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Improving reading rate activities for EFL students: Timed reading and repeated oral reading

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Abstract

This study investigates the effect of timed reading (TR) and repeated oral reading (RR) on 35 adult students of English as a foreign language. Students in the TR (n =18) and RR (n =17) groups read 52 and 26 passages respectively over a 13-week period. Reading rates and comprehension levels were measured at three occasions: pre-intervention, post-intervention, and delayed post-intervention. The reading rate results show that the TR group increased 50 (49%) words per minute (wpm) and 23 wpm (27%) for the RR group. The rate gains of both groups were largely retained after six weeks with no further instructional practice. In terms of comprehension levels, the TR group scored 53%, 67%, and 63%, and the RR group 53%, 60%, and 53% at the pretest, posttest and delayed posttest respectively. Overall, increasing the reading amount for the TR group improved reading rates and comprehension; increasing the reading rate for the RR group did not have a negative impact on reading comprehension. Thus, it is worthwhile including reading rate buildup activities in L2 reading instruction.

Keywords: reading fluency; repeated reading; timed reading; reading rate; reading speed; oral reading

Generally, in a second language (L2) or foreign language (FL) learning context, reading fluency has been ignored (Grabe, 2009, 2010). A major reason accounting for this absence may be that more weight has been given to accurate word decoding than automaticity or speed (Davies, 1982; Rasinski, Homan, and Biggs, 2009). Studies have shown that many L2 readers read laboriously and far more slowly than in their native language (Fraser, 2007; Nation, 2005). Reading slowly may imply poor comprehension, lack of automaticity when decoding word meanings, and lack of pleasure while reading. As Nuttall's widely cited comment (1996) states: "speed, enjoyment, and comprehension are closely linked with one another" (p. 127). More recently, Grabe (2009) has noted that the advent of the computer and the Internet increases the need for effective reading skills and strategies, so that readers may better cope with the large quantities of information made available to them. These remarks suggest the importance of developing reading fluency.

Fluency is posited to include three key elements: accuracy, speed, and fluidity (Segalowitz, 2000,

2007; Kuhn and Stahl, 2003). Reading fluency is often defined as "the ability to read rapidly with ease and accuracy and to read with appropriate expression and phrasing. It involves a long incremental learning process and text comprehension is the expected outcome" (Grabe, 2009, p. 291). Moreover, "a fluent reader can *maintain* this performance for long periods of time, can *retain* the skill after long periods of no practice, and can *generalize* across texts" (Hudson, Lane, and Pullen, 2005, p. 702; my emphasis). However, reading itself is a complex cognitive activity that requires simultaneous coordination and interaction across many tasks, knowledge, and skill resources (Fraser, 2007; Fuchs, Fuchs, and Hosp, 2001). Well-established research on reading indicates that reading involves lower- and higher-level cognitive processes (cf., Grabe, 2009; Koda, 2005; Perfetti, 1999; Pressley, 2006). Lower processes involve word recognition, syntactic parsing, meaning proposition encoding and working memory activation, all of which must be processed rapidly and automatically. The automation of these lower-level skills is considered the most fundamental requirement of reading fluency because decoding words accurately and automatically allows readers to devote their attention to comprehension (LaBerge and Samuels, 1974). However, fluent reading comprehension cannot be achieved only by the automation of these lower-level processes: it also involves higher-level processes. Higher-level processes include comprehension or meaning construction, which in turn includes drawing on background knowledge, using strategies to understand text meaning, interpreting the ideas presented in a text, making inferences, and evaluating the information being read.

While reading, these two process levels are assumed to support each other instead of working independently or serially (Stanovich, 1980, 2000). For example, when lower-level processes become slow due to unfamiliar words, the word-recognition process may incorporate context information to compensate for this inefficiency. Reading fluency is likely to be achieved more easily when both the lower- and higher-levels can be processed in parallel, efficiently, and automatically. However, for L2 readers, lower-level processing seems to be more problematic than higher-level processing because these readers are unable to carry out lower-level processing in an efficient way, preventing them from using cognitive resources for meaning construction (Grabe, 2009). There are a number of approaches that have been found to be effective in improving reading rates and comprehension in an L1 context (e.g., repeated reading, oral reading, extensive reading, and timed reading). However, two approaches will be focused on in this study—repeated reading and timed reading—because up to the present, L2 research on these two approaches is limited and inconclusive.

Literature Review

Improving Reading Rates through Repeated Reading

In an L1 context, one of the most common methods for developing reading fluency is repeated reading. This was developed by Samuels (1979) as a pedagogical application to use with beginning or struggling L1 readers. The theory underlying repeated reading is based on the Laberge-Samuels (1974) model of automatic information processing. According to this model, a fluent reader decodes texts automatically without attention. If too much attention is paid to decoding word meanings, then little remains for understanding what is read. Therefore, repeated reading is used as a means to assist unskilled readers to practice a very basic skill (word

recognition) and help them move from the non-accurate stage to the accuracy stage and eventually to the automatic stage (Samuels, 1979).

Repeated reading (RR) can be practiced in either silent or oral form. When RR is practiced orally, readers translate written text into spoken language—practicing it many times—until they can read the text fluently, accurately, and effortlessly. Both repeated silent and oral reading focus on the readers' automaticity in phonological segmentation, rapid word recognition, and ability to derive meaning from text; however, oral reading entails another component: an expressive rendering of a text. As such, appropriate use of prosodic features form one of the three primary components of reading fluency, the other two being accuracy in decoding and automaticity in word recognition (Kuhn and Stahl, 2003). Although the focus on prosody is very difficult to justify (Fuchs et al., 2001), it may provide a link between fluency and comprehension (Kuhn and Stahl, 2003) because when an individual provides a fluent rendering of a text, they are doing more than just reading rapidly and accurately; they are also reading with expression, including loudness, pitch, stress, and properly chunking groups of words into meaningful units. From a behavioral view, oral reading can be a direct measure of fluency (Fuchs et al., 2001).

As can be seen from the above, oral reading presents a different learning task than silent reading for the development of fluency. However, silent reading usually precedes oral reading while practicing fluency. That means learners first read silently on their own until they can understand the text and they start to read out loud (cf., Ash and Kuhn, 2006). Normally, it takes more time for L2 learners to read orally with fluency than to read silently, but research suggests that oral reading practice and instruction is most effective for developing fluency (National Reading Panel, 2000). This was also one of the reasons why the present study involves both silent and oral reading in order to improve the effect of RR in an L2 context. However, the ultimate goal of reading fluency practice is to be able to read silently with speed, accuracy, and a high level of comprehension.

Effects of RR in an L1 Context

The repeated reading method has been extensively studied in an L1 context and may be practiced with variations. For example, oral reading and repeated reading can be combined as oral rereading with or without modeling, and the modeling can be live or an audio-recorded version. Research into the effects of repeated reading has demonstrated substantial empirical evidence of its benefits despite variations in procedure.

Based on comprehensive reviews in this area (see Chard et al., 2002; Fuchs et al., 2001; Kuhn and Stahl, 2003; Rasinski and Hoffman, 2003), major findings can be briefly summarized as follows:

- Repeated reading, either assisted or unassisted, has been generally found to be effective in improving student reading rates and comprehension (Carver and Hoffman, 1981; Dowhower, 1987). However, it is still not yet clear whether the improvement comes from instructional features or due to increased exposure to print (Kuhn and Stahl, 2003).
- Rereading a small amount of text did not show any better effect than reading a large amount of text without repetition (Kuhn et al., 2006; van Bon et al., 1991). To make RR effective,

readers must read a series of texts for a period of time (Dowhower, 1987).
- Repeated reading with assistance or modeling tends to be more effective than without (Rose, 1984; Rose and Beattie, 1986; Smith, 1979).
- The carryover effect from practiced to new and unpracticed passages is inconclusive (Carver and Hoffman, 1981; Herman, 1985).
- The repeated reading effect occurs in both mastery and instructional level readers concerning their reading fluency and accuracy (Sindelar, Monda, and O'Shea, 1990), and on elementary pupils and college students (Levy, Barnes, and Martin, 1993).

