programme to have positive impact. One way to help here may be to work on reading speed. While students need to read enjoyable, understandable books, they also need to be able to read at rates that make reading enjoyable, as outlined in Nuttall's virtuous circle of the strong

reader (in McLean, 2014) whereby readers who can read faster find reading more enjoyable, which helps them to read more and understand better. Nation (2009) puts forward 250 wpm as a reasonable goal for second language learners reading easy texts with no unknown vocabulary or grammar. However, this might be a challenging goal for some readers, as findings from cognitive psychology suggest that adult L1 readers read at rates of between 200-400 WPM, usually nearer the lower rate (Anderson, 1985).

While one condition for successful ER is for learners to read books at a level at which comprehension does not suffer, it would seem that if the learners are not advancing in their levels of comprehension, then the process is not particularly helpful. Reading at the kind of pace required for extensive reading to positively contribute to gains in language for EFL learners may in fact be too demanding for low-proficiency learners (Hunt & Beglar, 2005). One way to help learners advance is to work on increasing their fluency so they are able to read faster while retaining comprehension; assuming the learners are receiving adequate language input and practice in other areas, this should help them maintain their motivation to read and contribute to positive reading outcomes.

A limited number of empirical studies have been carried out to assess varying approaches to increasing reading speed in second or foreign learners. These have focused on either extensive reading as a pathway to increased reading rates, or some kind of explicit timed reading training. As our focus is on the latter, we will present an overview of research into this area.

Reading Speed Research

Approaches to increasing fluency through increasing reading speed include paced reading, where the reading time is controlled by the instructor (and is usually slightly faster than the students' current reading speeds), and speed or timed reading (TR) where the reading time is recorded by the reader upon completion of the text. The favoured approach, at least in EFL, seems to be timed reading (Atkins, 2010, Taferner & Murray, 2013), and some evidence (Champeau de López, 1996) suggests that for intermediate-level EFL learners, TR leads to greater gains in reading speed than paced reading. A small number of studies have looked explicitly at increasing reading rates through TR, and the next section will outline findings from this research.

Timed Reading

The standard approach to TR instruction is that outlined by Nation (2009). Students read texts as quickly as possible while maintaining accuracy and comprehension, with comprehension measured by a series of questions (usually 5 to 10) answered immediately following text completion. Texts used for TR should be of equal length and lexical complexity, and students read a number of these over a set period of weeks or months. Students record the time taken to read the passages, and keep a record of this, along with the comprehension scores, usually in the form of a graph showing their progress over the duration of the TR practice.

Champeau de López (1996) may be one of the earliest published reports suggesting TR can lead to greater gains in reading speed for EFL learners. This research compared paced reading with timed reading for university-level Spanish-speaking EFL learners. Over five studies, with sample sizes of between 11 and 28 subjects, Champeau de López (1996) showed TR reading speed gains were nearly double those of readers doing paced reading. Here, paced reading activities contributed to increases in WPM read of between 24% to 42%, while timed reading training contributed to increases of between 42% to 52%, with the latter figure achieved after only ten timed readings.

Comprehension scores for the TR groups either increased or stayed stable compared to more variable changes for the paced reading group. One notable conclusion here is that these kinds of reading speed exercises benefit all students "since even very slow readers showed substantial gains in speed" (p. 199).

Utsu (2003, 2005) found that semester-long TR activities increased reading rates while maintaining or increasing their comprehension scores. The 2003 study, with a sample of 23 Japanese junior college students reading 400-word readings over a thirteen-week semester, had an increase of just over 13 WPM (an approximately 17% increase in reading speed), while Utsu (2005) reported on two other sets of results from successive years with 46 students which each saw gains of approximately 41 WPM (an increase of a little under 45%) and 34 WPM (or 37%). These studies reported descriptive statistics only, and did not use a control group.

Chung and Nation (2006) investigated the effects of a speed reading course on EFL learners at a university in Korea. Forty participants read 23 timed readings over nine weeks, both in class and at home. Chung and Nation (2006) found increases for nearly all subjects in their study, with an average increase of 52%, from 141 WPM to 214 WPM. They also found that while most of the increases in reading speed happened within the reading of the first ten texts, the reading speeds at this time were generally below 200 wpm, so it is worth continuing a reading speed course for longer if one wishes to reach a speed considered as optimum for careful silent reading. Chung and Nation (2006) concluded that "if students have good English, and are provided with speed reading training, there is a high possibility of substantial increase in [reading] speed" (p. 198). One limitation of this study was the lack of a control group; a second was that no measure of reading comprehension was included. Additionally, some of the reading was completed out-of-class, so it is uncertain whether the subjects accurately and correctly recorded their reading scores.

