Enhancing Oral Reading Fluency through Computer Assisted Repeated Reading

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Abstract: This study was carried out to investigate the effectiveness of using the Computer Assisted Repeated Reading (CARR) technique to enhance Form One rural students' oral reading fluency (ORF). The single subject experimental design (SSED) involved five students who participated in a 12-week study where CARR intervention was carried out twice a week. CARR, the adaptation of the CBM/ORF procedure, was used to improve their accuracy and automaticity in word decoding. Each participant's accuracy and automaticity in word decoding before and after intervention were charted on line graphs. Accuracy was determined by the percentage of words read correctly. The participant's initial reading accuracy showed that they could only read at instructional level but improved after the CARR intervention. Automaticity was determined by the reading rate or words read correctly per minute (WCPM) and the results too showed improvements. It can be concluded that the CARR technique was effective in improving struggling readers' reading fluency. Overall CARR can help ease teachers' burden, and their students to improve their reading skills.

Keywords: Reading fluency, Accuracy, Automaticity, Repeated reading, Computer assisted repeated reading

1. Introduction

The English language is viewed as central for the globalized and digital age and it is regarded as a means in facilitating Malaysia to leap into the global stage (Azman, 2006). English is taught as a second language in Malaysian schools and the secondary school syllabus emphasises on the mastery of language skills namely, listening, speaking, reading and writing skills along with grammar, pronunciation and vocabulary (Shabani,2018). Though these language components are taught with equal emphasis, reading is the most central skill students must learn in schools (Keyes, Jacobs, Bornhorst, Gibson & Vostal, 2017). An enormous amount of time, money, and effort is spent on teaching reading around the world and more time is spent on teaching reading than any other skill (Safarpoor, Ghaniabadi & Moulavinafchi, 2015). It is a significant pursuit for learning (Tui Boyes, 2019) and the mastery of the reading skills is essential in the academic settings (Grabe, 2004, Ayob, 2011). Schools should produce non-struggling readers who are able to read fluently. In view of this, the enhancement of the reading skills in schools is vital. Reading in schools refers to the ability to read and

make meaning from a text (Woolley, 2008) and this is the definitive goal of a reading development programmes (Veenendaal, Groen & Verhoeven, 2014). To realize this goal, learners have to utilize specific reading strategies and cognitive skills to aid reading comprehension (Jamian, Othman, Sabil & Masamin, 2016). Hence, this has lead to the important role of reading strategies in the field of second language learning (Yang & Sim, 2017).

However, the substantial number of illiterates or struggling English language readers in the Malaysian secondary schools is distinct; especially in rural areas (Lim & Mohtar, 2011). However, it is doubtful for English language teachers to teach their struggling readers reading fluency because they may not see the connection between reading fluency and reading comprehension capabilities (Rasinski, Blachowicz, & Lems, 2006). They also do not know how to teach and assess reading fluency (Ja'afar, 2015).

The connection between oral reading fluency (ORF) and repeated reading (RR) is evident. Research findings showed that fluency instructions involving RR is essential in fluency growth in children with or without disabilities (Swain, Leader-Janssen & Conley, 2013). Further, researchers such as Buly and Valencia (2003), Pany and Jenkins (1978), Pany, Jenkins and Schreck (1982) as cited in Kim, Thompson and Misquitta (2012) claimed that the lack of fluency development has led to problems in reading comprehension. Hence, research have shown that reading fluency impacts reading comprehension ability.

According to the National Reading Panel (NRP) (2000), ORF must include reading aloud and repetitive reading. Additionally, it must also include guidance and feedback. The panel verified that reading text aloud and repetitively improves readers' accuracy, speed and expression and there must be a listener to aid (Shanahan, 2006) struggling readers. The NRP suggested that repeated reading (RR) strategy is the best option for ORF instruction (Chard, Pikulski & McDonagh, 2006; Shanahan, 2006).

Rasinski's (2004) introduced a protocol (in his book, "*Assessing Reading Fluency*") to help analyse struggling readers' ORF. The protocol utilizes the Curriculum Based Measurement (CBM) developed by Deno (1985, 2003) to asses ORF. Ja'afar (2015) used Rasinksi's protocol to assess five Form One (Grade 7) secondary school students' reading fluency and improved their reading proficiency with success. However, English Language teaching in 21st century education is impacted by Industrial Revolution 4.0; technology plays an important role in enhancing teaching instruction to facilitate learning (Elas, Abd Majid & Narasuman, 2019). The integration of technology applications in teaching and learning is very significant as many struggling readers attain vocabulary knowledge, develop reading skills and improve their reading comprehension via technology-integration lessons (Huang, Whisnand, Cobb & Curry, 2016). Consistent with the Industrial Revolution 4.0 and the current development in ESL teaching and learning in schools, Ja'afar, Mahmud, Abu and Sandai (2019) developed the CARR technique to help teachers advance their struggling readers' ORF. This paper concerns enhancing secondary students' ORF through the use of CARR. The objectives of this study are to investigate the effectiveness of using the CARR technique to improve Form One rural secondary school students' (1) reading rate per minute as measured by the percentage of word decoding, and (2) word recognition errors as measured by the reading rate (total number of WCPM). Hence the research questions are (1) What is the CARR technique on the reading rate per minute of secondary rural school students as measured by the percentage of word decoding? and (2) what is the CARR technique on word recognition errors of rural secondary school students as measured by the reading rate or total number of words read correctly per minute (WCPM)?

2. Literature Review

The reading community states that reading fluency is a fundamental component in reading development (Hawkins, Hale, Sheeley, & Ling, 2011; Spencer & Manis, 2010) and dysfluent reading will affect students' reading comprehension competence negatively. The correlation between reading fluency and reading comprehension is apparent. Neddenriep, Fritz and Carrier (2011) conducted a study and used evidence-based instruction components to affect the reading fluency of five fourth-grade students for 15 weeks to evaluate their improvement in comprehension. They also carried out repeated practice with feedbacks and error corrections. They found that the five participants showed 25% progress over baseline levels of performance which was equal to an average gain of 15 words from baseline to intervention with an effect size of 1.25. Results showed that at the end of the 15th week, four

out of the five students improved their reading fluency significantly and they could read at instructional or mastery level.

