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Effects of Assisted-Repeated Reading on Students of Varying Reading Ability: A Single-Subject Experimental Research Study

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This study examined the effects of assisted-repeated reading on four first-grade students whose reading ability varied (a special education student, a non-classified poor reader, an English Language Learner (ELL) student, and a general education student) to determine if an assisted-repeated reading intervention is differentially effective for students of differing academic profiles. The students engaged in assisted-repeated reading two times a week for eight weeks. Each session lasted 10 to 15 minutes. A baseline was established for each student prior to the start of the intervention. Subsequently, initial and final readings were recorded at each session. The findings of this study support a positive relationship between assisted-repeated reading and improved reading fluency, with the greatest gains made by those students whose reading difficulty stemmed from a decoding deficiency-- the special education student and the non-classified poor reader. Results are interpreted in light of LaBerge and Samuels (1974) Automatic Information Processing Model.

Oral reading fluency is the ability to read text smoothly and effortlessly with correct phrasing and intonation. In Birsch's (1999) book, fluency is defined as "the rapid, prosodic flow with which a skilled reader reads. When a fluent reader reads aloud, it sounds as though he or she is speaking. His or her reading is fluid and accurate, with adequate speed, appropriate phrasing, and correct intonation" (p. 175). Kuhn and Stahl (2003) found three primary areas of fluency: "(a) accuracy in decoding, (b) automaticity in word recognition, and (c) the appropriate use of prosodic features such as stress, pitch, and appropriate text phrasing" (p. 5). A deficiency in any area may compromise reading fluency.

A disfluent reader can be characterized by his/her inability to read smoothly with intonation. When a fluent reader reads it should sound as if he or she is speaking. Students may become hesitant, uncomfortable, and evasive when the subject of reading is introduced if they are disfluent. Disfluency may be attributed to a student's inability to decode at a normal rate. When the student is not able to make the connection between graphemes and phonemes, or when this process is labored, the outcome is disfluent reading. Disfluent reading also has a negative effect on the student's comprehension (O'Shea & Sindelar, 1983; Levy, Abello, & Lysynchuk, 1997; Lefly & Pennington, 1991).

In a study conducted by Fleisher, Jenkins, and Pany (1979), the researchers state that a shared capacity or bottleneck hypothesis may account for the effect that low decoding ability has on speed and comprehension. Fleisher et al. (1979) state that "The basic notion is that individuals possess limited amounts of processing space, and that decoding and comprehension are separate but interrelated tasks both requiring space. The more space consumed by decoding, the less space available for comprehension. Thus, inefficient decoding can detract from comprehension" (p.31).

Methods of Fluency Instruction

Samuels (1979) was one the first to implement and measure the results of an intervention targeted to increase reading rate and other components of fluency. In Samuel's study, students read an easy, short selection that was repeated until a rate of 85 wpm was

reached. The research showed that reading speed increased while the number of word recognition errors decreased (Samuels, 1979). Samuels' research also showed a transfer of fluency between texts. This method of repeated reading was also supported by studies conducted by Allington, (1983), Anderson (1981), Herman (1985), Homan, Klesius, and Hite (1993), Kuhn (2005), O'Shea, Sindelar and O'Shea (1985), Rashotte and Torgensen (1985), Rasinski and Zutell (1990), Stoddard, Valcante, Sindelar, O'Shea, and Algozzine (1993), and Dowhower (1987).

Assisted-repeated reading takes many forms. The first to be discussed in this review is repeated listening-while-reading texts. Rasinski (1990) selected 20 students from third grades in various elementary schools in the southeastern United States. "The subjects were paired with students of equal reading ability (identified by the classroom teacher who relied on personal judgment and the subjects' scores on a standardized reading test). Subject pairs represented high, average, and low reading ability levels" (p. 148). The subjects received two cycles of treatment. Each treatment lasted four days. On Day One each group received a pretest. On Days Two and Three, Group A received repeated reading, and Group B received repeated listening. Day Four consisted of a posttest. The second treatment cycle was the same, but the groups received the opposite treatment. Rasinski found that the gains made from pretest to posttest for both treatments were significant for both reading speed and reading accuracy, however, he did not find significant differences between treatments from repeated reading or listening-while reading.