A study by Crawford (2008) with a sample of 48 Japanese university students in two EFL classes looked at the students' overall changes in a TR course of eleven weeks. Three texts were read per week for a total of 33 passages, and changes in reading speed and comprehension were measured. While initial and final reading speeds were not reported, results showed a statistically significant increase in reading speeds over the course of the study period. However, in contrast to Chung and Nation (2006), Crawford (2008) found that the greatest gains came in the latter stages of the TR exercises. A slight (less than one point) drop in comprehension was seen, but the paper concluded that the results were encouraging as regards the effectiveness of TR for developing reading rates of L2 (in this case, EFL) learners. Limitations of the study, as noted by the author, included a lack of a control group, and the fact that all data was self-reported, potentially resulting in errors in the data used in the analysis.

Atkins (2010) looked at how increasing reading speed was related to reading fluency, arguing that preceding research into TR was weakened through not considering the relationship between reading speed and comprehension, so perhaps not satisfactorily addressing measurement of fluency. Atkins (2010) proposed a unique, but unvalidated composite measure of fluency, involving time taken to read a passage divided by the total comprehension score. Working with five classes of Japanese EFL learners at a Japanese university, this study looked at changes over a 14-week long semester, with students doing a maximum of twenty timed readings during the semester. While finding support to suggest that TR leads to fluency gains, overall results were inconclusive. Atkins (2010) suggested this may have been a deficiency of ANOVA used for the analysis, as well as a problem with subject familiarity of the reading passages. Other limitations here could be due to problems with the measure of fluency used, plus the use

of imputation for a quite sizeable number of missing values in the data. Atkins reported only mean reading times and standard deviations of his composite reading scores, but there is no indication of the range of reading speeds recorded, making his data somewhat difficult to assess in relation to other related findings.

Research by Chang (2010) suggested that timed reading activities can improve reading speed and comprehension, even if only done for a small amount of time over a number of weeks. In this study, a sample of EFL learners (Taiwanese college students) reading three texts per week over a period of thirteen weeks saw an approximately 25% increase (29 WPM from an initial reading speed of 118 WPM) in reading speed, compared to a 5% increase (7 WPM, initial speed of 124 WPM) for the study's control group who had not done reading speed practice in class. There was a marginal improvement in comprehension scores for both the treatment and control groups. While the increases in reading speed were lower than other comparable studies, Chang (2010) attributed this to the differences in the amount read by the subjects, as well as the relatively short timeframe of the timed reading period used in the study, as students did speed reading for only 15 minutes a week for 13 weeks. Chang also found from qualitative data that the students saw the reading speed practice as beneficial for their reading, and that it contributed to increased confidence in their reading ability. One limitation of this study is that Chang (2010) does not explain exactly how the reading times were measured, other than that a student helper wrote times on the board, which the subjects then checked and recorded when they finished the reading exercise. It is not clear what intervals were used here, so students may have been under- or over-recording their actual reading times. Another problem Chang (2010) reported is that there was quite a large discrepancy in how much of the texts the speed reading group read in class, which may have skewed the results somewhat. Finally, there is no indication if the subjects were doing any other FL reading activities in other classes, so it is unclear to what extent the results can be attributed to the reading speed intervention.

Statistically significant increases for reading speed in TR activities used with high school students in Japan were reported by Underwood, Myskow, and Hattori (2012). Here, the subjects in their experimental group (N=51) did two speed reading exercises per week over two 4-month semester periods, reading 300-word texts and answering five comprehension questions on the texts. They found that while the students in the experimental group showed a mean increase of 47 seconds over their initial reading speeds at the end of the course (WPM scores were not reported), comprehension scores remained stable with an average score of 3. For the texts used in this study, scores below 4 were seen as an indication of a lack of adequate comprehension. A possible limitation the authors acknowledge is that the students in their study may have spent insufficient time on the reading activities to improve their fluency.

Taferner and Murray (2013) reported on the influence of text length on reading fluency in a timed reading programme, as well as the influence of TR on reading comprehension. Working with 150 non-English majors at three universities in Japan over a 10-week period, they had one group read eight 400-word texts and answer ten comprehension questions, while the second group read eight 200-word texts, answering five questions. They found that the students reading the 400-word texts showed a greater increase in WPM (posttest results showed a 33.39% increase in WPM over the pretest rate of 113.63 WPM) than the group reading the shorter text (a posttest change of 14.87% from 112.08 WPM), or their control group who had only done the initial pretest and posttest readings (a 5.67% WPM increase in the post-test from 98.16 WPM). They also found small increases in comprehension scores for both the long-text and short-text group, and a very minimal decrease in comprehension scores for the control group. One limitation Taferner

and Murray (2013) point out about their study was that the posttest results could have been influenced by a practice effect, and also that there could have been measurement problems with the reading times due to students self-recording their times. Another possible limitation is that the authors seem to have used only one reading passage for their pretest and posttest. Depending on the readability level of the text, as well as environmental and subject variables when reading the text, taking results from just one reading may not be an accurate gauge of the students' reading speed, and it may be more appropriate to measure reading speeds for two or more texts of approximate equivalence and averaging these speeds to give a composite WPM rate.