While investigating the effects of ORF on the comprehension competence of Iraqi undergraduates, Rashid and Ar-Riyahi (2010) learnt that ORF and text comprehension are significantly correlated. Studies carried out over 20 years also verified the connection between reading fluency and reading comprehension in the first language (L1) context. The correlation between fluency skills and reading comprehension is as high as r=.81 to .90 (Grabe,2010). This illustrates that fluency is vital in the development of reading comprehension.

2.1 Reading Fluency

Researchers delineated reading fluency in a few ways. According to Schreiber (1980) reading fluency is the ability of a competent reader to read nontechnical text effortlessly, smoothly, and automatically. To achieve this stage of reading ability, a reader must not only be able to code words; but instead, have the ability to put words together into meaningful sequences. Grabe (2004) states that reading fluency involves word recognition accuracy and automaticity. Thus, a fluent reader can process text rapidly (which showed that they have reading efficacy) and he/she utilize prosodic and syntactic structures.

Rasinski (2004a) explains that ORF is the ability to read a text both orally and silently with correct speed, accuracy, and expression. He continues that a reader with reading difficulties can sound out the words accurately. Nonetheless, he/she reads word by word and frequently paused at difficult words. On top of that he/she does not pay much attention to punctuation and phrasing and lacks expression and enthusiasm. Samuels (2012) states that accuracy of word recognition, speed of reading, and reading with expression are indicators of fluency and researchers have continued to accept these three dimensions of accuracy, automaticity, and prosody or expressive reading essentials in the development of reading fluency. Accuracy in word decoding, requires a reader to sound out words in a text with minimal errors. Automaticity in decoding words, requires a reader to use as little as possible his/her mental effort when decoding words so that he/she can use most of his/her mental resources for comprehension.

2.2 RR Strategy in Promoting Reading Fluency

Literature on the impact of RR on ORF is abundance. Dotson-Shupe (2017) conducted an action research to investigate the impact of RR on eight 8th grade students' reading comprehension abilities. Results showed that the RR strategy was successful in improving the 8th graders' comprehension abilities and the participants' improved their accuracy when reading orally. Swain, Leader-Janssen & Conley (2013) conducted a case study on a fifth-grade boy and found that the RR intervention improved his word recognition and reading speed.

In another study Chang (2011) investigated the effect of timed reading (TR) and RR among 35 Taiwanese college students. Students in the TR (n = 18) and RR (n = 17) groups read 52 and 26 passages respectively within a 13-week period. The researcher measured the reading rates and comprehension levels during pre-, post- and delayed post interventions. Results showed that the reading rates of both the TR and RR groups improved; the TR reading rate was 50 WPM and the RR group attained 23 WPM. With regards to the comprehension levels, during the pre-test, post-test, and delayed post-test intervention, the TR group recorded a 53%, 67%, and 63%, respectively. The RR group on the other hand recorded a 53%, 60%, and 53% respectively during the three periods. This is a clear indication that although both groups recorded an increase in reading rates and a positive comprehension level, the TR group performed better than the RR group. Despite this, RR is still a valid instrument to enhance students' reading fluency.

The RR strategy was also utilized by Morris & Gaffney (2011) who conducted a case study on an 8thgrade learner with attention deficit disorder. The researchers found that his reading rate was enriched by 33% after one year. According to Taguchi, Takayasu-Maass and Gorsuch (2004) good reading ability is not possible without fast and accurate word recognition skills and reading fluency. This notion stems from the results of their study when they investigated whether and how RR aids fluency development and comprehension. In their experimental design research, 10 students took part

in an assisted RR program (an audiotaped reading model was provided) while another 10 students took part in an extensive reading (ER) programme. This 17 week study was conducted from mid-May to end of November 2001. The researchers used the A and B forms of the U.S. fourth-grade passage in the Burns/Roe Informal Reading Inventory (Burns & Roe, 1999) for the pre-test and post-test to examine the differences between the RR and ER groups at the end of the intervention. They found that RR is effective in enhancing the fluency of beginning English as a Foreign Language (EFL) readers and is a significant method for developing the reading fluency of second language (L2) and English language learners (ELL) (Kesevan, 2014). Therrien and Kubina (2007) affirmed that RR enhances students' reading fluency. The researchers conducted a performance criterion study to compare reading words in context and reading words out of context. While investigating if practice with connected text is a critical component of RR for fluency improvement, Therrien and Kubina found that when students reread words in context, they tended to read faster and made few errors. They reported that students' reading speed increased and the number of word errors decreased as the students reread the connected text passage. All the students who participated in this study reached the rate of 93 WCPM (the performance criterion) with the six readings allocated.

Instruction in reading fluency has shown that the improvement in reading achievement and reading fluency instruction is typically linked with guided, repeated oral reading instruction (Rasinski et al., 2011). Extensive research have shown that RR has increased oral reading rate, accuracy, and comprehension for students with and without disabilities in elementary, middle, and high school (Therrien, 2004). The NRP (2000) also suggested that reading a text aloud repeatedly improves accuracy, speed, and expression. The panel also states that oral reading instruction must include guidance and feedback so readers must have a listener who is there to offer some assistance (Shanahan, 2006). Literature has shown that researchers have used strategies such as wide reading and timed reading in their studies. However, the panel suggested that one of the approaches that could provide students with reading practice and enrich their reading fluency is the use of repeated oral reading practice or guided repeated oral reading practice (Chard, Pikulski, & McDonagh, 2006; Shanahan, 2006). This is consistent with Taguchi et al (2004) who claim that the RR strategy is found to be very effective in fluency development.