Effects of RR in an L2 Context

The use of RR to improve reading fluency is less widely used in the teaching of an L2 (Taguchi, Gorsuch, and Sasamoto, 2006). In the L2 context, Taguchi and his associates (1997) conducted a series of studies with college students on the effects of RR on reading fluency (Taguchi and Gorsuch, 2002; Taguchi, Takayasu-Maass, and Gorsuch, 2004). Taking their preliminary study (2002) as an example, Taguchi et al. worked with 18 Japanese university freshmen (9 in an RR group, 9 in a control group). The students in the RR group read two books approximately at the American 4th grade level. Each book was divided into 28 segments, each containing 334 to 383 words. Repeated reading activities were done three times each week, and a total of 28 segments were read during a 10-week period. The students in the control group, however, were provided with a wide range of reading passages with different levels of difficulty, and they determined what they wanted to read and read at their own pace. The results for reading rates and comprehension at the end of the study showed no statistically significant difference between the RR group and the control group, who did not receive the repeated reading treatment. The main reason for the lack of difference could be that the texts used in the pretest, posttest and treatment all varied. Reading only 28 texts was insufficient to have a strong transfer effect to the unpracticed texts used in the posttest. More reading is likely needed to see this effect. Another explanation, based on the author's teaching experience, is that the treatment passages were not designed for training reading fluency, meaning that vocabulary levels and syntactical complexity were not controlled to suit their participants (see the section on study materials for details in the present study). Also, if students forgot the content they had previously read, they could not possibly understand the scenarios of the story, which might lead to poor comprehension or even loss of interest in reading. Finally, as the researchers note, the insignificant difference between groups could be due to the pretest passage being easier than that of the posttest. If so, it is not possible to determine the treatment effects.

Taguchi and his associates (2004) also speculate that the lack of substantial effect of repeated reading in their earlier study could be due to the treatment period being too short, so another 17-week (42 sessions) study was conducted with 20 university freshmen using two different approaches—repeated reading assisted with oral rendition of the reading passages versus extensive silent reading. A total of 57 pages (approximately 16,963 words) were read five times by the RR group, while 205 pages on average (the total words in each passage ranging from 334 to 608 words) were read by the extensive reading group. Different texts were used in the pretest and posttest for measuring reading comprehension. The results were similar to those of the previous study with no significant difference being found between groups. The average rates of the RR group improved 23.67 wpm, increasing from 78.20 wpm at the first session to 101.87

wpm at the forty-second session.

Overall, neither of these studies demonstrated a significant effect on improving EFL learners' reading fluency through RR and none showed that reading rates gained from RR could be transferred to reading new passages. Significant improvement of reading rates were found only within the groups, meaning that all students read faster at the end of the study compared to at the beginning of the study. The RR approach did not yield better effects than extensive reading even after the treatment period was extended and the reading amount increased. While the above studies suggest that repeated reading has only a small effect on developing L2 reading fluency, these studies are an insufficient basis to determine the effects of RR. More research is needed, especially in other learning contexts(e.g., integrating RR with oral practice).

Improving Reading Rates through Timed Reading

One of the theories underlying timed reading (TR; also known as paced reading and accelerated reading)—where readers read under some degree of time pressure—is based on research concerning working memory (short-term memory). Memory is usually divided into long-term memory and working memory. The former stores our permanent records of experience while the latter contains all the information that is ready for processing operations (Baddeley, 2006, 2007). In reading theory, comprehension is mediated through processes in working memory (cf., Daneman and Merikle, 1996 for a comprehensive review; Smith, 2004). In lower-level processing, working memory supports orthographic, phonological and morphological processing for word recognition, and then assembles the information at the word and clause level to construct meaning from the text. Working memory is generally described as a limited-capacity system, which means that it has limited storage and limited ability to perform multiple processes simultaneously (Baddeley, 2006, 2007). Under such circumstances, working memory can maintain information actively for only a very brief period of time (Kintsch, Patel and Ericsson, 1999). If one expends too much attention on lower-level processing (e.g., word decoding), then less attention will be available for higher-level processing (e.g., making inferences, drawing on background or world knowledge). This may result in poor comprehension (LaBerge and Samuels, 1974; Perfetti, 1985; Samuels, 1994).

One way to minimize the functional limitations of lower-level processing is to have certain readers—those who already have basic automated reading skills and are aware of some reading strategies—read under time constraints instead of reading leisurely. According to Walczyk's (2000) Compensatory-Encoding Model (C-EM), with sufficient time, most readers, even with verbal inefficiency, can comprehend most texts literally because they overcome their reading problems by compensatory behaviours (e.g., slowing down reading rates, looking back in the text, or rereading the text). Under time constraints, the use of compensatory mechanisms is less feasible, so readers may attempt to improve their reading speed to an optimal rate that supports comprehension. In addition, time limitations may promote concentration, thus enhancing reading comprehension (Walczyk et al., 1999). According to Carver (1982), an optimal reading rate for native speakers is between 250 words per minute (wpm) and 350 wpm, allowing readers to comprehend a text more efficiently. However, the rates may vary due to different reading purposes: scanning, skimming, rauding (a combination word of reading and auding, just to understand the message), learning (to acquire the information) or memorizing (Carver, 1990;

Fraser, 2007). Each task associates with different reading rates: for example, a college student can search for a specific word in a text at 600 wpm and can search for a piece of specific information at a rate of 450 wpm. However, reading rates may drop to 300 wpm for rauding, 200 wpm for learning, and only 138 wpm for memorizing. Existing research has shown that L2 students read at a rate of 100 wpm (Cushing-Weigle and Jensen, 1996) or 30% to 50% slower than their L1 reading rate (Segalowitz et al., 1991, Fraser, 2007).

With such a big gap between L1 and L2 reading, how can the reading rates in an L1 be applied to reading in an L2? As mentioned above, L1 reading rates may vary according to the reading purpose or task. However, some studies have shown that regardless of the reading task, readers in L2 conditions consistently slow down their reading rate to learning or memorizing purposes (Haynes and Carr, 1990; Oller and Tullius, 1973). This phenomenon could be due to any activity related to L2 being considered as learning the language rather than having other purposes, such as reading for pleasure or searching for information. If so, the gap in reading rates between the L1 and L2 may persist. Accordingly, L2 readers should be trained to demonstrate flexibility in adjusting rates to match reading purposes, with fluency development included as one of the four strands (meaning-focused input and output, language-focus learning, and fluency) of a balanced language course (Nation, 2007).

The Effects of Timed Reading in L1

In an L1 context, several empirical studies have shown that reading under a moderate amount of pressure resulted in significant gains in reading speed and comprehension. Breznitz and Share (1992) conducted a series of experiments investigating the impact of self-paced and fast-paced reading on reading accuracy and comprehension with 23 Israeli second graders reading short passages through various tasks. In the self-paced readings, students read all texts presented on the computer screen at their own natural pace; each text was cleared immediately after the reading was completed, with the time spent reading each text being recorded by a computer. In the fast-paced readings, the whole passage appeared on the screen; when the participants started to read, the text was deleted letter by letter. Short-term memory-sensitive tasks, such as recognition and word recall, forward and backward sentence and order recall, and recency versus primacy effects, were administered to all the pupils. In the fast-paced manipulation, large gains were shown across all tasks. In the slow-paced conditions, students' decoding accuracy improved, but their comprehension significantly decreased. The results of these experiments are consistent with Breznitz's (1987) earlier study of 161 Israeli and 61 American first graders.