All the above timed reading studies were carried out in EFL settings. In research focusing on ESL learners, Macalister (2008, 2010) aimed to measure whether changes in reading speed for learners studying in New Zealand would be maintained after regular reading speed practice was stopped. He was concerned about the possibility of a practice effect serving as a confounding variable in research on speed reading. If readers are reading similar-style texts to the ones being tested, it may be that they become accustomed to the text format and process of the exercise, and thus show gains in post-test studies because they know how to do these well, rather than because of an actual improvement in ability. If this were the case, any gains in reading rates would not be sustainable once the training period of the course was over, i.e., once the practice sessions had been completed (Macalister, 2010). Another possibility is that the gains may not be transferrable to other text types.

In Macalister (2008), in which the subjects read seventeen texts as part of their regular language classes, results showed that at the end of this first stage of the study (note that the time period involved here is unclear) 25 of the 29 learners showed increases in reading speed ranging from 5 WPM to 143 WPM. After a break of a number of weeks, three more texts were read in the final class of the course and the reading speeds recorded. Here, fourteen of the subjects showed additional average gains, two had no change and thirteen showed a decrease in the average speed compared to at the end of the speed reading training. Due to a decline in reading speed after students stopped reading practice, the possibility that the increase in speed was the result of a practice effect was suggested. It should also be noted that no measure of comprehension was included in this study. Furthermore, the largest proportion of learners who showed gains in reading speed were also enrolled in an extensive reading programme, but there is no discussion of how this may or may not have impacted on reading speed. Overall, the methodology of the study is not clearly reported, and it is unclear how reading speed rates were measured, or if the method by which they were collected was consistent across the different groups making up the sample. Finally, no control group was included in this study. In a second study, Macalister (2010) aimed to see if there was a relationship between increased reading speed on the texts used from a speed reading text, and authentic texts (in this case writings by George Orwell). The findings in this study showed that the students who had engaged in speed reading training were reading authentic texts faster both at the end of the speed reading class and the end of the language programme, which suggests a speed or timed reading component to a language course is of benefit to learners. Macalister (2010) points out that students may increase their reading speed over the course of a language programme irrespective of a speed reading component to the course, "however, students who do a speed reading course tend to show greater gains in reading speed than those who do not, even if their gains from the end of the speed reading course to the end of the language programme may not be maintained at peak levels" (Macalister, 2010, p. 112). As with other studies, however, there were a

number of limitations, including no measure of comprehension and the difficulty of controlling for confounding variables—a common problem in most of the TR studies citied.

As should be clear from the above, there is evidence to support the view that FL learners will be able to increase reading rates through timed reading practice, although to what extent the research has demonstrated increases in fluency is unclear. If we are to equate the increases with fluency, the positive increases in reading speed should be associated with either increases in comprehension levels, or if already at a high level, minimal changes in comprehension. With this aim in mind, we now turn to our study.

Study Aims

The aim of this project was to see if instruction aimed at increasing reading speed would have a positive effect on students' fluency. Based on the literature reported above, along with an earlier, unpublished study (Collett & Swanson, 2015) the hypothesis we wished to test was that speed reading practice would lead to faster overall reading speeds, with positive gains in comprehension. Specifically, we predicted that the lower level students (English A) would benefit more from the timed reading classes than the English B class, but that both of these classes would show higher gains than students in the control group. The second assumption was that comprehension scores for the treatment group would increase as reading speed increased, while those for the control group would stay stable or decline. We also wished to see if there was a positive relationship between reading speed gains and words read for the independent reading component of the course.

Methodology

Subjects

The participants in this study were students at a women's university in Southwestern Japan. They were all aged between 18 and 20 years, and were in their first year of study. The treatment (experimental) group consisted of English majors divided into two classes of 16 each, English A and English B. Class placement for these classes was based on results of a placement test held at the beginning of the academic year, with higher-scoring students making up the B class. Placement test results showed that students had predicted TOEIC scores ranging from 280 to 540. The control group were students in the same faculty of humanities who were studying tourism. While 18 students in this group took the pretest and posttest, three students failed to complete both tests due to absences, and one student did not complete the tests correctly, giving a final sample size for the control group of 14. All students were taking a required extensive reading class, with the English A and B students taught by the first author, and the tourism course students taught by a Japanese faculty member.