Kuhn and Stahl (2003) also researched studies by Chomsky (1978) and Carbo (1981) in which reading-while-listening strategies were employed. The results of Chomsky's study indicated growth in fluency, however, this growth was a 6-month gain in 10 months (Kuhn & Stahl, 2003; Chomsky, 1978). Carbo's approach was somewhat modified to stress phrases, and students were instructed to use a point to text method. The results of Carbo's study indicated that students gained 4 to 15 months in word recognition in a three month period (Kuhn & Stahl, 2003; Carbo 1981).

Rasinski, Padak, Linek and Sturtevant (1994) combined an oral recitation lesson and paired repeated reading, and developed an intervention entitled, Fluency Development Lesson (FDL). This intervention takes only 10-15 minutes per day and includes the following steps: prediction of text, modeled reading, class discussion, choral reading, paired reading, performance and at-home practice (Rasinski, et al., 1994).

The subjects for this study consisted of second-graders from two elementary schools (A and B) in a large urban school district. The duration of the intervention was six and one-half months. Pre- and posttests were administered. The results indicated that “greater gains in instructional reading level and reading rates were made by the experimental treatment group” (Rasinski, et al., 1994, p. 161). The authors also found that “experimental group students, especially those from School B, may have gained in rate to the limit of their physical capability. They nearly doubled their reading rate at each level of passage difficulty from pre- to posttest: actual gains over the pretest ranged from 81.7% to 93.6% for primer through Grade 3 passages. Gains by control groups were much less impressive, ranging from 34.2% to 49.2%” (Rasinski, et al., 1994, p. 162). This study clearly indicates the positive effect of repeated-paired reading on fluency development.

Another program was developed by Stahl, Heubach and Cramond (1997). This program, the Fluency-Oriented Reading Instruction program, uses repeated reading in the classroom to develop students’ automatic word recognition. The program incorporated three areas of instruction - “a redesigned basal reading lesson, a free reading period, and a home reading program” (Kuhn and Stahl, 2003, p. 16). The researchers redesigned stories from a basal reader. On the first day the teacher read and discussed the story with the students. Key vocabulary and comprehension were addressed regarding the story. Echo reading and practice reading were additional approaches. The story was sent home to be read with parents. On Day two, the students reread the story with a partner. This cycle would begin again on the following day.

This intervention was expanded over two years to increase from implementation with four teachers to ten teachers.

“In both years, children gained, on the average, nearly two years in reading growth over the course of their second-grade year, as measured by an informal reading inventory. Even more gratifying were the effects that this intensive reading experience had on struggling readers. Over two years, all of the children but two who had began the second-grade year reading at a primer level (out of a total of 105) or higher were reading at a second-grade level or higher at the end of the year” (Kuhn and Stahl, 2003, p. 16).

These results strongly support the positive effect of repeated reading in a classroom setting.

As stated in the study by Stahl, Heubach, and Cramond (1997), Echo Reading is another form of repeated reading used with a whole group, small group, or an individualized instruction to increase oral reading fluency. Anderson (1981) described this method of intervention as implemented in studies by Schneeberg (1977) and Chomsky (1976). In this approach the teacher reads first and the student then repeats what has been read. The teacher models with clarity and expression, and the student echoes not only the words but the intonation. In Schneeberg’s study, this approach was used to introduce books. He also incorporated tapes to reinforce the skill. Chomsky (1976) took a different approach with echo reading. She used a short book at the student’s instructional level. The story was taped, and the student listened repeatedly while following along with the book. The student read the section to the teacher when he/she was able to read the section fluently. “Chomsky developed the method with five remedial readers from a third-grade class. They worked with the taped books and activities for 4 months and achieved overall reading gains ranging for 1 to 9 months. The students felt that they could and would read following the echo reading activities” (Anderson, 1981, p. 175).