Comparable results were also found in Walczyk et al.'s study (1999) of university students, who read under no time pressure (i.e., reading at their leisure), mild time pressure (calculated by the median amount of time spent by 15 readers reading each passage in the pilot study), and severe time pressure (34% less time than mild time pressure). The results of their study showed that reading rate improves comprehension scores and has a strong relation to reading ability when students read under time pressure. The authors also argued that having readers read under mild time pressure increases mindfulness, motivation, and effort, and has important implications for educational assessment, as in comments by Carver (1992) that standardized reading tests are administered under time constraints.

However, contradictory findings were found by Meyer, Talbot, and Florencio (1999) with college students reading under three speeds: 90 wpm, 130 wpm and 300 wpm, representing no time pressure, mild time pressure, and severe time pressure, respectively. Their results showed that participants' performances on the three recall tasks uniformly improved as the speed decreased and they scored best at the 90 wpm condition. However, in their second experiment with both the younger and the older adults, the best comprehension outcomes were observed under mild time pressure (Meyer, Talbot, and Florencio, 1999). Overall, most of these above studies support that a moderate pressure enhances reading rates and comprehension.

The Effects of Timed Reading in an L2 Context

As previously mentioned, reading fluency has not received as much attention in the L2 as in the L1 context (Grabe, 2004, 2009; Nation, 2005), and even less in foreign language (FL) contexts. In the English as a Second Language context, some studies have integrated reading fluency training as part of the English proficiency curriculum (Cushing-Weigle and Jensen, 1996; Macalister, 2008, 2010). Cushing-Weigle and Jensen (1996) looked at reading rate improvement in university ESL classes through various activities: paced and timed reading, instruction in eye movement, as well as reading strategies. In this study, first year students gained an average of 110 wpm over a 10-week course without decreasing comprehension. In later studies (conducted in Spring and Fall 1994), Cushing-Weigle and Jensen (1996) found that student reading rates improved about 40 wpm, but their comprehension scores declined. The authors understood the decreased comprehension scores as being due to more difficult academic texts used in the pretest and posttest passages rather than the easier passages practiced in class.

Two recent studies by Macalister (2008, 2010) also involved timed reading activities integrated into an English proficiency program. In his 2008 study, Macalister looked at changes in reading rates between the start (pretest) and finish (posttest) of a rate-building activity. Reading rates were also measured at the end of the language course (delayed posttest) to see whether students could maintain the reading rates they had gained. Speed readings were the third part of the daily fluency program done in the manner discussed by Millet (2008), beginning with five-minute writing, followed by speaking based on the writing, and then reading. The reading speeds were then recorded in a reading chart. Twenty-nine students read a total of seventeen 400-word texts chosen from *New Zealand Speed Readings for ESL Learners* (Millett, 2005), which was written within the 2000 highest frequency words plus the Academic Word List (Coxhead, 2000). Students' reading speed improvement (practice effect) was calculated by the difference of the average speed of the first three passages (1-3 as a pretest) and the final three passages (15-17 as a posttest); reading speed maintenance (delayed posttest) was calculated by the difference between the final three readings (15-17) and another three that had not been studied before (18-20). The findings were that 25 out of 29 students increased by 5 to 143 wpm after reading 17 texts and only four students did not improve in their reading speed. Fourteen students showed further gains at the delayed posttest.

In Macalister's 2010 study observing 36 students enrolled in the English proficiency program, 24 received reading fluency training (see Millet, 2008, for details of the daily fluency program) but 12 did not. The same practice texts used in his 2008 study were reused, but three authentic texts chosen from George Orwell's essays were added to test whether the improved reading rate could

be transferred to unfamiliar texts. The results show that more students (16 out of 24) who received speed reading treatment were more likely to read an unpractised authentic text more quickly than those who had not received such an intervention (2 out of 12). On the whole, Macalister's studies consistently show that most students did improve their reading rate, and that many students continued to improve their reading rates even after the intervention. Studies conducted in ESL contexts have found that timed reading activities can be integrated into the normal language proficiency curricula and that the effects are promising. However, in these two studies, the comprehension level was not assessed.

Some timed reading activities have also been carried out in the English as a Foreign Language (EFL) contexts. A recent study conducted by Chung and Nation (2006) with 49 Korean university students showed that nearly all students made some advances after reading 23 texts over a period of nine weeks. The texts were chosen from *Speed Reading* (Quinn and Nation, 1974) and each text contained 550 words with approximately 12,650 words read. The frequency of reading fluency practice each week was unclear and the amount of reading practice varied from two to four texts. After nine weeks, students' reading rates improved 50%, from 141 wpm to 214 wpm. However, this study did not include a control group, so it is unknown how much improvement students who did not receive intervention would have made. In addition, reading comprehension was not reported in the study, and some reading was done outside the class, which may have affected reliability. To fill the gaps in Chung and Nation's study, another study was carried out by Chang (2010) with 84 Taiwanese college students, divided into an experimental and a control group. The timed reading activity was included as a part of their English assessment course. The reading texts were chosen from *Reading for Speed and Fluency*, Book 2 by Nation and Malarcher (2007), with each text containing approximately 300 words. The reading fluency practice was done once a week. Each week, the students in the experimental group spent 15 minutes reading three passages for 13 weeks and a total of 39 texts (or 11,700 words) were read. Results show that students doing the timed reading activity increased their reading speed on average by 29 wpm (25%), from 118 wpm to 147 wpm; however, the control group increased only 7 wpm (5%), from 124 wpm to 131 wpm. The differences between the two time periods for the experimental group were statistically significant but not so for the control group. Despite the improvement in reading rates, comprehension levels improved only marginally for both groups.

To briefly sum up the research on developing reading fluency in an L2 context: despite reading rate gains in the studies by Cushing-Weigle and Jensen (1996) and Chang (2010), readers did not show significantly better comprehension. One of the reasons could be that the readers' rates had still not reached the optimal level that could promote comprehension. Another possible reason, discussed later, may relate to how comprehension is measured. Other studies did not provide statistical data on comprehension outcomes.

A common feature of the above studies in ESL or EFL contexts (with the exception of Cushing-Weigle and Jensen, 1996, whose students read very long academic texts) is that the amount of text read was limited, and the regularity of reading fluency practice in each week varied across the studies, making the results difficult to compare. This study attempts therefore to extend Chang's (2010) study by increasing the reading amount up to 52 passages (a total of 16,800 words), four in each week for a total of 13 weeks. This is in order to investigate the degree to

which students' reading rates and comprehension would improve compared to a group who read 26 passages repeatedly with the assistance of audio recording of the texts. The level of retention of reading rates and students' perceptions of the intervention were also examined. This study sought answers to the following three research questions:

RQ1. To what degree did students who received a timed reading intervention or repeated reading intervention improve their reading rate? Could the rate gained from the intervention be retained for up to six weeks without any further instructional practice?

RQ2. To what degree did students who received a timed reading intervention or repeated reading intervention improve their comprehension?

RQ3. How did students in both groups perceive their respective intervention?