Study Materials

Students in the English A and B classes used the texts "Reading for Speed and Fluency" Books 1 & 2 (Nation & Malarcher, 2007) in class. This involved the students reading five short (300 words on average) thematically-linked passages on non-fiction topics, timing their reading progress, and answering 5 general comprehension questions after completing each passage. Students kept a chart of their weekly reading speeds and comprehension scores so they could easily see how they were progressing in the course. Over the 15-week course, they read 40 texts from Book 1, and 25 from Book 2, totalling an average of 19,500 words. The remainder of each 90-minute class was used for vocabulary exercises or silent reading, and for checking on independent reading progress.

Students from the control group in the tourism department also studied ER as a compulsory course. However, rather than using a textbook and supplementary readers, they used a guided e-learning approach, studying English using the CHIeru online system. Within this, they were expected to meet specific monthly targets, plus were directed to study specific materials on the site, both under teacher supervision and as independent study. While no placement test results are available for the control group, entrance test results indicate similar English levels to the students in the English Department.

Independent Reading

English A and B students were also expected to do independent reading outside of class using the university library's extensive reading collection. This consists of approximately 1,700 books covering levels 1 to 6 . As well as many graded readers, the extensive reading collection contains a number of picture books from series aimed at young native English speakers from such publishers as Ladybird and Scholastic. These proved to be quite popular choices for the students. There were no limits set on the levels from which the students could choose books, but they were encouraged to follow the general rule of choosing books of which they were unfamiliar with only two or three words on a randomly selected page in keeping with ER recommendations. For the out-of-class ER component of the course, students were asked to read at least fifteen books, and were set the additional goals of reading for 180 minutes a week outside of class, and to read 250,000 words over the course of the semester. To keep track of reading progress, the Moodle Reader Module, part of the Moodle Learning Management System, was used. Students were requested to read regularly and frequently, and also had to keep a brief written log of their progress. This, as well as the data from the Moodle Reader Module, was checked in class each week to ensure students were making progress with their reading, with feedback and encouragement given to students on their reading progress.

Pretest and Posttest

A number of readings from Book One of *New Zealand Speed Readings for ESL Learners* (Millett, 2005) were used to measure the students' reading speeds for the pretest and posttest. These readings are approximately 400 words in length, and are written within the 2,000 most frequently used words of English. They were chosen due to the similarity to the readings the students would be doing in class in terms of word level, length and content, and also because the topics were likely to be unfamiliar to the students.

For both the pretest and posttest, the texts were given to the students with instructions to read the text, check and write the time they completed the reading, and then answer the ten comprehension questions for each reading. A timer counting down minutes and seconds was projected on a screen at the front of the class which students referred to to record their reading speed. The class teacher observed students to ensure they were not referring back to the text when answering the comprehension questions. Once students had answered the questions, they were instructed to close the reading booklets and wait until all students had completed the task. At this time, the next reading task was undertaken.

While the English A & B classes read 3 texts for the pre and posttest parts of the study, unavoidable time constraints resulted in the tourism class control group only reading 2 texts for both the pre- and post-test. The texts used for the English and Tourism classes were *Netball* and *Auckland—City of Sails*, and the third text *Tuatara* for the English A & B classes. Table 1 outlines lexical details of the texts, including details of the number of words contained in the 1st and 2nd thousand most frequent word families, and the number of words from the Academic Word List (AWL). These were

calculated using the Web Vocabprofile (Cobb, 2015).

Vocabulary Size Test

To ensure the students had a sufficiently high level of vocabulary to comprehend the speed reading texts, at the pretest stage they were tested using a bilingual (English-Japanese) version of the Vocabulary Size Test (Nation & Beglar, 2007). This test measures knowledge of written receptive vocabulary. While the complete test comprises 140 items, ten each from the one- to fourteen-thousand word levels, in this project only the first five thousand word levels were tested, with a total of 50 items. The vocabulary level is calculated by multiplying the test-taker's total score on the test by 100, so for example, a score of 35 would suggest a knowledge of 3,500 word families. The shortened version of the test was used due to concerns about student fatigue and the quality of student performance and motivation if given the full version. The test was administered only to the experimental group, and was given in the first week of classes.

Reading Questionnaire

A short questionnaire focussing on student's self-efficacy and enjoyment towards reading was given to the English A and B classes at the end of the course. This consisted of 6 Likert scale questions and an open-ended response option.

Results

Vocabulary Size

Scores from the vocabulary size test were relatively similar for the English A and B class, suggesting that, at the beginning of the course, students from the A class had an average receptive reading knowledge of 3112 words, whilst that for the B class was 3243 words. However, as Figure 1 shows, the ranges of the two classes are quite divergent, but for the majority of students this should have been adequate for them to be able to understand the readings used for the pretest and posttest.

