

Reading Horizons

Volume 51, Issue 1

2011

Article 4

APRIL/MAY 2011

Assisted Reading with Digital Audiobooks for Students with Reading Disabilities

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The goal of this study was to compare the efficacy of assisted reading with digital audiobooks with the traditional practice of sustained silent reading (SSR) in terms of reading fluency and reading attitude with upper elementary students with reading disabilities. Treatment group participants selected authentic children's literature and engaged in assisted reading with digital audiobooks four to five times per week over an eight-week implementation period. Results showed that while all students demonstrated growth in reading fluency as calculated by words read correctly per minute, the growth of the treatment group far outweighed that of the control group. There was no significant difference in reading attitude scores. Consequently, this study shows that teachers can promote greater growth in reading fluency when assisted reading with digital audiobooks is implemented in the place of SSR.



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Abstract

The goal of this study was to compare the efficacy of assisted reading with digital audiobooks with the traditional practice of sustained silent reading (SSR) in terms of reading fluency and reading attitude with upper elementary students with reading disabilities. Treatment group participants selected authentic children's literature and engaged in assisted reading with digital audiobooks four to five times per week over an eight-week implementation period. Results showed that while all students demonstrated growth in reading fluency as calculated by words read correctly per minute, the growth of the treatment group far outweighed that of the control group. There was no significant difference in reading attitude scores. Consequently, this study shows that teachers can promote greater growth in reading fluency when assisted reading with digital audiobooks is implemented in the place of SSR.

Assisted reading with audio recordings has been used as an effective instructional intervention for students with learning disabilities (Carbo, 1978; Gilbert, Williams, & McLaughlin, 1996) and with struggling readers (Chomsky, 1976; Hollingsworth, 1978; Hoskisson & Krohm, 1974; Koskinen et al., 2000; Rasinski, 1990). The assisted reading method, reading along while listening to a fluent model (Kuhn & Stahl, 2003), may be resurfacing as a viable approach to fluency instruction and as a tool to improve reading attitude due to the growth in the popularity of listening to audiobooks. The availability and quality of audiobooks has improved

dramatically over the past decade (Johnson, 2003) as audiobook publishers recruit professional actors and trained orators who read with engaging expression that captivates listeners with their vivid storytelling. As a result, audiobook publishing has grown to a nearly 1 billion-dollar industry with audiobooks for children and teens making up 17% of the market (Audio Publishers Association, 2009). Pairing commercially-produced digital audiobooks with MP3 players, such as the Apple iPod, seems to have real potential in today's classrooms.

Given that approximately 80% of students with learning disabilities struggle with reading (Shaywitz, 2003), instructional time must be used in the most efficient manner possible for students with reading disabilities. Although sustained silent reading (SSR) is a common classroom practice for elementary age students (Pilgreen, 2000; Yoon, 2002), its utility in improving reading has been called into question. The National Reading Panel (2000) reported a need for more research in order to prove its value in a student's reading program and they also cautioned that SSR did not appear effective for struggling readers. Moreover, the panel found the practice did not improve the overall attitude students have about reading.

Professional literature increasingly speaks to how teachers can address variance in the general education classroom with differentiated instruction and therefore reduce the need for specialized instruction outside the classroom walls (Tomlinson & Germundson, 2007). In a position statement titled "Making a Difference Means Making it Different" by the International Reading Association (2000) the authors stated:

Because there is no clearly documented best, or only, way to teach reading, teachers who are familiar with a wide range of methodologies and who are closest to the children must be the ones to make the decisions about what reading methods and materials to use. Furthermore, these professionals must have the flexibility to modify those methods when they determine that particular children are not learning. Each child must be provided with an appropriate combination of methods. (p. 3)

Clearly, teachers are responsible for offering students multiple methods of instruction that have been proven effective in order to prevent and remediate reading difficulties. Given that SSR lacks sufficient evidence of effectiveness for students who struggle with reading, teachers might consider other means to meet the goals and objectives of SSR.

Sustained Silent Reading

SSR can be traced back to the 1950s when teachers regularly used workbooks as their primary means of reading instruction. SSR offered a period of time devoted to reading connected text so that students could transfer the isolated skills learned during the regular instructional period (Pilgreen, 2000) to a trade book. Reading instruction has changed dramatically since then (International Reading Association, 1999) and, while the National Reading Panel (2000) did not endorse SSR as a method of building reading fluency or reading attitude they did not completely reject the practice either.