Method

Participants

Thirty-five part-time adult students (22 females, 13 males), aged between 22 and 48, participated in this study. Participants were from two in-tact EFL classes at a college in Taipei, Taiwan, instructed by the researcher, with 18 students being enrolled in her first class and 17 in her second class; both classes met once a week for 60 minutes. Students were from various majors and their purpose in learning English was to improve their general English competence, mostly for professional promotion purposes. Before this research was undertaken, none had ever taken any official standardized English tests, though some had taken a simulated test of TOEIC on campus. TOEIC scores, which were voluntarily reported, had a range between 450–550 out of 990. Participants commented that their major problem was reading lengthy texts, which they could not finish in time. These scores show that their overall language proficiency was low, which was further proved by the results of vocabulary levels tests (described below). The mean raw scores for the 1000, 2000 and 3000 levels were 28.31/30, 22.17/30, and 15.94/30 for the TR group and 28.69/30, 21.96/30, 14.72/30 for the RR group, respectively. These results indicate that the participants should have been able to read texts written within the 2000 high frequency words; other levels of vocabulary were not tested. Moreover, the participants were adults and they were thought to have some vocabulary knowledge from their own fields.

Study Materials

The 1st, 2nd, and 3rd 1000 Vocabulary Levels Tests[1] (Schmitt, Schmitt, and Clapham, 2001) were administered to the participants in order to select appropriate reading materials (results briefly reported above). *Reading for Speed and Fluency*, Books 2 and 3, by Nation and Malarcher (2007) were adopted for the reading fluency activity. Book 2 is written at the 1000 word level, Book 3 at the 1500 word level. The content at each level involves eight familiar topics and each topic has five texts. In Book 2 for example, the topics include art, money, communication, health, nature, people, space, and transportation. Each text is of approximately equal length—300 words in

[1] The 1st 1000 word level was developed by Professor Paul Nation, Victoria University, Wellington, New Zealand.

Book 2 and 400 words in Book 3—followed by five or eight multiple-choice questions, respectively. Each question has three options and most of the questions focus on global understanding (e.g., the topic of the reading, or the purpose of the passage) rather than detailed information (e.g., specific dates or places). The books are written using familiar high frequency vocabulary to avoid the slowing effect of unfamiliar words. As to the syntactical complexity, although there is no formal grammar control, complicated sentences and complex noun groups are avoided (2011, personal communication with the first author). Due to the different treatments, the TR group read three passages in class and one outside the class, whereas the RR group read one passage in class, and another outside the class. Both groups had to time and record the rates they achieved in and out of class, in addition to answering the comprehension questions.

The Treatment

The timed reading (TR) group. Prior to the pretest, specific instructions for doing the activity were given to the students. They were instructed not to read until they heard the command—Go! That meant that everyone started at the same time. When they finished, they looked towards the student assistant, who was holding a large-sized, spiral bound notebook of times, each page presenting the next five second interval (e.g., page 1: 0:00; page 2: 0:05; page 3: 0:10, etc.). It should be stressed that reading times were recorded on these five-second interval approximations. Then, they answered the comprehension questions without referring back to the passage they had just read. The researcher oversaw each reading activity. Each passage took about five minutes to read, including completing the comprehension questions. When the three passages were completed, students turned to the back of the book to check answers and ask questions (if any). Finally, the times for each passage were recorded on a time chart attached to the end of the book. Students were also asked to read passages and time their own speed outside class (using their own cellular phone in this case). A total of 52 passages were read, 39 in class and 13 outside. Although students in this group just timed the time they spent on reading each passage instead of setting a specific amount of time to read, they felt some time pressure from their peers because everyone was doing their best to finish reading and also from themselves because they had all the time records from reading previous passages.

The repeated reading (RR) group. This group read one of the same three passages as the TR group but without time pressure and were allotted 20 minutes to read the passage as much as five times or more if they could (one silent reading with modelling, one silent reading without modelling, two oral readings, and one paired reading). They were also provided MP3 audio recordings of the texts, which were downloadable from the publisher. Students first read while listening to the recording of the text, then read silently again without modelling. Afterwards, they answered the comprehension questions, checked the answers, did oral reading on their own a minimum of two times, and finally, they were paired to read to each other once. The researcher walked around the room and provided any assistance students needed, such as with pronunciation or meaning of the texts. Unlike the TR group, the students in the RR group used their own cellular phones to record the time they spent on each reading and also recorded these times on a piece of paper to compare whether their reading became more fluent after each practice. After the paired reading, a student volunteer would read the passage for the whole class, and the researcher would provide feedback on student's oral renderings. The students in this group were required to practice another passage at home. Oral rendition for the passages taken home were sent to students via email, or some students saved them onto their memory sticks

before leaving the class. To ensure they did the practice, the students had to record their renderings and submitted them via email or other channels before the next meeting. A total of 26 passages were read, 13 in class and 13 outside. The treatment procedure for the two groups is shown below:

Timed reading	Repeated reading
Time and Read passage 1	Read and listen to the passage (once)
↓	↓
Answer comprehension questions	Silent reading (once)
↓	↓
Time and Read passage 2	Answering comprehension questions
↓	↓
Answer comprehension questions	Individual oral reading practice (twice)
↓	↓
Time and Read passage 3	Paired oral reading (once)
↓	↓
Answer comprehension questions	Volunteer reading
↓	↓
Check the answers to all the comprehension questions	Giving feedback

Fig. 1 Testing procedures for timed reading and repeated reading protocols

Tests of Reading Rates and Comprehension

To assess the effect of these activities on students' reading rates and comprehension, three reading speed tests were administered to the participants: a pre-, post-, and delayed posttest. Each test contained 30 comprehension questions. The passages for testing reading rates and comprehension were taken from *New Zealand Speed Readings for ESL Learners* (described below) instead of those from *Reading for Speed and Fluency*, which students used in weekly practices. One reason for this course of action was to avoid the possibility (though the probability was low) that some students might read the passages from their practice book beforehand. Another reason for using the test passages from *New Zealand Speed Readings for ESL Learners* was that these topics were unfamiliar to the participants. For example, many of the students were unaware that the seasons in the southern hemisphere are opposite those in the northern hemisphere, so that snow is unlikely during Christmas in New Zealand; they did not know that the Kiwi and Tuatara are a New Zealand bird and reptile, respectively. Accordingly, their comprehension score would not be greatly affected by their background knowledge. The final reason was that there are many similarities between these two series of books despite the different topics: both *Reading for Speed and Fluency* and *New Zealand Speed Readings for ESL Learners* are particularly written for developing reading fluency; therefore, the length, vocabulary, and syntax are controlled and comparable to each other.

The pretest and posttest. All the participants received a pretest at Week 2 and a posttest at Week 16. Reading speed and comprehension were assessed based on three passages (*Katherine Mansfield*, *Kiwi,* and *The Weather*) taken from N*ew Zealand Speed Readings for ESL Learners*,

Book 1 and 2, written by Millett (2005). Book 1 is written within the 2000 word list; Book 2 is the same plus an Academic Word List (Coxhead, 2000). According to Millett, the range of grammar has been restricted by limiting the number of relative clauses, passives, and difficult time references. Each passage contained 400 words. A reading comprehension test with 10 questions followed each text. The same reading speed test was repeated at the end of the course. When the students took the pretest, they were unaware that the same test with the same reading texts would be given again, and most importantly, none of the test papers were retained by the students.

The delayed posttest. A delayed posttest was given to the participants six weeks after the end of the intervention, the six-week period coinciding with the participants' winter vacation and the New Year holiday. Three different 400-word passages were again chosen from *New Zealand Speed Readings for ESL Learners*. The original topics were changed due to there being only six weeks between the posttest to the delayed posttest; therefore, three similar topics were chosen to be tested. *The Weather* was replaced by *Christmas in New Zealand*, *Katherine Mansfield* with *Sir Edmund Hillary*, and *Kiwi* with *Tuatara*. Except *The Weather*, all were chosen from Book 1. The vocabulary used in these six passages and syntactical structures calculated in T-units[2] are presented in Table 1. Overall, the six passages are quite comparable in terms of vocabulary and syntax; however, sentences in the passage *The Weather* are longer, with an average 19.95 words, whereas the vocabulary used in *Sir Edmund Hillary* seems to be more difficult because it contained only 81.38% of the first 1000 words and many not on the list.