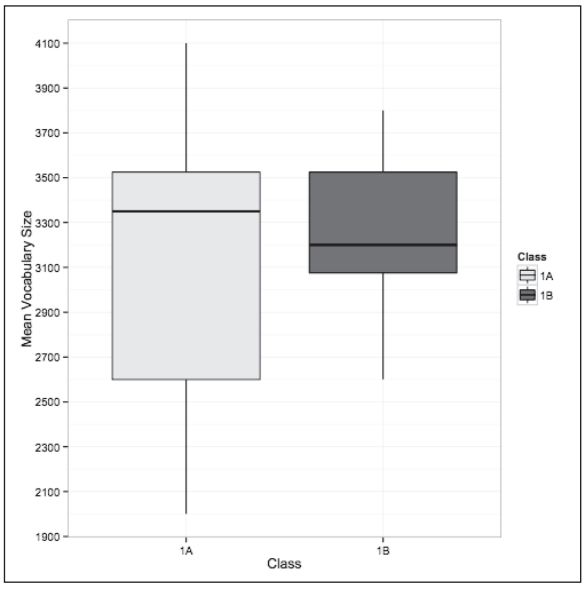

Figure 1. Results of Vocabulary Size Test by Class

Reading Rates: Words Per Minute (WPM)

To test for changes in reading speed, the data was analysed to see if there was any difference in the number of words per minute

Table 1. Reading Passage Details

Reading	Total Words	Total T-Units	Mean words per T-Unit	1st 1000 (%)	2nd 1000 (%)	Not on lists (AWL)	Flesch-Kincaid Grade Level	Flesch Reading Ease
Netball	401	28	14.29	85.29	5.24	6.48 (2.99)	7.5	66.7
Auckland	401	27	14.81	85.29	5.74	8.48 (0.5)	7.5	67.2
Tuatara	406	23	17.39	87.68	5.91	6.41 (0.25)	7.6	71.3

read at the beginning and end of the course. The ranges are provided in Table 2.

Descriptive statistics for the English and Tourism classes are presented in Table 3. Looking at the average reading speeds for both groups, the English class had an average increase of 43.49 WPM, a change of slightly more than 50% over the initial reading rate. In comparison, the control group saw a 29% mean increase (19.92 WPM) over their reading rate at the pretest stage. Looking more closely at the results for the two separate English classes, it seems that initial differences in reading speed between the two groups were quite small at the beginning of the course, and they both made gains in reading speed over the semester, with the English A class showing the greatest gains of the three groups, supporting our first hypothesis.

The results are illustrated in Figure 2, which shows the mean WPM of the pretest and posttest, along with 95% confidence interval (CI) bars. The magnitude of the changes and the size of the confidence intervals would suggest that our first hypothesis is supported. However, we will look at this more closely in the next section.

Table 2. Reading Speed Ranges

Average WPM	Pretest			Posttest		
	English A	English B	Tourism	English A	English B	Tourism
Below 70	5	1	9	0	0	3
70-99	9	10	4	1	2	9
100-129	2	5	1	7	9	1
130-149	0	0	0	5	2	1
Above 150	0	0	0	3	3	0

Table 3. Descriptive statistics for Reading Speeds

WPM	English A		English B		Tourism Pre	Tourism Post
	Pre	Post	Pre	Post		
Min	60.79	93.84	69.68	87.60	53.18	59.78
Max	107.42	191.32	129.17	187.64	119.44	133.38
Median	79.41	127.94	81.18	118.49	61.84	88.55
Mean	80.09	129.01	90.99	129.04	68.17	88.09
SD	14.24	24.26	20.80	30.25	18.28	19.66
SE	3.56	6.07	5.20	7.56	4.89	5.25
95% CI Upper	87.67	141.94	102.07	145.16	78.72	99.44
95% CI Lower	72.50	116.08	79.91	112.93	57.61	76.74

Reading Speed Comparison of Means

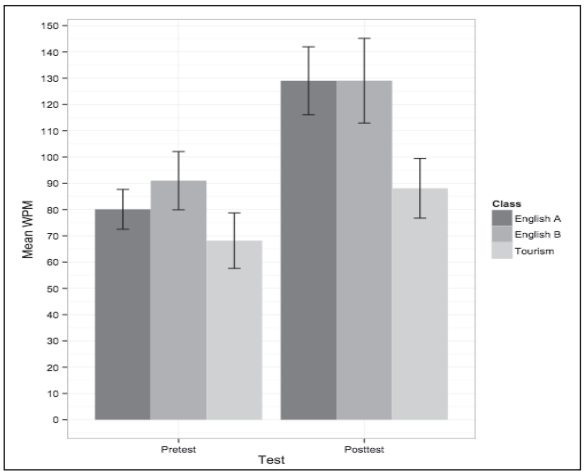

Figure 2. Means and 95% CIs for Reading Speed

To test for a difference between the initial (pretest) reading rates and the reading rates at the end of the course, a comparison of means was performed. The analysis looked at the changes in average WPM for the pre and posttest data.