Reading fluency experts allege the best way to facilitate the shift from deliberate decoding to recognizing the whole word is through extensive practice (Kuhn & Stahl, 2003; Rasinski, 2003). SSR is designed to provide readers with that extensive practice (Pilgreen, 2000), but it is not intended to serve as the primary component of a student's reading program. The key components of SSR are self-selection of text and non-accountability (Pilgreen, 2000; Yoon, 2002), and a documented benefit of SSR is increased self-determination when students are able to select their own reading material (Yoon, 2002). Readers who feel ownership of what they read tend to persist for longer periods of time, pay closer attention to the text, and have a better attitude (Rehder, 1980). In addition, the use of authentic children's literature seems to interest students and encourage them to read more (Flood, Lapp, & Fisher, 2005). The elimination of accountability, such as comprehension checks or response journals, sends a message to the reader: SSR is intended for the sheer enjoyment of literature. Nevertheless, it seems as though teachers can differentiate their instruction for students who struggle with reading to include the beneficial components of SSR and modify the practice so the diverse needs of students are being met.

Assisted Reading

The foregoing discussion suggests teachers may be able to make better use of time devoted to SSR when considering the needs of student with reading disabilities. This is supported by Flood et al. (2005) who noted that assisted reading methods could easily be implemented during either the classroom's SSR or independent reading time. Like SSR, assisted reading is not designed to serve as the primary component of a student's reading program. Some researchers explain that the use of these methods is so powerful since they act as a scaffold (Vygotsky, 1978) allowing students to read at their instructional level. The overall goal of assisted reading with digital audiobooks is similar to the goal of SSR in that students are exposed to literature; however, assisted reading approaches provide scaffolded support by using a fluent model as an example of effective reading practices, whereas SSR does not.

Over the years, technology has made implementation of assisted reading more feasible. The process evolved from one-to-one human interaction to tape-assisted reading to books on CD and now to digital audiobooks downloaded on MP3 players. Regardless of the medium used, the studies have consistently demonstrated positive results. The research findings of assisted reading with students with learning disabilities and with struggling readers lends credence to the claim that assisted reading improves overall reading fluency and therefore, promotes comprehension for students who are described as dysfluent readers. The studies presented in Table 1 confirm that assisted approaches were more effective than unassisted approaches. Researchers cite improvements in reading attitudes due to the self-confidence gained by marked improvements in reading fluency and comprehension, the ability to read grade-level text, and the enjoyment of reading high-interest material.

Table 1. *Studies on Assisted Reading*

Study	Number of Subjects	Grade of Subjects	Fluency of Subjects at Implementation	Reading Level of Text Used	Special Education Label	Fluency Results
Carbo (1978)	8 in treatment group	2nd-6th	Below grade level	At or slightly above reading level	Learning Disabilities	Improvement over time
Chomsky (1976)	5 in treatment group	3rd	Below grade level	Above reading level		6 months mean gain in 10 month period
Gilbert et al. (1996)	3 in treatment group	1st-2nd	Below grade level	Not specified	Learning Disabilities	Mean gain in WCPM for all subjects
Hollingsworth (1970)	8 in treatment group	4th	At grade level	Below, at, and above grade level		T=C
Hollingsworth (1978)	10 in treatment group	4th-6th	Below grade level	Below, at, and above grade level		T>C
Koskinen et al. (2000)	46 in treatment group	3rd	Below grade level	Below, at, or above grade level		T=C _a

Note: The method used for all studies was assisted reading with audio recordings of text. WCPM= words correct per minute; T > C = the treatment group showed mean gains higher than the control group; T = C the difference between the treatment and control group was not statistically significant; a= statistical significance was found on impact of assisted reading on reading interest

In *Becoming a Nation of Readers* (Anderson, Hiebert, Scott, & Wilkson, 1985) the authors point out, “the single most important activity for building the knowledge required for eventual success in reading is reading aloud to children” (p. 23). Assisted reading exposes students to more literature and listening to books read by enthusiastic and expressive readers makes reading pleasurable (Casbergue & Harris, 1996). Assisted reading also enables struggling readers to self-select text, absorb storylines, attend to the plot, and listen to a fluent model (Carbo, 2005). The use of authentic children’s literature seems to interest students and encourage them to read more (Flood et al., 2005). These findings, coupled with the knowledge that assisted reading is a research-proven method for improving fluency, leads one to envision a place for audiobooks in a student’s balanced reading program. Additionally, it could be predicted that the practice of assisted reading could mitigate some of the problems students with reading disabilities have with SSR.