Table 1. *Vocabulary and syntactic complexity in the pre-, post-, and delayed post-test passages*

Pre-/post- tests	1st 1000 (%)	2nd 1000 (%)	Not on list (%)	Total words	Total T-units	A/W in T-unit*
Katherine	86.96	2.81	10.23	391	25	15.96
Kiwi	84.54	7.48	7.98	401	24	16.63
Weather	83.92	7.54	5.78	398	20	19.95
Delayed post-test						
Edmund	81.38	5.61	12.76	392	26	15.35
Tuatara	87.50	6.00	6.25	400	23	17.35
Christmas in NZ	83.17	13.32	3.52	398	23	17.35

Note. * = average words in each T-unit.

Final written report. As in some of their other courses, participants were asked to write a 300-word anonymous report on their perceptions of the course, focusing on three areas: the usefulness of the activities, the perceived effectiveness of the intervention, and their suggestions to improve the practice. This data is used to explain the quantitative reading rates and comprehension data.

[2] The vocabulary was analyzed with the Range program, with the GSL/AWL List downloaded from Professor Paul Nation's website: http://www.victoria.ac.nz/lals/staff/paul-nation.aspx. T-units measure the overall syntactic complexity and refers to a sentence including all subordinate clauses. The tool for T-unit analysis is from Professor Tom Cobb's website, http://www.lextutor.ca/tools/ex_sentences/.

Procedure

In the first week, all participants were first instructed how to take a reading speed test, followed by a simulated practice test. Week 2, the pretest was administered to all the participants. Weeks 3 to 15, the two groups completed one 20-minute reading practice each week. Week 16, a posttest was given to all participants, and they completed a written report when they finished. Six weeks after the intervention, a delayed posttest was administered. When taking the tests, every student began to read at the same time. When they finished reading a passage, they looked up at the student assistant, who was holding a large-sized, spiral bound notebook of times, each page presenting the next five second interval (e.g., page 1: 0:00; page 2: 0:05; page 3: 0:10, etc.). Participants recorded the time they spent, and then turned to the next page to complete the comprehension questions. While taking the tests, only one passage was given at a time. This same procedure was repeated three times for both groups.

Scoring and Data Analysis

The three reading speeds obtained from reading the three test passages were averaged and the quotient was the student's reading rate calculated in words per minute. Comprehension was assessed based on 30 reading comprehension questions. Answering one item correctly gained one point, with a maximum of 30 points. SPSS 18 for Windows was employed for quantitative statistical analysis. The reading rate in the pretest was not comparable between the two groups (see Table 2), with the timed reading group rate at 102 wpm, but only 83 wpm for the repeated reading group. The difference in reading rate was 19 words in the pretest. A *t*-test shows that the difference in reading rate of the two groups is statistically significant, $t(33) = 2.94$, $p < .01$ (with the confidence level set at .90 due to the sample size being smaller than 30). ANCOVA was, therefore, assumed appropriate for the analysis. The rationale for using ANCOVA is when a study uses in-tact classes instead of randomly assigning students to different experimental groups, the groups may differ on a number of attributes (e.g., reading speed in this study). ANCOVA thus controls for pre-existing differences between groups, so the results will be less affected by any differences prior to treatment. Preliminary checks were conducted to ensure there was no violation of the assumptions of normality, linearity, homogeneity of variances, or homogeneity of regression slopes of the covariate. It was found that the difference in pretest reading rates between the two groups met the ANCOVA assumptions. ANCOVA was therefore performed to compare the differences in students' immediate posttest and delayed posttest scores between groups. However, the pretest scores on reading comprehension were 16 out of 30 for both groups (refer to Table 5); they only differed marginally in standard deviations (3.17 for the timed reading group and 4.92 for the repeated reading group). Because the comprehension scores were comparable, repeated measures of GLM (general linear model) were used to compare the comprehension scores of the two reading groups. The 35 students were instructed to write reports that centred on three aspects: perceived benefits, difficulties experienced, and suggestions for future practice. The reports were analyzed manually and frequency tallied for each category, otherwise the data was qualitative and used to help explain the quantitative data.

Results

Reading Speed

The first part of this section focuses on student reading rate gain from the intervention and the retention of this rate. The results provide answers to the first research question: *To what degree did students who received a timed reading intervention or repeated reading intervention improve their reading rate? Could the rate gained from the intervention be retained up to six weeks without any practice?*

Table 2 presents the descriptive statistics of the reading rates measured at three different times. As shown, before the intervention the TR group read at an average of 102 wmp and only 83 wpm for the RR group. The gap between the two groups is about 19 wpm; the TR group read faster than the RR group. After the intervention, both groups made some progress. The TR group improved 50 wpm or 49%, moving from 102 wpm to 152 wpm, and the RR group 23 wpm (27%) advancing from 83 to 106 wpm. The TR group made more progress than the RR group. However, at the delayed posttest, which was six weeks after the end of the intervention, the reading rates of the groups fell back 5 (TR) and 4 (RR) words, or 10% (5/50) and 17% (4/23), respectively.

Table 2. *Means, standard deviations, and ranges of reading speed for the two reading groups at three different times*

RT / Times	Timed Reading (n = 18)			Repeated Reading (n = 17)		
	Mean	*(SD)*	Min-Max	Mean	*(SD)*	Min-Max
1 (pre-test)	102	(21)	74-140	83	(15)	50-110
2 (post-test)	152	(26)	106-196	106	(16)	84-151
3 (delayed post-test)	147	(23)	117-190	102	(15)	87-148

Note. Figures have been reported in words per minute.

Table 3 sets out the changes in reading rates between Time 1 (pre-intervention) and Time 2 (post-intervention), Time 2 and Time 3 (six weeks after the post-intervention), and Time 1 to Time 3. From Time 1 to Time 2, nearly every student, except one in the RR group, improved their reading rate. The range of rate change was larger for the TR group (between +102 to +9 wpm) and smaller for the RR group (between +46 to -12). In the TR group six weeks after the intervention, reading rates of 10 students fell back and 8 students continued to improve. As shown, the changes are between +84 and -80. In the RR group, the reading rates of 15 out of 17 students regressed: one student continued to improve and one remained the same; however, the range of rate change was much smaller compared to the TR group, from +4 to -17. Overall, if we look at the change from Time 1 to Time 3, 15 out of 18 students in the TR group retained their improvement, 2 regressed, and 1 remained unchanged. In the RR group, only one student regressed, while 16 retained the rate gained.