The data was checked to determine if it met assumptions of normality and homogeneity. A Shapiro-Wilk test was carried out to check for normality. This indicated non-normality for the English B and Tourism classes pretest data (English B: W = 0.83981, p < 0.05; Tourism: W = 0.74574, p < 0.05) and for the English B posttest data (W = 0.8645, p < 0.05). To check for homogeneity, Levene's test was performed, and here results showed that the data did meet conditions of homogeneity. Given these results, it was decided a non-parametric analysis of the data was most appropriate to test for differences in means. Friedman's ANOVA (Friedman rank sum test) indicated a statistically significant change in reading speed over the course of the 15-week semester, x^2 (1) = 42.09, p < .01, which as noted above, supports our first hypothesis. A post hoc test gave a critical distance (a = .05) of 13.29, ***difference*** = 44.

A Wilcoxon signed rank test was next performed to see where the changes lay. For all groups, reading posttest speeds were statistically significantly higher than the pretest, with correspondingly large effect sizes; the largest changes were for English A (Pretest ***Mdn*** = 79.41; Post-test ***Mdn*** = 127.94, ***r*** = -.74), followed by English B (Pretest ***Mdn*** = 81.18; Post-test ***Mdn*** = 118.49, ***r*** = - .74), and lastly, Tourism (Pretest ***Mdn*** = 61.84; Post-test ***Mdn*** = 88.55, r = - .67), p < .001 for all groups.

Relationship Between Reading Speed and Words Read

To see if there was a relationship between the amount of reading done for the extensive reading component of the course, and the changes in reading speed over the course of the semester, the correlation between changes in reading speed and the number of words read as part of the extensive reading homework was calculated. As the tourism class students did not use the Moodle Reader system to monitor their outside reading, and we have no other data available to tell how much they read, the data reported here is only for the English A & B classes. The correlation was extremely small, r = 0 .02 with 95% CIs of -0.34 and 0.36. A correlation of the total number of words read with the final average WPM score was also calculated; r = 0.26, 95% CIs = -0.1 and 0.56. It would appear that there is only a weak relationship between the out-of class extensive reading and any gains in reading speed, which differs from our initial assumptions.

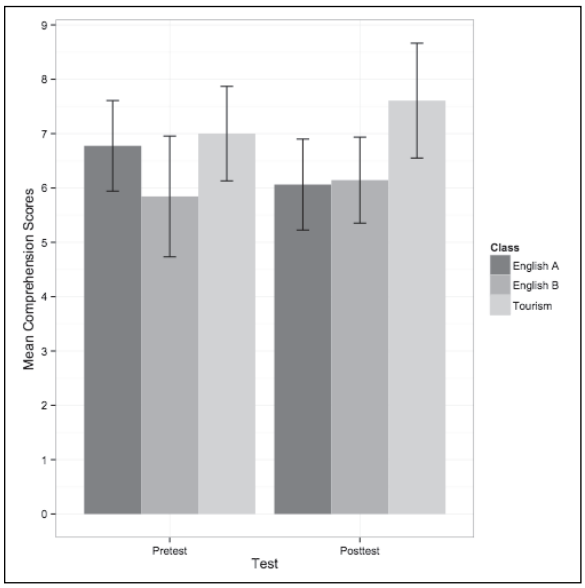

Figure 3. Means and 95% CIs for Comprehension Scores

Reading Comprehension Analysis

Changes in the comprehension score responses in Table 4 show a pattern of either decreasing comprehension or little discernible change in the English A & B classes, while the Tourism class appears to have made slight gains. This is supported by Figure 3, showing the changes in means with 95% CIs. Looking at the descriptive statistics in Table 5, we can see that the average comprehension scores for the English classes did not improve, staying below the level regarded as demonstrating comprehension of the texts read.

Figure 3 suggests the difference between the two groups is not statistically significant. An analysis of means was performed to confirm this. Assumptions of homogeneity of the data were met. However, the sample showed deviations from normality, with a Shapiro-Wilk test indicating non-normality for the tourism class pretest data, $W = 0.8447$, $p < 0.05$. Therefore, a non-parametric Friedman's ANOVA was used to check for any statistically significant difference in the data. This confirmed that the changes were not statistically significant, $x^2(1) = 0.1$, $p > 0.5$. Based on these results, we can say that the data does not support our second hypothesis regarding positive changes in the comprehension scores.