2.3 Computer Assisted Repeated Reading (CARR) Technique

The use of the RR technique in ORF assessment in studies conducted by researchers such as Dotson-Shupe (2017); Swain, Leader-Janssen & Conley (2013), Chang (2012); Neddenriep, Fritz & Carrier (2011); Morris & Gaffney (2011); Therrien and Kubina (2007); and Taguchi et al (2004) have shown the effectiveness of the RR technique in enhancing readers' reading fluency. In this digital age, instructors have increasingly used computers as an aid in foreign language teaching (Saeed, 2015). While investigating the relationship between computer-based reading activities and reading achievements among Hong Kong and U.S. students, Wang and Li (2014) found that there is no significance difference in the students' reading scores in their reading processes. Nonetheless, they found that when students are asked to use computers to write, they found that there is a positive influence on their students' reading achievement. Contrary to these findings, when conducting a multiple case study on three mild intellectual disability students, Cerasale (2009) found that the participants showed an increase in their reading fluency rate at their instructional reading level when computer-assisted readings was used. These two differing findings indicate the need to investigate further the effectiveness of using a computer assisted learning strategy in schools.

2.4 ORF Assessment

ORF assessment must include measures of reading accuracy, reading rate and prosody (Pikulski & Chard, 2005). Accuracy is determined by the percentage of words read correctly and this is a valid measure of reading proficiency. Automaticity on the other hand is determined by reading rate because fast reading illustrates automaticity in word recognition. The CBM procedure is also known as the ORF assessment that was developed by Deno (1985, 2003), and used to assess readers' accuracy and automaticity.

3. Methodology

The single subject experimental design (SSED) which focused on the individual participant (Byiers, Reichle & Symons, 2012) was used. This design is relevant because extensive studies which provide fluency interventions for secondary struggling readers had used the single subject design (Wexler et al., 2007). Data are presented by charting the dates and any significant changes throughout the duration of the treatment on line graphs and using statistical tests of significance.

Before the intervention, each participant's baselines for accuracy in word decoding and automaticity in word decoding were established. A stable baseline is necessary because an individual behaviour should change only a little over several days (Creswell, 2008). To establish the baselines for all two dimensions, each participant's percentage of words read correctly per minute and the reading rate or total number of words read correctly per minute (WCPM) were taken for five days and averaged after the fifth reading.

The percentage in word decoding was calculated by taking the result of the total number of words read correctly and divided it by the number of words in the text multiple by 100. For example, if 144 is the total number of words read correctly, it is divided by 150 which the number of words in the text. This equals 0.96 and it is multiplied by 100. Hence, the percentage of word decoding equals to 96% (144÷150=0.96 x 100 = 96%).

According to Rasinski (2004a), fast reading is assumed as the sign of automaticity in word recognition. The participant's reading rate was measured by deducting the number of errors made from the total number of the words read per minute. Thus, if the number of words in the text is 150 and the errors made is 8, that will be 150-8=142.

This study was conducted to find out if the CARR technique impacted the behaviour of a participant by observing him/her over a prolonged period while recording the behaviour before and after the intervention from the baseline. The study was carried out to investigate the impact of the RR strategy on the two dimensions of ORF; accuracy in word decoding, and automatic word processing. Assessment was made to identify any relationship between the treatments and the target behaviour or outcome.

Five Form One (7th grade) struggling readers aged between 12 to 13 years old from a rural secondary school from varying socio-economic backgrounds participated in the study. Materials used in this study consist of audio taped reading texts of between 150 to 250 words at Form One instructional or grade level. The texts consist of narrative, descriptive and expository essays. Topics are consistent with the themes listed in the Standard-Based English Language Curriculum for Secondary School. The CARR technique was administered to assess students' accuracy and automatic word decoding (Mukandan & Khandehroo, 2010). Data were collected over a period of 12 weeks. During data collection, intervention was conducted twice a week for about 15-20 minutes per participant per session. However, the researchers spent about 3 hours and sometimes more as they were often late. Accuracy in word decoding was measured by the percentage of words read correctly per minute. The participants' reading accuracy was compared against the Levels of Performance for Word Decoding Accuracy table as follows:

Table 1. Levels of Performance for Word Decoding Accuracy

Reading level	Percentage Range
Independent Level	97-100
Instructional Level	90-96
Frustration Level	<90

Automaticity in word decoding refers to how fast a reader can read. This is the reading rate or total number of words read correctly per minute (WCPM). The participants' reading automaticity was compared against the Oral Reading Fluency Target Rate Norms. Since the study was conducted at the end of the school year, the participants' WCPM was made based on the Winter ORF target norm.

Table 2. Oral Reading Fluency Target Rate Norms (WCPM)

Grade	Fall	Winter	Spring
1		10-30	30-60
2	30-60	50-80	70-100
3	50-90	70-100	80-110
4	70-110	80-120	100-140
5	80-120	100-140	110-150
6	100-140	110-150	120-160
7	110-150	120-160	130-170
8	120-160	130-170	140-180

Note. WCPM = words correct per minute. From Creating Fluent Readers: What Research Says About Reading, by T. Rasinski, 2004b, *Educational Leadership, 61*(6), 46-51. Retrieved from http://www.ascd.org/publications/educational-leadership/mar04/vol61/num06/Creating-Fluent-Readers.aspx. Reprinted with permission.

4. Findings

Results of the two dimensions of each participant were charted automatically by the computer on two separate line graphs. Besides reviewing the progress of each participant throughout the 12-week intervention, the line graphs were also used to examine the effects of the CARR intervention across the five participants to determine the impact of the intervention on the participants' reading fluency. The findings of the study answered the two research questions.

Research Question 1: What is the impact of the CARR strategy on the reading rate per minute of secondary rural school students as measured by the percentage of word decoding?