The above form of independent assisted repeated reading was further studied by Hasbrouck, Ihnot, and Rogers, (1999). In this study, an intervention program, “Read Naturally”, is described and tested. The Read Naturally strategy combines the three “empirically-supported techniques: reading from a model, repeated readings, and progress

monitoring” (Hasbrouck, Ihnot, & Rogers, 1999, p. 29). In step one of the program the student reads an unpracticed passage. The student is timed and then the student graphs the words correct per minute. Step two incorporates practice reading of the same passage. The student reads along three to four times with a tape. In step three the student reads independently until he or she reaches a predetermined words- correct-per- minute (WCPM). When they have reached this goal, the teacher will time the student’s reading. In order to pass, the student must reach the WCPM, have three or fewer errors, and read with correct phrasing. If these criteria are not met, the student will continue practicing the same story, as step four (Hasbrouck et al., 1999). The results of the intervention indicated gains between 1.60-1.68 WCPM/week which exceeded the “typical” goal for reading performance improvement of 1.5 WCPM/week as defined by Fuchs, Fuchs, Hamlett, Walz, and Germann (1993), and stated in Hasbrouck, et al. (1993); Fuchs, et al. (1993).

Research on the effectiveness of Readers Theatre in the development of reading fluency was presented in a study conducted by Keehn (2003). Keehn supports this claim through a comparative study of two different approaches to Readers Theatre. Treatment Group One received mini-lessons and strategies to increase fluency in addition to the implementation of Readers Theatre. Treatment Group Two received instruction in Readers Theatre only (Keehn, 2003). The results indicated that “both treatment groups made statistically significant growth in oral reading fluency during the nine-week Readers Theatre intervention” (Keehn, 2003, p. 49).

In summary, a major area of agreement within this review is that repeated reading, in various forms such as assisted-repeated reading, proves to be an effective intervention for the development of reading fluency. Researchers also agree that the use of appropriate level text for fluency development is necessary to promote reading fluency. The research states that a student must be able to decode what he/she is reading so that the energy can be spent on practice of intonation and prosody as well as reading rate, rather than expending the energy on sound by sound, word by word decoding (Keehn, 2003; Kuhn and Stahl, 2003; Anderson, 1981; Hasbrouck, Ihnot and Rogers, 1999; Chomsky, 1976; Schneeberg, 1977; Stahl, Heubach and Cramond, 1997; Rasinski,

Padak, Linek, and Sturtevant, 1994; Rasinski, 1990; Herman, 1985; Allington, 1983; Samuels, 1979; Homan, Klesius and Hite, 193; Rasinski and Zutell, 1990; O'Shea, Sindelar, and O'Shea, 1985; Carbo, 1981; Kuhn and Stahl, 2003; Kuhn, 2005).

Purpose

Although research supports the effectiveness of assisted-repeated reading as an aide to fluency acquisition, to date, there is no published research of the differential effects of assisted-repeated reading on students of varied reading ability. We designed the present study to examine this issue.

Theoretical Frame

Multiple theoretical frames are applicable to the study of fluency (Tracey & Morrow, 2006). Of these, LaBerge and Samuels' (1974) Automatic Information Processing Model is most often cited in connection with this topic (Kuhn, 2005). The model is most famous for articulating that readers' internal attention has a limited capacity—that is, if readers expend too much internal (cognitive) energy on low-level reading tasks such as decoding there will not be sufficient internal energy remaining to devote to comprehension. Samuels (1994) states, "It is assumed in the theory—as well as by many who study reading—that getting meaning from printed words involves a two-step process: first, the printed words must be decoded; second the decoded words must be comprehended" (p. 820). According to the model, the beginning reader comprehends by switching back and forth between the two processes of decoding and comprehending, an experience that can be slow, laborious, and frustrating. Furthermore, the struggling reader's comprehension can often be adversely affected if too much attention is directed to decoding. In contrast, the fluent reader needs little internal attention to decode text because he/she is able to decode most, or all, of the words with ease. For the fluent reader, little or no attention is needed to decode the words, and, as a result, most or all of his attention is available for comprehension. The Automatic Information Processing Model suggests that assisted repeated reading aides reading fluency because it reduces the energy needed for decoding.