Survey Responses

Percentage responses for the survey on attitudes towards reading for the students in the English A and B classes are presented in Table 6. Overall, most students see themselves as having improved in their reading speed and comprehension to some degree (Q1 & 2). As the students had been keeping regular and detailed records of their reading progress, it is reasonable to assume that they were aware of their progress, and that these results do reflect actual outcomes, i.e. in class, students

Table 4. Mean Comprehension Ranges

No. Correct	E A-Pre	E A-Post	E B-Pre	ER B-Post	Tourism-Pre	Tourism-Post
8 or more	5	4	4	2	5	8
7 to 8	3	1	0	3	5	2
6 to 7	3	3	5	3	1	2
Less than 6	5	8	7	8	3	2

Table 5. Descriptive statistics for Comprehension Data

	English A		English B		Tourism Pre	Tourism Post
Comprehension Scores	Pre	Post	Pre	Post		
min	4.70	4.00	3.30	4.00	4.00	3.50
max	9.30	8.70	9.30	9.00	8.50	10.00
median	6.85	5.85	6.15	5.85	7.50	8.25
mean	6.78	6.06	5.84	6.14	7.00	7.61
SD	1.56	1.57	2.09	1.49	1.51	1.83
SE	0.39	0.39	0.52	0.37	0.40	0.49
95% CI Upper	7.61	6.90	6.96	6.93	7.87	8.67
95% CI Lower	5.95	5.23	4.73	5.35	6.13	6.55

were making steady, if somewhat limited, gains. The results for questions 3 to 6 are somewhat more positive, suggesting changes in student confidence and self-efficacy towards reading. We had also included an open-ended section for students to leave any comments regarding their reading, and whilst the responses were limited (see Appendix 1), those made were positive in terms of the perceived usefulness of the course.

Discussion

The results of this study support those of the previous research in this area reported in the literature review to a degree. We found that if students undertake timed reading practice, this will result in increases in the speed at which they can read short texts. However, our main hypothesis—that speed reading practice will lead to faster overall reading speeds with positive gains in comprehension—was not supported. While we found greater increased reading speeds for the English classes, these came at the expense of comprehension, and in fact our results suggest that slower reading, as evidenced by the control group, is associated with higher levels of comprehension. This partially matches the findings the authors reported from a 2014 study following a similar research design which found increased reading speeds but drops in comprehension at the end of a timed reading-based course (Collett & Swanson, 2015). Chang (2010) found similar results, suggesting that the students had not yet reached an optimal reading level to support comprehension. Another possibility may be that the students in our study still lack the lexical knowledge required to understand passages written at the level of the readings used. Perhaps rather than focussing on reading speed, a necessary step for lower-level university students is to first work on ensuring they have sufficient vocabulary knowledge.

The results related to comprehension scores are similar to those reported by Underwood, Myskow, and Hattori (2012), who suggested that based on their results, rather than an emphasis on increasing reading speed "at this level of language proficiency, instruction which focuses on building greater linguistic ability (e.g., lexicon-grammatical competence) could be of more benefit to [high school level] students" (p. 37). In the case of our study, where the subjects were university English majors, it might be better to say that an increased focus on building linguistic grammar is something that could complement speed reading training if this is something that will lead to increased reading fluency. Underwood, Myskow, and Hattori

Table 6. Reading Survey Results

	Not at all	Not so much	A little	Quite a lot	Very much
1 : I think my reading speed has increased through this course	0.0	6.3	59.4	31.3	3.1
2 : I think my reading comprehension level has increased through this course	0.0	9.4	56.3	31.3	3.1
3 : I think my enjoyment of reading in English has increased through this course	0.0	3.1	40.6	50.0	6.3
4 : I think that I can read English more easily now than at the beginning of this course.	0.0	3.1	40.6	53.1	3.1
5 : I feel more confident about my ability to read English now than at the beginning of this course	0.0	0.0	56.3	40.6	3.1
6 : I enjoy reading in English	0.0	0.0	28.1	37.5	34.4

(2012) point out that developing reading fluency is an important part of the Course of Study 2009 for Foreign Language set by the Ministry of Education as the national curriculum for high school English education in Japan. Seeing the comparisons between our results for first-year university students compared with the results for first-year high school students from the Underwood, Myskow, and Hattori (2012) study does suggest that something is hindering this development of fluency, at least in the case of our sample, and more research at both the high school level and tertiary level may be helpful to see what factors are at play here.