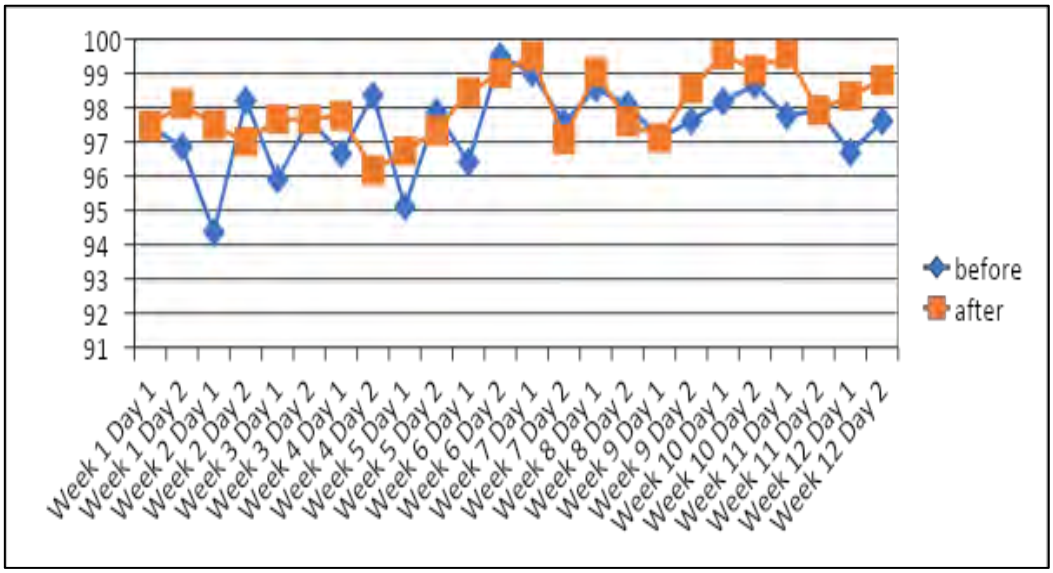

Fig.1 Participant 1's accuracy in word decoding

Figure 1 shows the results of Participant's 1's accuracy in word decoding. The baseline for Participant 1's reading speed per minute was 96.7% and this shows that he was reading at instructional level. On the first day of Week 1 he made 7 errors during the initial reading and 2 errors after the CARR intervention. On the second day of Week 5 he made 7 errors during the initial reading and 0 error after the CARR intervention. On the second day of Week 12 he made 11 errors during the initial reading and 3 errors after the CARR intervention. He consistently recorded lesser errors through the 12-week intervention. In addition, his reading speed per minute increased to 98.8%. This shows that at the

beginning of the study he could read at the instructional level and after the CARR intervention he/she can read the assessment texts or other texts of comparable difficulty independently.

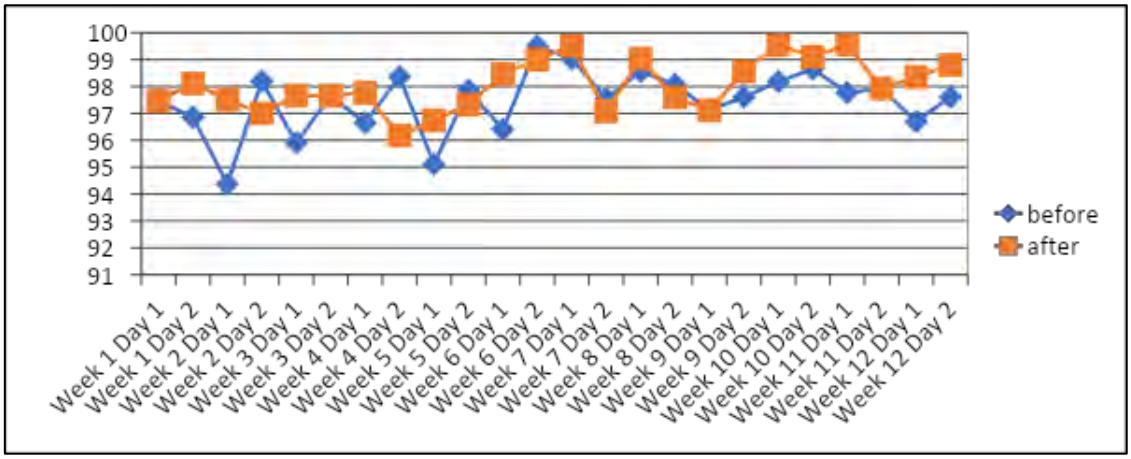

Fig. 2 Participant 2's accuracy in word decoding

Figure 2 shows the results of Participant's 2's accuracy in word decoding. The baseline for her reading speed per minute was 94.2%. This shows that she was reading at the instructional level. On the first day of Week 1 she had 13 errors during the initial reading and 8 errors after the CARR intervention. On the first day of Week 6 she made 13 errors during the initial reading and 4 errors after the CARR intervention. On the second day of Week 12 she made 8 errors during the initial reading and 2 errors after the CARR intervention. In general, she recorded lesser errors through the 12-week intervention. In addition, her reading speed per minute increased to 99.2%. This shows that at the beginning of the study she could read at the instructional level. However, after the CARR intervention he/she can read the assessment texts or other texts of comparable difficulty independently.