Method

The method used in this study was single-subject experimental research. This type of research establishes the effects of an intervention on a single subject, rather than averaging a group of subjects' scores. Single-subject research provides a personalized evaluation of data. In single-subject research, "Although the focus of this type of study is the individual subject, most of these studies include more than one subject. When there are multiple subjects, the data are still analyzed separately for each subject rather than as a group". . . (Best & Kahn, 2006, p. 216). Neuman and McCormick (1995) write, "although single-subject research is helpful for answering a wide variety of literacy questions, it may be particularly useful for studying subjects in remedial programs" (p. 28).

Thus, the present study was created to extend the results of previous studies on repeated reading by comparing students in the same grade level but of varying reading abilities through the use of a single-subject experimental design.

Subjects

The study took place in a first-grade classroom in a small, low-socioeconomic, northeast school district. The total number of students in the school was 654 of which 266 received free or reduced lunch (29.6%). The students' ethnic makeup was Caucasian (29%), African-American (13%), Hispanic (28%), and Asian (30%). The total number of students in the district was 3,899 of which 2,119 received free or reduced lunch (54.3%). The four focal subjects consisted of three boys and one girl.

The first subject is a student who is classified as a specific learning disabled student. His age at the start of the intervention was seven years and eight months. This subject has four siblings, three of whom are of school age. The oldest sibling is an eighth-grade male who is considered an at-risk student. The second oldest sibling is a fourth-grade male who is also classified as specific learning disabled. The younger sibling is a male kindergarten student who has been referred to the child study team and is currently being evaluated for a learning disability. The youngest sibling is a female of less than one year old. The subject is a friendly

boy who gets along well with his classmates. He is conscientious in his schoolwork; however, his homework is never completed. Excessive absenteeism is an issue with all the siblings. This student is struggling with reading. He has a very difficult time decoding words that contain vowel digraphs. His comprehension and recall are areas of strength. He is a pleasant child with whom to work.

The second subject is an English Language Learner. His age at the start of the intervention was six years, three months. He is from a Hispanic background. He has a younger male sibling who attends Pre-K at the same elementary school. This subject's need lies in the area of oral language. His processing is delayed. He was recently referred to the Intervention and Referral Services Committee. He is not in danger of being retained, however, support is required for his development. He has become more outgoing and more comfortable with his surroundings as time has passed. His decoding is improving; however, his comprehension and response to oral instruction are low.

The third subject is a non-classified, male, at-risk reader due to decoding difficulties. His age at the start of the intervention was seven years. He is an only child from a one-parent household. His mother is involved in his education. She is supportive at home, and is in contact with his teachers on a regular basis. This subject is an outgoing boy who likes to play and be involved in all classroom activities. He is active and has some trouble staying on-task. He is eager to learn and responds well to praise. He is interested in learning to read. Decoding is challenging, but he does not give up easily.

The fourth subject is a general-education female student. Her age at the start of the intervention was seven years. She is of Polish ethnicity. Her mother's primary language is Polish. She has a younger female sibling who is not of school age. She is a kind, hard-working student who is quite competent in the area of language. She speaks, reads, and comprehends at an average to above-average level. This subject interacts well with her classmates and has a positive attitude.

All kindergarten through third-grade students were tested in October by the Basic Skills teachers in the district using the DIBELS

test. These scores, along with teacher observation and classroom performance, were used in the selection of the target students.

Materials

The leveled reading books series, *Early Connections* (1999), published by Benchmark Education Company, was used to establish a baseline reading level for each student. This series of leveled books consisted of five levels. Level D was the lowest level and consisted of one to two syllable basic words that were repetitive, and included pictures that could be used as an aid in decoding unfamiliar words in the text. Level E increased the level of decoding skills necessary for fluent reading by including compound words, as well as two syllable words; however, picture cues that assisted the students' ability to decode were provided. Level F text included suffixes, compound words, and two syllable words. At this level the pictures did not aid the students' decoding ability, and words became less repetitious. Level G text became more diversified by including the drop e rule, suffixes, and three syllable words. The stories became longer with more opportunities to implement comprehension strategies. The highest level, Level H, consisted of longer stories, smaller print, vowel digraphs, three syllable words, and suffixes. Leveled books were also used to record each student's reading rate. Passages of 100 words were marked, and the data were graphed for initial and final readings for each passage. Reading expression and ease were noted for each student. The students graphed each of their initial and final readings, under the teacher's supervision, using graph paper and crayons.