However, the results from the reading questionnaire present one potentially positive finding. Overall, the responses here suggest that the students in the English classes hold a perception that their reading ability had improved as an outcome of the course, and show positive attitudes towards reading in English. Although we do not have any direct empirical data to show here, students had been keeping an ongoing record of their reading speeds and comprehension scores for the regular in-class timed reading activities. Based on informal weekly observations, both these indices of progress demonstrated positive increases for the majority of the students, and this result was mirrored by their outside readings, which they were able to track through the Moodle Reader system, as well as via feedback from the class instructor. While our learners may not yet be at an ideal level of reading fluency, their general attitudes towards their course outcomes after 15 weeks do point to positive self-efficacy and outcome expectations related to their reading ability, both key components in the development of effective self-regulatory skills and strategies, as well as positive motivation for learning (Bandura, 1997). Ensuring learners are able to monitor their progress, and to recognise how their study choices (or lack of such) contributed to this progress is an essential part of any learning programme, something we hope will be maintained as learners continue to develop their reading skills through the course.

Limitations

A number of factors that limit the findings of this study must be addressed. Firstly, the Tourism class group read only two texts for the speed reading activity, compared to three for the ER class. This presents problems with making comparisons between the groups, especially if the third text read by the English group was of a greater level of difficulty than the other two. One possibility here is that the difference in reading passages for the experimental (English) group and the control group may have contributed to the outcomes.

Another limitation was the use of the same texts for the pre and posttest stages, which may have contributed to faster reading speeds or higher comprehension scores. This is an issue with any pretest - posttest situation, and we can only assume that students had not been primed to remember the material in the pretest, and that the 15-week timespan between the pretest and posttest would be long enough to ensure the results were not simply due to familiarity or recall of the materials. While an alternative approach used in some studies has been to use different readings for the pretest and posttest stages, Huffman (2014) notes some limitations here. This also relates to the possibility of a practice effect accounting for the changes seen in reading speeds for the English classes. Macalister (2010) address this issue, and suggests one way around it is to test the subject some time after the timed reading component of the course has ended to see if reading speed gains are sustained, theoretically with any practice effect having faded. At this stage it is too early to do so with our sample, however we did see some evidence to suggest reading speeds were sustained sometime after the end of the timed reading course component of an earlier study (Collett & Swanson, 2015), so it may be worth trying to replicate this at an appropriate time.

There is also the issue of students guessing the responses to the comprehension questions. This is of course an issue for any kind of multi-choice questions, and without using more rigorous tools for measuring comprehension, it is unclear how this can be controlled for.

Finally, we need to acknowledge the inability to control for any influence other parts of the coursework may have had on their reading rates. As reported, we did not find a strong correlation between the final word speed amount of words read in the ER component of the course, but we have to accept that this reading, as well as the course work they were doing in other classes, may have influenced results. This is an inevitable outcome of the quasi-experimental nature of the study, and future research would benefit from more complex designs that allow for control of extraneous confounding variables.

Conclusion

The findings reported in this study are consistent with those in other research into increasing reading rates through timed reading, in that they show an increase in reading speed for learners who engage in timed reading practice. However, the declines in comprehension rates suggest that, at least for our sample, this increase in speed came at a slight decrease in understanding—which may be interpreted that there were no, or only slight gains in fluency. Whilst the English group may not have shown quantitative increases in comprehension for this particular study, they did demonstrate a positive attitude towards, and confidence in their reading abilities as a result of the timed reading practice. The weekly process of recording reading times and graphing these seems to be effective, as does the use of such systems as Moodle Reader to help learners keep track of their reading process, a crucial aspect of helping learners develop self-regulatory strategies.

Further studies should be carried out with similar groups to see at which stage increases in fluency can be expected, and also to further investigate the role of the learners' own perceptions about their reading ability and how this relates to fluency development. It would also be useful to look at to what extent, if any, the reading sped gains are maintained over time, and to see if there is any positive increase in the length of texts students are willing to read as a result of increases in their reading speed.

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Appendix

Reading questionnaire comments. Comments were anonymous. 1-3 were written in English and are included as written; 4 was in Japanese and is translated by the authors.

1. I can read more books than at the beginning of this course
2. I like this course very much because I could read fast
3. I dislike to read a lot of books very much. But I thought that if I didn't read it a lot, I

couldn't read fast. So, now I would like to read a lot of books.

4. I don't really like reading long passages in English. However, each week I enjoyed this class, and enjoyed doing the reading.
（私は英語の長文を読むのはあまり好きではありません。だけどコレット先生の授業は毎時間とても楽しくて苦手な長文も楽しく読むことが出来ました。）

EFL学習者の速読力向上に関する研究

マルコム・ロス・スワンソン*
ポール・コレット**

＜要　旨＞

効果的な読解力の習得をサポートすることは、英語力を向上させる上で重要なステップである。特に、多読は語彙を増やし、速読を促し、文法力も向上させる訓練としての可能性を秘めている。本研究では、同時開講された２つの多読クラスを比較検討し、速読力向上に焦点を充てたクラスが読解力にも向上が見られたか検証する。

キーワード：多読、速読、読解力

*　西南女学院大学人文学部英語学科
**　下関市立大学