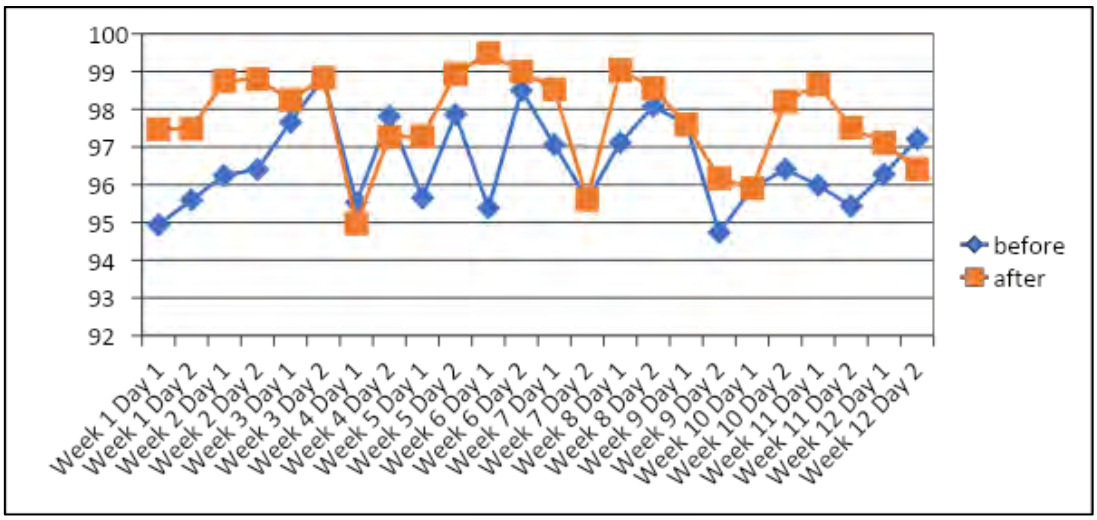

Fig. 3 Participant 3's accuracy in word decoding

Figure 3 shows the results of Participant 3's accuracy in word decoding. The baseline for her reading speed per minute was 96.6%. This shows that she was reading at the instructional level. On the first day of Week 1 she had 8 errors during the initial reading and 4 errors after the CARR intervention. On the first day of Week 6 she made 9 errors during the initial reading and 1 error after the CARR intervention. On the first day of Week 12 she made 9 errors during the initial reading and 3 errors after the CARR intervention. This shows that she recorded lesser errors through the 12-week intervention. Furthermore, her reading speed per minute increased to 97.2%. This shows that at the

beginning of the study she could read at the instructional level. However, after the CARR intervention she can read the assessment texts or other texts of comparable difficulty independently.

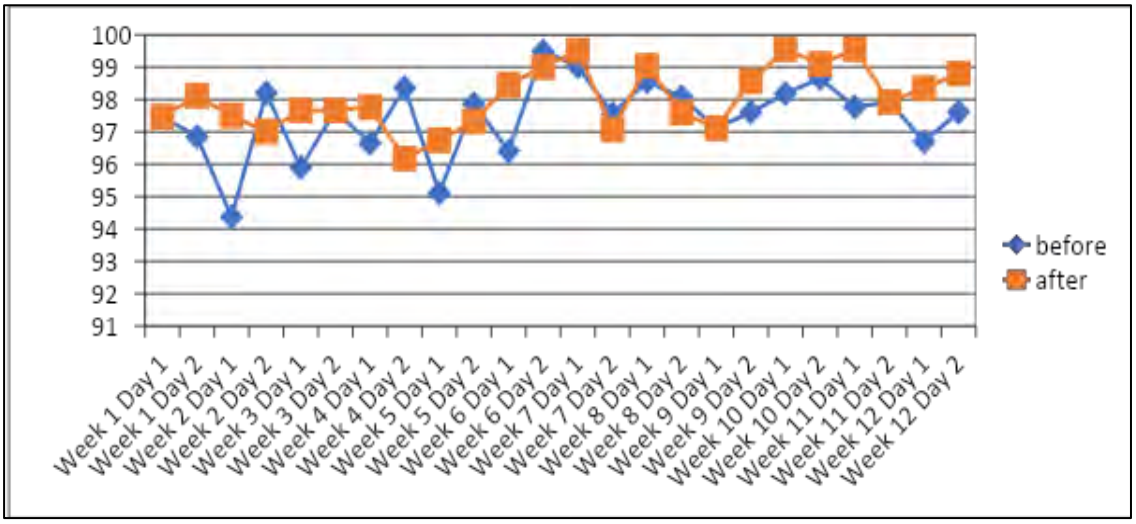

Fig. 4 Participant 4's accuracy in word decoding

Figure 4 shows the results of Participant 4's accuracy in word decoding. The baseline for his reading speed per minute was 97.3%. This shows that he was reading at the independent level. On the first day of Week 1 he had 9 errors during the initial reading and 4 errors after the CARR intervention. On the first day of Week 10 he made 4 errors during the initial reading and 1 error after the CARR intervention. On the first day of Week 12 he made 8 errors during the initial reading and 4 errors after the CARR intervention. In general, he recorded lesser errors. Moreover, his reading speed per minute increased to 98.8%.This shows that although he could already read at the independent level, there is an increase in his reading speed after the CARR intervention.

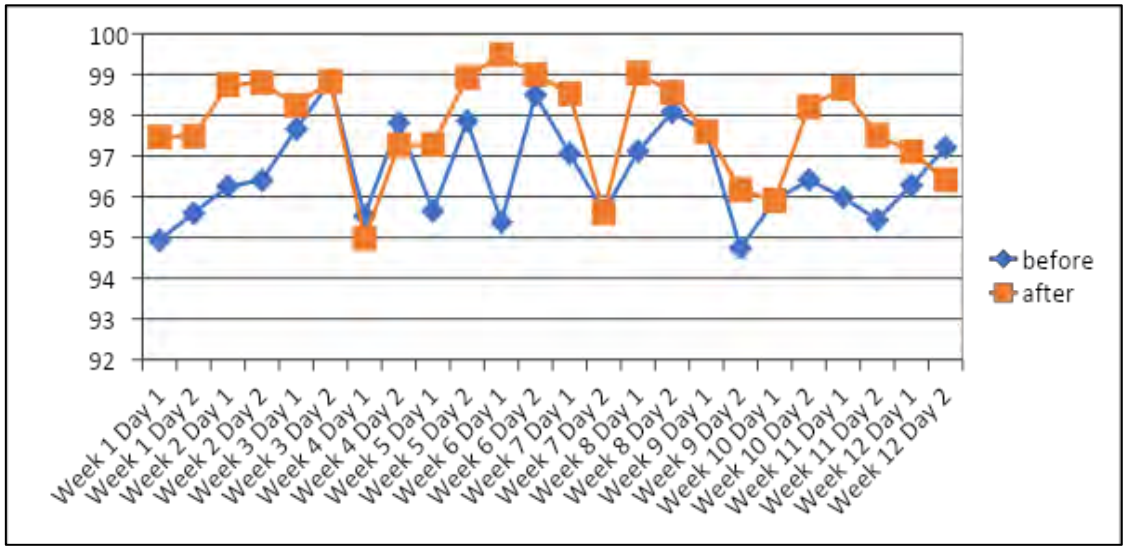

Fig. 5 Participant 5's accuracy in word decoding

Figure 5 shows the results of Participant 5's accuracy in word decoding. The baseline for his reading speed per minute was 97.1%. This indicates that he was reading at the independent level. On the first day of Week 1 he had 3 errors during the initial reading and 6 errors after the CARR intervention. On the second day of Week 2 he made 7 errors during the initial reading and 2 errors after the CARR intervention. On the first day of Week 7 he made 10 errors during the initial reading and 3