Procedure

A baseline was established for each student by recording the words read correctly per minute for five days and averaging the scores. The subjects read from the leveled books described above. Subject One read on a D level and achieved a baseline score of 18 WCPM. Subject Two read on a D level and achieved a baseline score of 43 WCPM. Subject Three read on a D level and achieved a baseline score of 39 WCPM. Subject Four read on level G and achieved a baseline score of 66 WCPM.

The intervention began after the baseline was established. Each intervention lasted 10-15 minutes per student and was administered twice a week for eight weeks. At each session, each student completed an initial reading on his/her instructional level. During this reading the student read for one minute, the teacher told the student his/her words correct per minute (WCPM) and the student then graphed his or her score. Each student then listened to the teacher model the passage. The child then echoed the teacher's reading. The teacher and the student then completed two trials of repeated reading. The student then completed a final reading of the passage. The final words correct per minute were again recorded by the student on a graph. This procedure was repeated for each student.

Data Analysis

As reported above, the initial and final WCPM were graphed for each student. The results from the graphs were used to compare the student's individual progress throughout the intervention. In addition, the data collected were used to compare the effects of the intervention across subjects to determine if the intervention was differentially effective with student of varying profiles.

Results

Figure 1 shows the results for Subject One, a special education student. Subject One read at a level D-E. The graph shows the words correct per minute for each week of the intervention. The results indicate that 94 percent of the first readings and 100 percent of the final readings were over the high range of the baseline reading with the intervention. The baseline scores were 17, 20, 21, 17, and 17 words correct per minute with a mean score of 18 WCPM. Subject One's first reading scores ranged from 18 to 60 words correct per minute. These results indicate that practice reading had an effect on the increase of words correct per minute. The final scores that were recorded after each session of intervention ranged from 46 to 81 words correct per minute. These results indicate that assisted repeated reading had a positive effect on raising the student's words correct per minute. Transfer of skill to unrelated text is also noted in this intervention. The results suggest that

this student benefited from the practice reading as well as the intervention. When the student became more familiar with the words, he had more energy to focus on the rate and flow of the text.