Table 3. *Number of students and ranges of rate change at three different times*

Times / RT	From Time 1 to Time 2 (wpm)			From Time 2 to Time 3 (wpm)			From Time 1 to Time 3 (wpm)		
	+	-	0	+	-	0	+	-	0
TR (n = 18)	18	0	0	8	10	0	15	2	1
Ranges (max—min)	+102 to + 9			+84 to -80			+102 to -20		
RR (*n* = 17)	16	1	0	1	15	1	16	1	0
Ranges (max–min)	+46 to -12			+4 to -17			+44 to -15		

Note. RT = reading treatment; TR = timed reading; RR = repeated reading; + = progress; - = regress; 0 = no change

A summary of ANCOVA for reading speed for the variables of Time (two levels: posttest and delayed posttest), RT (reading treatment, two levels: timed reading and repeated reading) and PS (pretest score, the covariate) is set out in Table 4. The results show that both groups improved their reading rates to varying degrees. To further understand the effect size of the two reading fluency practices on EFL learners, ANCOVA (analysis of covariate) was performed because their pretest scores showed a statistically significant difference (see the section on data analysis). The results show that for the within-subjects effect, no main effect was found for Time (1, 32) = 2.84, $p = .10$. Neither the interaction effect of Time and PS nor the interaction effect of Time and RT were found to be significant. As shown in Table 2, the reading rate for the TR group was 152 wpm and 147 wpm in the posttest and delayed posttest, and 106 wpm and 102 wpm for the RR group. Participant reading rates from posttest and delayed posttest varied only four or five words. However, for the between-subjects effect, the main effect of PS (pretest score) was detected to be significant: $F(1, 32) = 4.01$, $p = .05$, (just reaching the bench mark for being significant), and the effect size was moderate ($\eta^2 = .11$), meaning that pretest score had a moderate effect on the outcomes. The main effect of RT (Reading Treatment: timed reading and repeated reading), was also significant, $F(1, 32) = 91.25$, $p < .0005$, and the effect size was very large ($\eta^2 = .74$). The significant main effect of RT implies that the 13-week intervention made a statistically significant difference in reading rates between the TR group and the RR group. Therefore, the answer to the first research question was that the reading rate for the students receiving TR activities improved statistically significantly more than the RR group. Answering the first supplementary question, both groups were able to retain their reading rate gain up to six weeks and the attrition in reading rate was only marginal, and that the within-subjects effect for Time (from posttest to delayed posttest) is insignificant (see Table 4).

Table 4. *Summary of ANCOVA for reading speed for the variables of time, pretest score (PS) and reading treatment (RT)*

Source	*SS*	*df*	*MS*	*F*	*Sig.*	η^2
Within-subjects effect						
Time	1534.14	1	1534.14	2.84	0.10	0.08
Time* PS	1896.59	1	1896.59	3.51	0.07	0.10
Time * RT	284.95	1	284.95	0.53	0.47	0.02
Error (Time)	17267.96	32	539.62			
Between-subjects effect						
PS	1036.56	1	1036.56	4.01	0.05	0.11
RT	23598.31	1	23598.31	91.25	0.00	0.74
Error	8275.79	32	258.62			

Note. PS = Pretest Score; RT = Reading Treatment

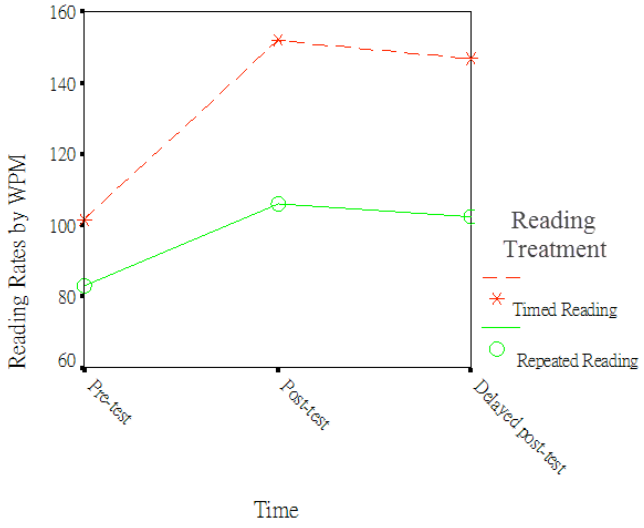

Fig. 2 Reading speed at three different times by different reading treatments

Reading Comprehension

The second part of this section looks at student reading comprehension. The results are meant to address the second research question: *To what degree did students who received a timed reading intervention or repeated reading intervention improve their comprehension?*

The descriptive statistics of student comprehension scores are set out in Table 5. As shown, the two reading groups scored comparably at Time 1 (pretest); both groups obtained a mean score of 16 out of 30 and the comprehension mean rate was about 53%. However, the range of scores for the RR group tended to be larger than that of the TR group, as can be seen from the standard

deviations (4.92 vs. 3.17). At Time 2 (posttest), the TR group improved 4 points or approximately 14%, and 2 points (7%) for the RR group. Six weeks after the end of the intervention (delayed posttest), both groups fell back, 1 point for the TR group and 2 points for the RR groups compared to their posttest scores. If the comprehension scores are further compared with those of the pretest, we find that the TR group improved 3 points (10%), but the RR group remained the same.

Table 5. *Means, standard deviations, and ranges of student comprehension scores measured at three different times*

	Timed Reading (n = 18)			Repeated Reading (n = 17)		
Times	Mean	*(SD)*	Range	Mean	*(SD)*	Range
1 (pre-test)	16	(3.17)	12—24	16	(4.92)	8—25
2 (post-test)	20	(2.62)	15—27	18	(4.71)	10—27
3 (delayed post-test)	19	(3.36)	13—24	16	(5.17)	8—25

Note. Maximum score is 30; RT = Reading Treatment

Repeated measures of GLM (general linear model) were performed to assess the impact of two different reading treatments (RT: timed reading and repeated reading) on participants' reading comprehension scores across three time periods (Time 1: pretest, Time 2: posttest, and Time 3: delayed posttest). The summary of repeated measures of GLM is presented in Table 6. For the within-subjects effect, the interaction effect between Time and RT (reading treatment) was not significant: $F(2, 66) = 2.96$, $p = .06$; however, there was a statistically significant main effect for Time: $F(2, 66) = 19.90$, $p < .0005$, and the effect size was large ($\eta^2 = .38$). This suggests that there was a significant change in comprehension scores across the three different time periods. As can be seen in Table 5, the TR group scored 16 (53%), 20 (67%), and 19 (63%) out of 30, the RR group 16(53%), 18 (60%), and 16(53%), at the pretest, posttest, and delayed posttest respectively.

The between-subjects effect shows no main effect for varying reading treatment (RT) on reading comprehension: $F(1, 33) = 1.24$, $p = .27$, and the effect size ($\eta^2 = .04$) is small. The answer to the second research question is that both groups improved reading comprehension scores in the immediate posttest with no significant interaction between time and different reading intervention. On the whole, the TR group homogenously made more improvement than the RR group at the immediate posttest (14% versus 7%) and also retained a higher comprehension level than the RR group after six weeks without further instructional practice (10% versus 0%).

Table 6. *Summary of repeated measures of GLM for reading comprehension for the variables of time and reading treatment (RT)*

Source	*SS*	*df*	*MS*	*F*	*Sig.*	η^2
Within-subjects effect						
Time	198.69	2	99.35	19.90	0.00	0.38
Time * RT	29.55	2	14.77	2.96	0.06	0.08
Error (Time)	329.48	66	4.99			
Between-subjects effect						
RT	49.73	1	49.73	1.24	0.27	0.04
Error	1320.33	33	40.01			

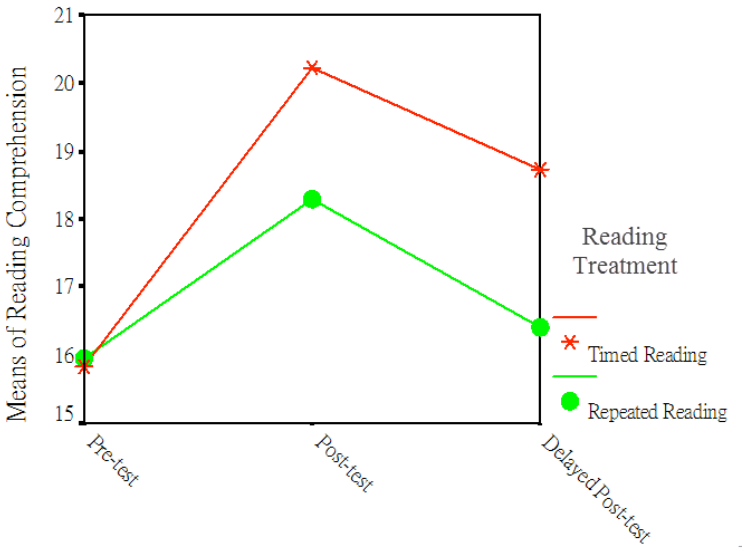

Fig. 3 Reading comprehension scores at three different times by different reading treatments

Student Perceptions

This section reports on student feedback with regard to the intervention. Their comments provide answers to the third research question and also help explain the quantitative data. Student perceptions revolved around three themes, so their comments were grouped into three categories with frequency and percentage calculated.