errors after the CARR intervention. The same number of errors were made on the first day of Week 11. In general, he recorded lesser errors. Moreover, his reading speed per minute increased to 98.0%. This shows that although he could already read at the independent level there is a minimal increase in her reading speed after the CARR intervention.

Research Question 2: What is the impact of the CARR strategy on word recognition errors of rural secondary school students as measured by the reading rate (total number of WCPM)?

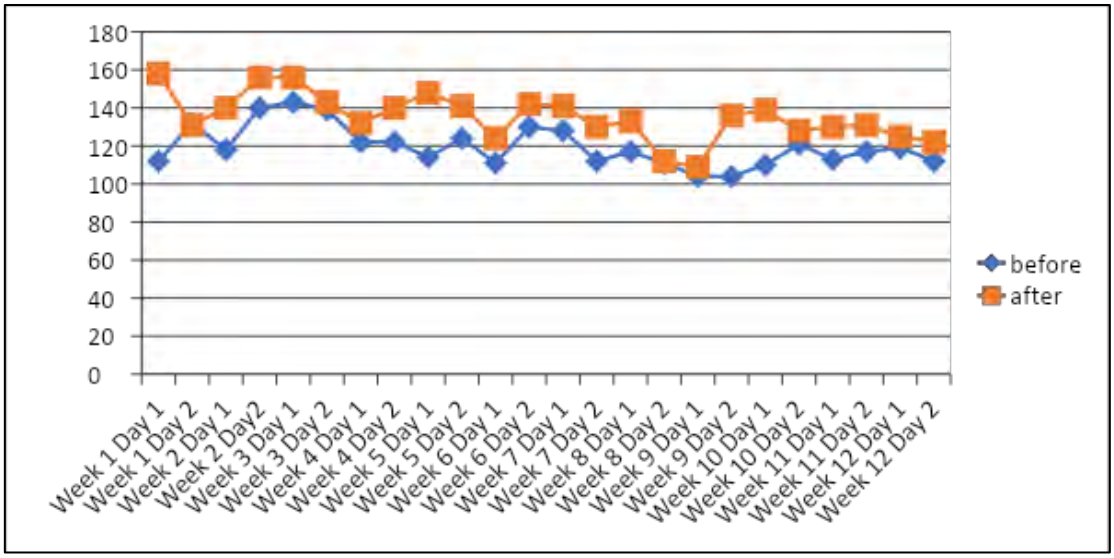

Fig. 6 Participant 1's automaticity in word decoding

Figure 6 shows the results of Participant 1's automaticity in word decoding. The baseline for his reading rate per minute was 82 WCPM. Based on the winter ORF target norms he has a Grade 4 WCPM. Participant 1's initial WCPM ranged from 104 to 143 and his final WCPM ranged from 109 to 158. He improved throughout the CARR intervention after he/she listened and echoed to the audio reading texts four times repeatedly. The range of his improved WCPM was between 5 to 46 words. Based on the winter ORF target norms he had a Grade 5 to Grade 6 WCPM at the initial stage and a Grade 5 to Grade 7 WCPM after the CARR intervention.

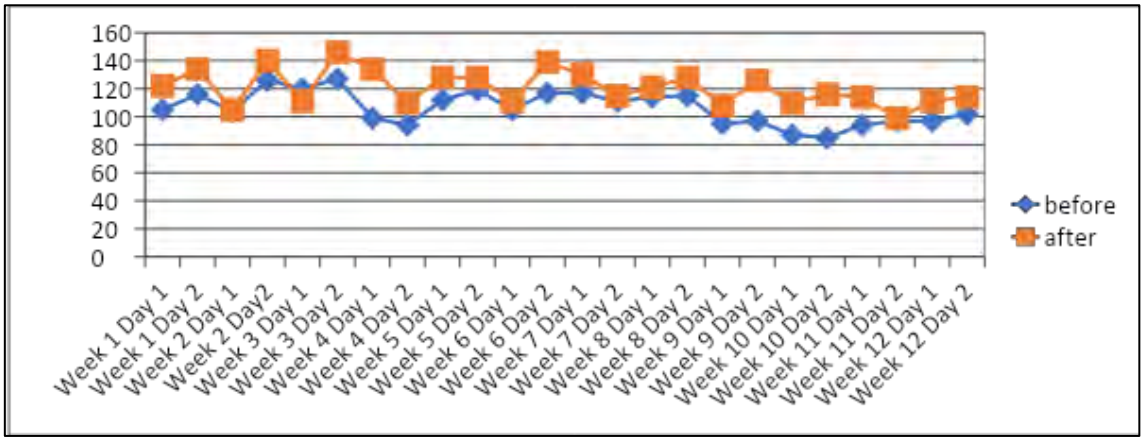

Fig. 7 Participant 2's automaticity in word decoding

Figure 7 shows the results of Participant 2's automaticity in word decoding. The baseline for her reading rate per minute was 79 WCPM. Based on the winter ORF target norms she has a Grade 3 WCPM. Participant 2's initial WCPM ranged from 85 to 127 and his/her final WCPM ranged from 99

to 146. She improved throughout the CARR intervention after she listened and echoed to the audio reading texts four times repeatedly. The range of her improved WCPM was between 2 to35 words. Based on the winter ORF target norms he/she had a Grade 4 to Grade 5 WCPM at the initial stage and a Grade 4 to Grade 6 WCPM after the CARR intervention.