Figure 1

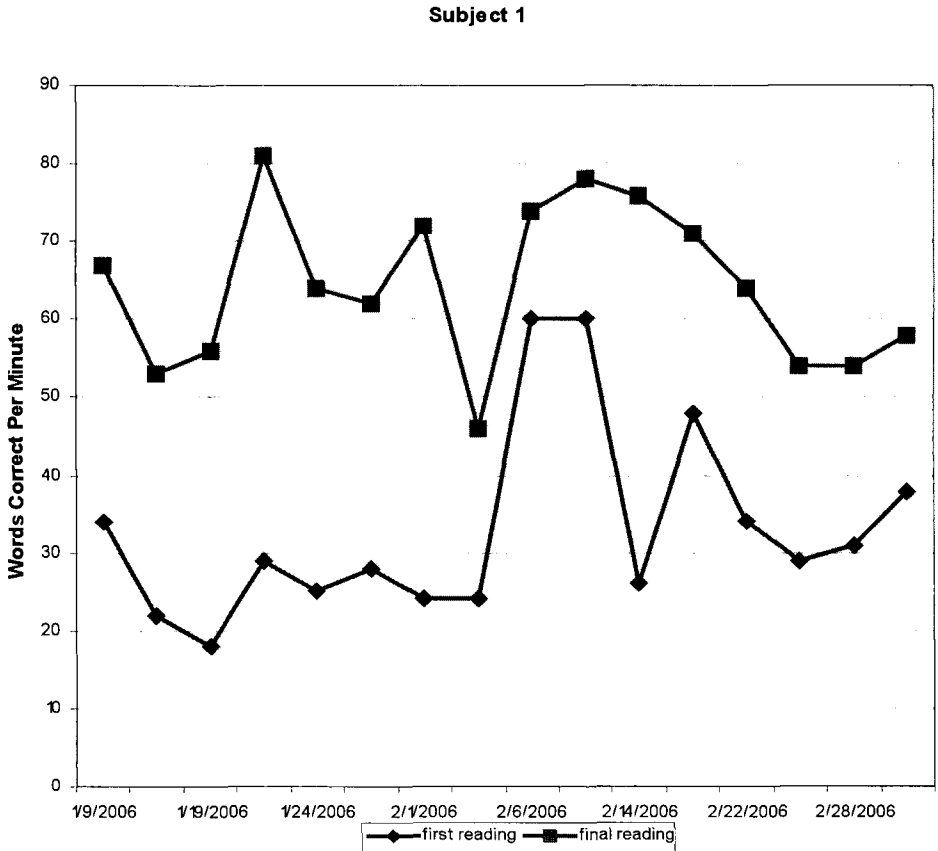


Figure 2 shows the results for Subject Two, an ESL student. Subject Two read at level D-E. The results indicate that 75 percent of the first readings were higher than the baseline with practice reading, and 100 percent of the final readings were higher than the baseline with the

intervention. The baseline scores for Subject Two were 48, 47, 36, 42 and 42 words correct per minute with a mean score of 43 WCPM. Subject Two's first reading scores ranged from 37 to 72 words correct per minute. These results indicate that practice reading had an effect on the increase of words correct per minute. The final scores that were recorded after each session of intervention ranged from 52 to 84 words correct per minute. These results also indicate that assisted repeated reading had a positive effect on raising the student's words correct per minute. Transfer of skill to unrelated text is also noted in this intervention; however the percentage was lower when compared to Subject One. The results suggest that this student benefited from the practice reading as well as the intervention.

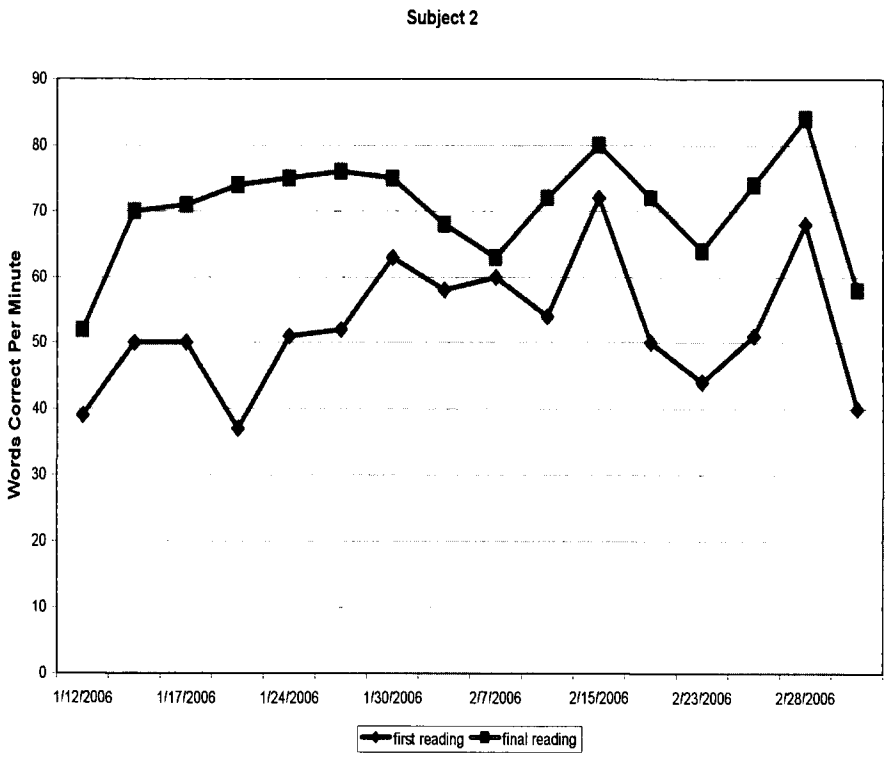


Figure 2

Figure 3 showed the results from Subject Three, an at-risk student. Subject Three read at level D-E. The results indicate that 69 percent of the first readings were higher than the baseline with practice reading, and 100 percent of the final readings were higher than the baseline with the intervention. The baseline for Subject Three was 41, 40, 41, 38, and 34 words correct per minute with a mean score of 39 WCPM. Subject Three's first reading scores ranged from 21 to 67 words correct per minute, and the final reading scores ranged from 46 to 95 words correct per minute. These results indicate that Subject Three benefited from the practice reading as well as the intervention, and a transfer of skill was present in both the practice and intervention readings.