Perceived benefits of the intervention. Both groups reported on their perception of benefits gained from the intervention. The RR group reported more positive comments than the TR group. As shown below, 10 out 17 students expressed that their oral reading became more fluent than before, and more than half the students perceived that their pronunciation improved. While reading, they had to read every word, so 7 out of 17 students thought that oral reading made them concentrate better, 4 out of 17 students expressed that they could remember nearly every word

they read; however, it was rather surprising that none of the students reported that they became a faster reader. In the TR group, 15 out of 18 students reported that their reading speed became faster. While reading, they perceived they became more accurate and efficient in finding the main ideas and key words.

TR group (n = 18)

- Improve reading speed (15, 83%)
- Become quick in searching for main ideas or key points (12, 67%)
- Timing made me go faster and concentrate better (11, 61%)

RR group (n = 17)

- Become more fluent in reading English orally (10, 59%)
- Improve pronunciation (9, 53%)
- Made me concentrate better (7, 41%)
- Remember nearly every word after reading several times (4, 24%
- Become more confident in orally reading English (3, 18%)

Perceived difficulties of the intervention. Both groups reported difficulties experienced while reading. In the TR group, half the students complained that reading three passages at one time was too demanding, and that they could concentrate on the first two but became slower when reading the third passage. Eight out of 18 students also reflected that even though they could read faster than usual, they forgot nearly everything after they completed the comprehension questions. Because all the participants were part-time students, half also reported that they could not fully concentrate when they were tired. Timed reading was also reported to be a bit anxiety-provoking for some students, and this was particularly so at the beginning stage of the intervention when they were not used to it.

Different difficulties were reflected by the RR group. Approximately one third of the students reported being tired or having a dry throat after oral reading. When encountering words that were difficult to pronounce, in particular proper nouns, they felt frustrated. Even though these students were not required to read in front of the whole class, a few students reported feeling ashamed when they heard the volunteer students reading in front of the class or overheard other students read faster and more fluently than themselves.

TR group (n = 18)

- Could not concentrate when tired (9, 50%)
- Not being able to fully concentrate after reading two passages (9, 50%)
- Forgetting most of the content after reading (8, 44%)
- Time pressure made me feel anxious, particularly in the beginning (5, 28%)

RR group (n = 17)

- Feeling tired after reading four or five times (6, 35%)
- Feeling frustrated when encountering words difficult to pronounce (5, 29%)
- Having a dry throat after oral reading (5, 29%)
- Feeling ashamed if overhear other students read more fluently than oneself (4, 24%).

Suggestions offered to better the practice. Student suggestions in the TR group seemed to be

divided, especially in terms of the quantity they should read in class. Half the students thought that reading two passages was enough at one time. However, three students had an opposite view in this regard and considered reading three passages a reasonable amount, also suggesting that more reading be done outside class. Another comment was to do the timed reading more often to produce better effects. Seven students in the RR group suggested allowing more time to practice, stating that 20 minutes a time was not sufficient to read a passage fluently. In addition, a few requested having teacher feedback on their individual oral rendering.

TR group (n = 18)

- Reading 3 passages at one time was too demanding; 2 is sufficient (9, 50%)
- Training should be done more than once a week to kick the slow reading habit (3, 17%)
- Students should read 3-4 passages outside the class. One is not sufficient (3, 17%)

RR group (n = 17)

- The teacher should allow students more time to practice (7, 41%)
- Every student should have a chance to read in front of the teacher, to get pronunciation feedback (4, 24%)

Discussion

The effects of TR and RR on student reading rates, comprehension, and perceptions of the intervention are summarized as below:

- The TR group increased an average of 50 wpm immediately after reading 52 passages, which was about 49% faster than pre-intervention, whereas the RR group improved 23 wpm, or about 27% faster than pre-intervention. Both groups showed a significant improvement in reading rates after the intervention, but the TR group increased significantly more than the RR group. Six weeks after the intervention, the rate gain fell back slightly 5 wpm (TR) and 4 (RR) wpm, though the retention rates were high.
- The reading comprehension levels did not differ significantly between groups after the different reading interventions. When the comprehension scores were compared within groups, it was found that the TR group improved 14% at immediate posttest and retained 10% at the delayed posttest compared to the pretest. The comprehension scores of the RR group, however, did not significantly change at the three different times. The RR group increased only 7% at the posttest and retained 0% at the delayed posttest.
- Both groups made positive comments regarding the intervention. Many students in the TR group perceived they read faster than before, became quick at searching for main ideas and even concentrated better, whereas the students in the RR group reported that they orally read more fluently than before and had improved their pronunciation. However, none reported that they read faster.

The Effects of TR and RR on Reading Rates

The effect of TR and RR in improving reading rates has been confirmed in this study; however, the overall results show the TR method seems to be more effective than RR. The group receiving

TR treatment gained an average 50 wpm (or 49%, from 102 wpm to 152 wpm) on their mean score at the immediate posttest and still retained a rate of 147 wpm six weeks after. If the present TR rate gained is compared with those in Chang (2010) and Macalister (2010), the evidence supports the position that the more one reads, the higher rate one achieves. However, this is not so when we compare the study by Chung and Nation (2006) with this study. The rate gain in the two studies appear comparable, 49% and 50%, respectively, but the students in the present study seem to have read much more (52 passages/16,800 words versus 23 passages/12,650 words) to achieve a similar rate gain. One reason for this is that some of the reading speed data in the Chung and Nation study was collected outside the class, whereas all data in the present study were measured in the classroom, and the passages used for measurement were not those practiced weekly. Another reason is the testing procedure of this study, which may have substantially reduced the reading rate. According to the written reports, many students reported that reading three passages in a row was very tiring, and their concentration decreased after reading two passages. Despite there being many differences between these studies, the timed reading activities had some effect on improving reading rates.

Regarding the effects of the RR method, the use of RR to improve reading fluency in an L2 context has rarely been reported. RR has also been practiced with variations, such as listening while reading, with modeling, etc., which makes it difficult to compare results. Comparing the present RR method with the study by Taguchi and Gorsuch (2004), it is noteworthy that the starting levels of the students in the two studies were similar (83 vs. 78 wpm), and the mean scores of the reading rates at the posttest were nearly the same (102 wpm), despite the reading materials, treatment procedure, and reading quantity being different. In terms of reading quantity, the students in the present study read only 26 passages (7,800 words), which was much less than those of Taguchi and Gorsuch's (57 pages, 16,963 words), though the participants in both studies achieved comparable reading rates. The main reason for equal gain but less input quantity in the present study could be due to the different treatment procedures as, apart from silent reading and listening to oral rendition of passages used in both studies, oral reading, paired reading and oral reading feedback were added to the current treatment procedure. The extra practice activities may have improved the effects of RR practice in the EFL context.