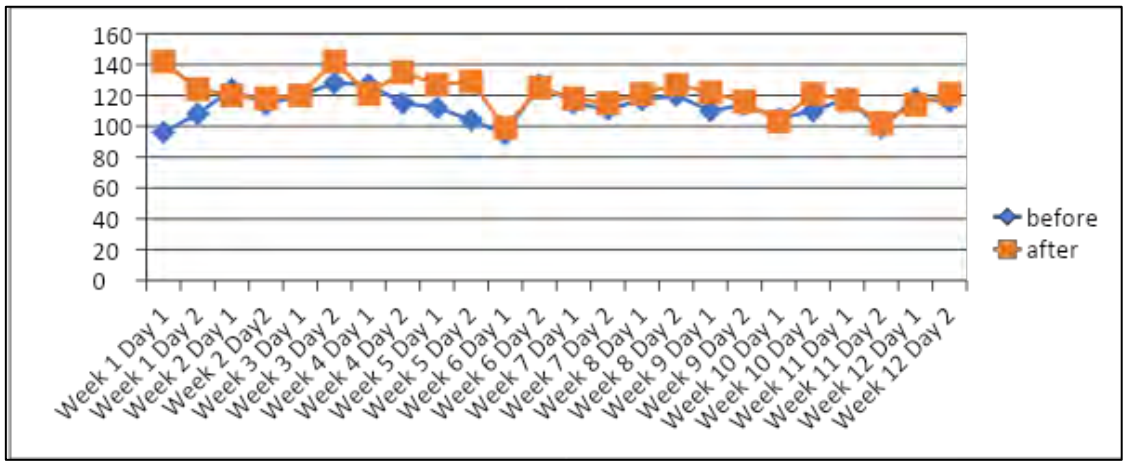

Fig. 8 Participant 3's automaticity in word decoding

Figure 8 shows the results of Participant 3's automaticity in word decoding. The baseline for her reading rate per minute was 90 WCPM. Based on the winter ORF target norms she has a Grade 4 WCPM. Participant 3's initial WCPM ranged from 99 to 128 and his/her final WCPM ranged from 99 to 135. She improved throughout the CARR intervention after she listened and echoed to the audio reading texts four times repeatedly. The range of her improved WCPM was between 4 to 46 words. Based on the winter ORF target norms she had a Grade 4 to Grade 5 WCPM at the initial stage and a Grade 4 to Grade 6 WCPM after the CARR intervention.

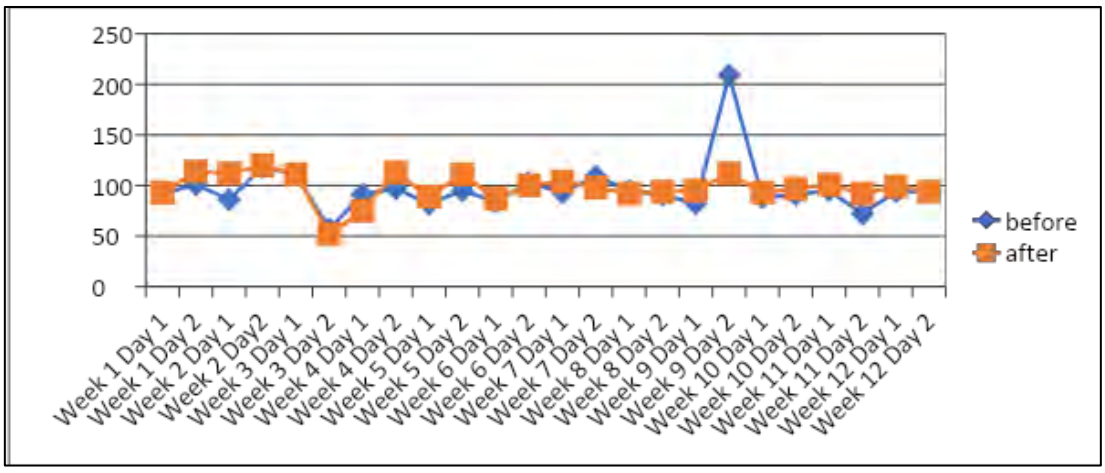

Fig. 9 Participant 4's automaticity in word decoding

Figure 9 shows the results of Participant 4's automaticity in word decoding. The baseline for his reading rate per minute was 101 WCPM. Based on the winter ORF target norms he has a Grade 4 WCPM. Participant 4's initial WCPM ranged from 57 to 209 and his final WCPM ranged from 52 to 120. He improved throughout the CARR intervention after he listened and echoed to the audio reading texts four times repeatedly. The range of his improved WCPM was between 3 to 20 words. Based on the winter ORF target norms he had a Grade 2 to Grade 4 WCPM at the initial stage and a Grade 4 to Grade 6 WCPM after the CARR intervention.