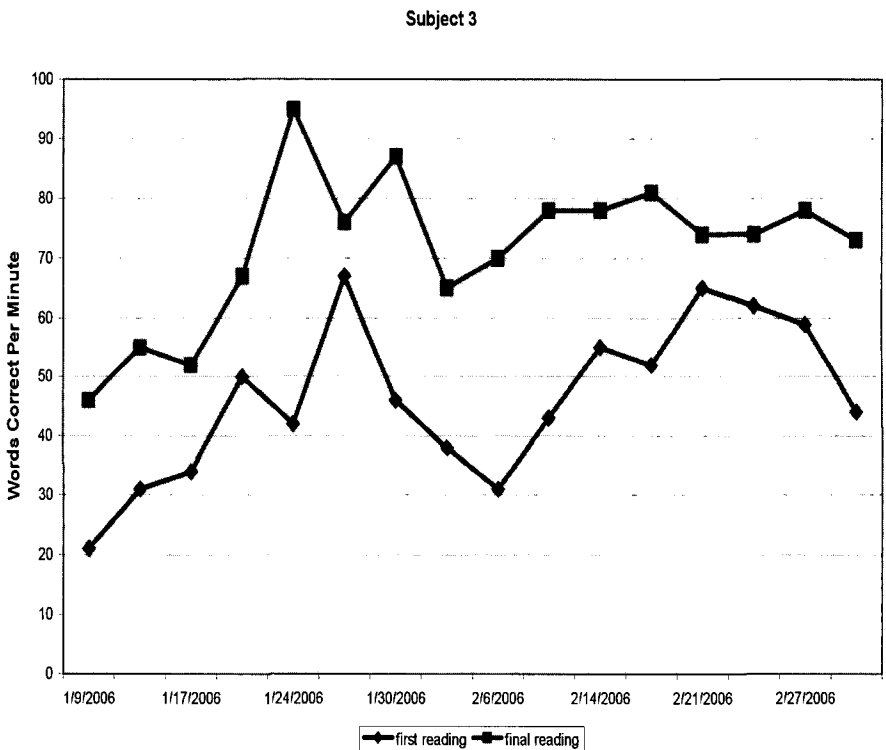


Figure 3

Figure 4 shows the results for Subject Four, a general education student. Subject Four read at level G. The results indicate that 50 percent of the first reading and 100 percent of the final readings were higher than the baseline. The baseline scores were 65, 71, 63, 62, and 70 words correct per minute with a mean score of 66 WCPM. Subject Four's first reading scores ranged from 52 to 93. These results indicate that practice reading had an effect on the increase of words correct per minute. The final scores that were recorded after each intervention session ranged from 83 to 116 words correct per minute. These results indicate that assisted repeated reading had a positive effect on the increase of words correct per minute.