Comparing the gains in reading rates between TR and RR, the increased rate of the RR group was approximately half that of the TR, with the RR group reading only half the amount of the TR group. Is this a coincidence or do factors such as reading amount and others play a substantial role in the degree of rate increase? According to previous research on the effect of extensive reading on reading rates (e.g., Iwahori, 2008), it is certain that reading amount was essential to the outcome. Other factors should be counted because the RR group received more than just silent and oral re-reading; they were assisted with recorded texts, pronunciation correction, miscue feedback, and peer interaction. Without such assistance, the improvement may have been lower. Concerning this, Rasinski, Homan, and Biggs (2009) note: "Practice without feedback may result in students reinforcing their errors or practicing to achieve the wrong goal" (p. 195). Another phenomenon that should be mentioned is that the RR method was not considered by the students to be a method of improving silent reading fluency but rather a method of improving pronunciation, while none reflected that they read faster, many noted that they became confident in oral reading and in their pronunciation. However, the students in the TR group could easily perceive the intervention was to improve their reading rate and reading

skills, so 67% of the students wrote that they became quicker in searching for main ideas and key words. This difference is an important point since students' perception of the task goal could have a strong effect on what they focused on during practice.

Despite the RR group having lower reading rate gains than those of the TR group, the RR group might have benefited from linguistic gains. For example, a few students in the RR group stated that they could remember nearly every word after reading so many times, whereas 44% of the TR students reported that they forgot nearly all they read. The above differences between the TR and RR method suggest that the two approaches are not comparable in many ways. RR seems to focus more on accurate and automatic word decoding and learning how to chunk texts so as to read fluently out loud, while TR focuses on the training of reading skills, such as skimming and rauding, as many students reflected they improved their reading speed and became efficient in searching for main ideas or specific points. Also, TR activities focus on reading for general comprehension, the most common reading purpose for fluent readers (Carver, 1990; Grabe, 2009). The students' written reports also support the position that TR promotes mindfulness (Walczyl, 1999), an essential element during the reading process. Finally, while the reading rate of the TR group greatly increased, it is still unknown whether the increase was due to exposure quantity to L2 print, or students' lower-level processing being improved, or students attempting to apply L1 reading skills to reading in L2, or simply due to the treatment. It is likely that all of these factors contribute in some way to the improvement of reading rates. More research is called for to determine this.

The Effect of TR and RR on Reading Comprehension

Studies on L2 reading fluency usually focus more on reading rates than comprehension; therefore, comprehension levels are rarely reported (Taguchi et al., 2006). For example, we do not know how much Chung and Nation's (2006) students understood their texts, and the same can be said for Macalister's study (2010) even though he reported that after the speed reading treatment, his students were more likely to read authentic texts faster than before. However, those studies that include comprehension assessments show that the L2 student comprehension levels were between 55% and 65% [e.g., 6.59 (pre)/5.58 (post) out of 10 in Cushing-Weigle and Jensen, 8.13 (pre)/8.76 (post) out of 13 in Chang (2010)]. Carver (1990) in his review of reading research notes that when reading comprehension is assessed using a multiple-choice format, a score of 70% to 75% is the norm for L1 learners. In the present study, the comprehension results (53%, 67%, and 63% at three times) are not only similar to other results in L2 research context but also only 10% less than expected in an L1 reading context. As well, Carver (1990) also suggests that when reading for general comprehension about 50% is the performance outcome. By this standard, the comprehension results of the present study could be said to be acceptable; however, they are less satisfactory according to Nation (2005), who suggests that 70% of comprehension is the norm. There are many reasons that could account for the comprehension levels being not high. One could be that students were not able to automatically process the lower-level components (e.g., word recognition), so they could not completely direct their attention to comprehending the content. Another might be that a 10- or 13-week intervention is not sufficient to turn a slow reader into a fluent one. Longer intervention and regular practice included in the normal curriculum should be considered (Millett, 2008). The other is that comprehension levels could also depend on how and what was assessed through the

comprehension measure. All of these conjectures are beyond the scope of this research.

The reading comprehension levels between silent reading and oral reading can be different. In this study, the comprehension scores through repeated oral reading were 16 (pre)/18 (post)/16 (delayed), an improvement of two points at the immediate posttest, and a fall back to the starting point at the delayed posttest. This means that student comprehension did not improve although their reading rates increased a little. However, to say the comprehension level is unsatisfactory is somewhat unfair to the RR group because they did only half the comprehension practice that the TR group did, and a lot of their time was spent practicing oral reading fluency, focusing on accurate pronunciation and segmenting the text. Therefore, the difference in treatment procedure may have led to a far better outcome for the TR group against the RR group in the present study.

In an L1 context, there are many studies showing that RR used in combination with assisted oral reading improves young learners' reading fluency and comprehension. However, the students in this study did not see that oral rereading was an approach to improve reading rates because none reported they perceived their reading rate or comprehension was enhanced. Is it that some readers simply 'bark' at the print without understanding the content? Perhaps this is one of the reasons that some scholars strongly object to oral reading (see Gibson, 2008). Apart from some observable disadvantages, e.g., anxiety provoking, or feeling dull and bored listening to those who read awkwardly and slowly, reading aloud must focus on every word, which may slow reading speed and further impede reading comprehension (Eskey & Grabe, 1988; Grabe & Stoller, 2002).

Conclusion

This study investigates the effects of integrating TR and RR into the normal reading curricula of adult EFL learners. As expected, nearly every student regardless of reading practice type showed slight improvement in reading rates but less so in reading comprehension. The study also confirmed that increased exposure to print increased reading rates. Above all, in neither intervention (TR or RR) did reading comprehension scores decline while seeing increases in reading speed. Thus, L2 instruction that focuses on improving reading rate does not have a detrimental impact on reading comprehension. However, some limitations of the study should be pointed out. Firstly, no control group was involved in this study, which made it difficult to see the real improvement between the group receiving treatment and the group without it. Even though we may refer to Chang's (2010) research in which a control group was included and the same materials also used, many differences between the two studies (e.g., student age, reading quantity) do not allow direct comparison. To improve our understanding of the effects of reading fluency practice, a control group should be involved in future studies. Secondly, that the TR group read three passages in a row could be considered too much because many students reported that they could not concentrate when they read the third passage, which might have reduced the effectiveness of the intervention. As suggested by many students in the TR group, two passages at a time are considered a more reasonable amount than three. This suggestion can be applied to the testing of reading speeds with the pretest, posttest, and delayed-tests. It was very likely that student reading rates could be higher if the reading amount was reduced to two passages instead of three at a time, or allowing students to have a break between reading

passages. Therefore, future research may alter the treatment and testing procedures to see whether enhanced effectiveness can be achieved. Thirdly, students met with the researcher only once a week, and spent 20 minutes on the reading rate buildup activities. The limited practice time and frequency make it difficult to attribute improvement in reading rates and comprehension attributable to the intervention. This phenomenon, however, is very common in universities because many college students do not have English classes every day (cf. Chung and Nation, 2006; Taguchi and his associates, 2002, 2004), which substantially reduces the opportunities to practice reading fluency in the classroom. To overcome this unfavorable condition, students can be encouraged to choose a series of developing reading fluency books and read one or two passages per day. Books that focus on developing reading fluency are usually written under tight control for vocabulary and each passage has an equal word count. Readers can determine their reading speed immediately. Finally, regardless of RR or TR, each approach has its distinct features, and now that MP3's are very popular for use with ESL or EFL learning material, readers may combine both TR and RR to improve their reading fluency. For other useful reading rate-buildup activities refer to Anderson (1999) and Nation (2005).

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