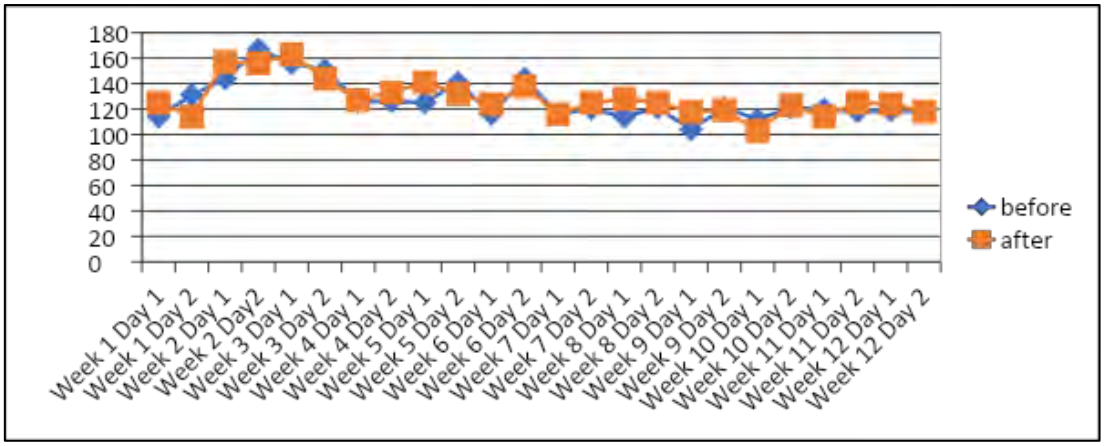

Fig. 10 Participant 5's automaticity in word decoding

Figure 10 shows the results of Participant 5's automaticity in word decoding. The baseline for his reading rate per minute was 72 WCPM. Based on the winter ORF target norms he has a Grade 3 WCPM. Participant 5's initial WCPM ranged from 103 to 163 and his/her final WCPM ranged from 114 to 167. He improved throughout the CARR intervention after he/she listened and echoed to the audio reading texts four times repeatedly. The range of her improved WCPM was between 0 to 16 words. Based on the winter ORF target norms he had a Grade 4 to Grade 8 WCPM at the initial stage and a Grade 3 to Grade 8 WCPM after the CARR intervention.

In sum, the participants' automaticity in word decoding was measured in terms of the number of words read correctly per minute (WCPM). Based on the Winter ORF target norm in automaticity in word decoding, Participant 1 initially recorded between 104 to 143 WCPM or Grade 5 to Grade 6 WCPM. Later he/she recorded between 108 to 158 WCPM or between Grade 5 to Grade 7 WCPM. Participant 2 initially recorded 85 WCPM to 127 WCPM or between Grade 4 to Grade 5 WCPM. Later he/she recorded between 99 to 146 WCPM of between Grade 4 to Grade 6 WCPM. Participant 3 initially recorded between 99 to 128 WCPM or between Grade 4 to Grade 5 WCPM. Later he/she recorded between 99 to 135 WCPM or between Grade 4 to Grade 5 WCPM. Participant 4 initially recorded between 57 to 209 WCPM or between Grade 2 to over Grade 8 WCPM. Later he/she recorded between 52 to 120 WCPM or between Grade 2 to Grade 6 WCPM. Participant 5 initially recorded between 103 and 163 WCPM or between Grade 5 to Grade 8 WCPM. Later he/she recorded between 114 and 167 WCPM or between Grade 5 and Grade 8 WCPM.

The findings showed that after the CARR intervention, the reading automaticity of Participant 1 and 2 improved significantly. Participant 3's WCPM improved from 99 to 128 to 99 to 146 WCPM and Participant 5's WCPM improved from 103 and 163 to 114 and 167. This showed that after the CARR intervention, although there was no change in the participants' reading grade but there was still an improvement in their overall WCPM. This suggests that the CARR technique was effective in improving the participants' automaticity in word decoding improved significantly.

5. Discussion

The participants reading accuracy was measured in terms of the percentage of words read correctly. Based on the Levels of Performance for Word Decoding Accuracy table, results showed that Participants 1 initially recorded 96.7% and later 98.8%. Participant 2 initially recorded 94.2% and later 99.2%. Participant 3 initially recorded 96.6% and later 97.2%. Participant 4 initially recorded 97.3% and later 98.8%. Participant 5 initially recorded 97.1% and later 98.0%. According to the result, Participants 1, 2, 3, 4 and 5 initially could only read text at their instructional level. However, after the 12-week CARR intervention their reading accuracy increased considerably. This showed that after the CARR intervention, they could read the assessment texts or other texts of comparable difficulty, independently. This suggests that the CARR technique was effective because the participants' accuracy in word decoding improved significantly.

The CARR technique which was conducted for 12 weeks is a form of extensive reading (ER). The above results are consistent with Taguchi, Gorsuch, Lems, & Rosszell (2016), who state that ER, a robust, time-tested approach help second language learners (L2) develop reading fluency. According to Paige & Magpuri-Lavell (2014) poor reading skills do not allow secondary students adequate access to course content. Hence, they could not perform well academically. Results of this study showed that the CARR technique can help students become fluent readers and thus allow them to get sufficient access to course content. This in turn will help them to improve their academic performance.

In addition to this, Noor Hanim, Mazlen & Suraiya (2020) claim that reading difficulties and reading anxiety are related and the reading fear can be stopped with good teaching method and reading strategies. Results of this study has shown that the CARR technique is effective in improving struggling rural readers' reading fluency. Hence, it could be a technique ESL teachers can adopt to help their struggling readers become fluent. In terms of using digital technology in teaching reading fluency to struggling readers, the use of CARR is pertinent. Aziz, Seman, Hashim, Roslin and Ishar (2019) as cited in Mohd Nasiruddin, Siti Norlizaiha, Mohd Khairi and Norfadilah (2020) state that the incorporation of ICT in the education has become a norm. Thus, the introduction of CARR in improving struggling readers reading fluency can be easily implemented in ESL reading classes.

6. Conclusion

The use of the CARR technique will encourage struggling students to practice their reading independently after school. Furthermore, teachers may allow them to take the audio reading text home and practice their reading independently. This will encourage struggling readers to be responsible of their own reading. Besides, parents may get involved in their children's reading activities by ensuring that their children practice their reading with the aid of the audio reading text.

In this study, all five participants came from various socio-economic background and the CARR intervention improved their accuracy and automaticity in word decoding considerably. Studies have shown that often students' low economic background impacted their studies negatively. However, the results of this CARR study prove that teachers can help improve students' reading fluency despite their differing socio-economic background. Without any intervention, students who are struggling readers will continue to struggle in their reading. Based on the positive results of this study, teachers can use CARR to help improve struggling readers' reading fluency. Researchers state that good ORF involves the ability to read a text both orally and silently accurately, with correct speed (WCPH) and expression. These are the indicators of reading fluency. This paper investigated how the CARR impacted only the accuracy and automaticity of words decoding of struggling readers. For further research, other researchers may want to investigate how much does CARR impact struggling readers' expressive reading or reading prosody.

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