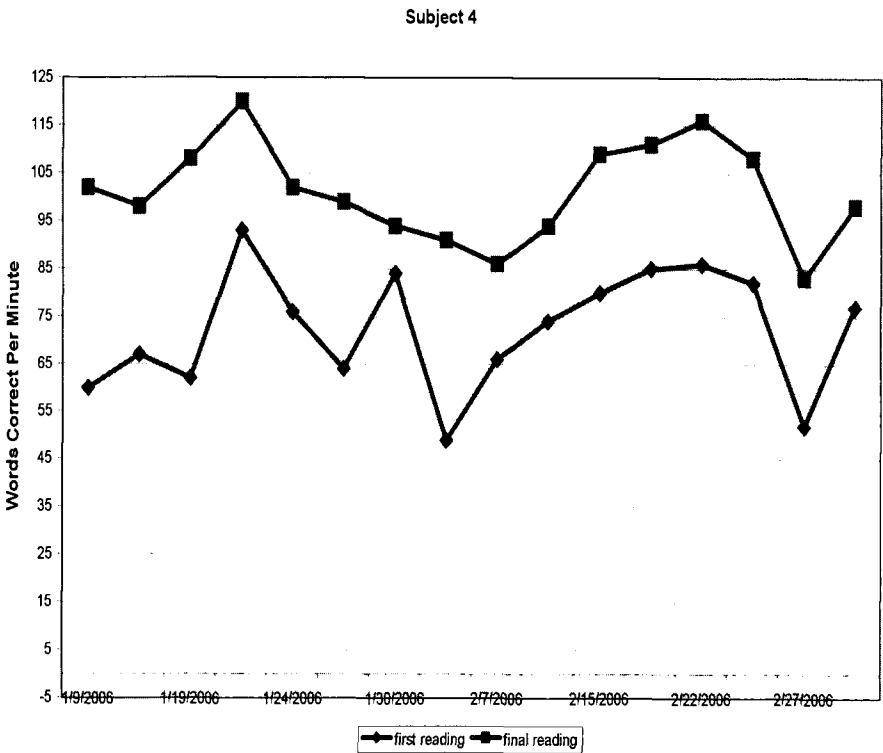


Figure 4

The results demonstrate the effects of practice reading of new texts. The overlap of common words was minimal. The results also demonstrate the effects of assisted repeated reading of each text. The results indicate that the intervention was effective for all students to varying degrees.

Discussion

The purpose of this study was to examine the effects of assisted reading on first-grade students whose reading ability varied. Past research has examined the effects of repeated reading using various methodologies, however, the differential effects of assisted-repeated reading on students of varying reading profiles has not been previously reported in the literature. A single-subject experimental research methodology was used with four first-grade students. The results indicated that all students scored higher than their baseline scores 100 percent of the time when the intervention was administered. The results from the practice (first reading of each passage) reading were also examined to determine the effects practice had on the students' words correct per minute. These results also showed an increase for all students.

The findings of this research support the positive effect of repeated reading in all variations of implementation. Samuels (1979) was one of the first to implement this type of intervention in order to determine its effectiveness regarding reading rate. This method of repeated reading was also supported by studies conducted by Allington, (1983), Anderson (1981), Herman (1985), Homan, Klesius, and Hite (1993), Kuhn (2005), Kuhn and Stahl (2003), O'Shea, Sindelar, and O'Shea (1985), Rashotte and Torgensen (1985), Rasinski and Zutell (1990), Stoddard, Valcante, Sindelar, O'Shea, and Algozzine (1993), and Dowhower (1987).

The present study also examined the differential effects of assisted-repeated reading on a general education student, a special education student, an ELL student, and a non-classified at-risk student. Comparative results indicated that the special education student and non-classified poor reader demonstrated greater growth in reading rate than did the ELL and general education students. This finding suggests that

those students who had the most difficulty in the decoding component of reading experienced the greatest improvements in reading rate. These results may be related to the assisted-repeated reading intervention that freed up energy that had been formally expended on decoding tasks. The students who had less difficulty decoding at the outset of the study (the ELL student whose difficulty was primarily in the realm of oral language/vocabulary, and the general education student whose reading was average to above average for her grade level) also showed improvements associated with the repeated reading intervention; however, the results were not as notable. Thus, while including assisted-repeated reading into the classroom curriculum may be beneficial for all students, results from the present study indicate that repeated reading may be most beneficial to readers who struggle with the decoding aspect of the reading process.

The results of the present study also support LaBerge and Samuel's (1974) Automatic Information Processing Model. The model suggests that reading fluency will be improved as decoding difficulties are reduced, as is the case with repeated reading. In fact, the present work demonstrated that students whose decoding was most problematic were those who gained the most by the repeated reading intervention. Future research should further explore the differential effectiveness of repeated reading reported within this paper.

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