Methodology

Experimental Design and Participants

The goal of this research study was to examine how assisted reading with digital audiobooks and SSR influenced reading fluency and reading attitude. Students in the treatment group were given MP3 players with downloaded audiobooks and the accompanying text to follow along with while listening during the time normally devoted to SSR. Participants were 20 students from five different schools in a Midwestern suburban school district. According to the Standard and Poor’s School Evaluation Services (2005), the overall school district enrollment of 7,796 was made up of roughly 96% White, .5% African American, 1% Hispanic, and 1% Asian/Pacific Islander, with the population of students receiving special education at 10.7% at the time of the study. The subjects were upper elementary students with documented reading disabilities who had individualized education program (IEP) goals in the area of reading. Seventeen students were learning disabled and three had the label of Other Health Impairment due to Attention Deficit Hyperactivity Disorder (ADHD). The participating schools were randomly assigned to the treatment or control group. Due to the fact that the study involved intact groups, the participants were kept in their natural setting, allowing for a higher degree of external validity (Dimitrov & Rumrill, 1988). Random assignment to groups would have equalized characteristics of the participants, thereby isolating the effects of the intervention (Dimitrov & Rumrill, 1988; Keppel & Wickens, 2004); however, descriptive statistics were conducted to compare the characteristics of the participants in each group and groups were found to be analogous across measures of disability

type, gender, and grade level. All students were educated in resource room settings, rather than self-contained special education classrooms or the inclusion setting. Independent-samples t-tests showed there to be no significant difference between the groups at the pretest measurement point for fluency and attitude.

A pretest, intervention, posttest design with treatment and control groups was used and a one-way between-groups analysis of variance was conducted to explore the differences in overall reading proficiency at the onset of the study between the treatment and control schools (see Table 2). Overall reading proficiency percentages were determined by scores on the Michigan Educational Assessment Program (MEAP) reading subtest. There was a statistically significant difference between the groups of schools ($F(1, 4) = 17.04, p < .05$) with the mean score for the control group ($M = 94, SD = 2.03$) significantly higher than that of the treatment group ($M = 91.26, SD = .55$). This factor is subsequently considered in the interpretation of the findings.

Table 2. Comparison of Control and Treatment Schools

	Control Schools			Treatment Schools	
	School A	School B	School C	School D	School E
Overall Reading Proficiency (%)	96.8	92.0	93.4	91.0	92.3
Total Enrollment	358	178	522	497	327
Economically Disadvantaged (%)	10	7	7	5	14
Subjects Per School	3	3	4	8	2

Measurement Instruments

The measurement instruments used in this study consisted of the Dynamic Indicators of Basic Early Literacy Skills® (DIBELS) oral reading fluency measurements (Good & Kaminski, 2002) and the Elementary Reading Attitude Survey (ERAS) (McKenna & Kear, 1990). DIBELS was used to quantify the number of words read correctly per minute and the ERAS was used to quantify reading attitude.

DIBELS Oral Reading Fluency Measurements

A set of three passages written at each participant's reading level, as identified by the students' special education teachers, was used to assess the number of words correct per minute at baseline. Administration of the oral reading fluency portion

of DIBELS involved providing the reader with the leveled text and timing him or her for one minute. The number of words read correctly per minute served as the score. For the purpose of this study, the DIBELS oral reading fluency measurements were used to evaluate the effectiveness of the intervention; this is supported by Davidson and Myhre (2000) who stated that oral reading fluency measures represent an effective strategy for assessing progress in reading and serve as a barometer of the effect of intervention. Selection of passages at the independent or instructional reading level is also supported by Davidson and Myhre (2000) who found that passage difficulty at the appropriate levels are more sensitive to growth than passages at the frustration level. The scores were averaged to establish the pretest score and sets of three different DIBELS passages written at the same grade level as the materials used in the pretest phase were used to establish a posttest score.

Elementary Reading Attitude Survey

The ERAS, an assessment designed for students in grades 1-6, (McKenna & Kear, 1990) was used to evaluate reading attitude at the pretest and posttest stages. The ERAS is set up on a four-point Likert-type scale. More specifically, the survey uses a pictorial format depicting Garfield, the cartoon cat by Jim Davis, posed to represent the feelings of very happy, slightly happy, mildly upset, and very upset. Each test item is assigned a one, two, three, or four point value with a four being very happy, a three being slightly happy, a two being mildly upset, and a one being very upset. Each test item begins “How do you feel...,” and the student is to respond by circling the Garfield pose which best represents his or her feelings about the statement. Questions 1-10 discuss feelings regarding recreational reading and questions 11-20 discuss feelings regarding academic reading (McKenna & Kear, 1990). The students were informed that reading while following along to audiobooks should be included in their definition of reading (i.e., “How do you feel when you read a book or read while listening to an audiobook on a rainy Saturday?”). The ERAS has a standardized method of survey administration that increases reliability of the measure for pretest and posttest use (Johns & Lenski, 2005).

The measurement tools used in the present study are subject to threats of reliability, internal validity, and external validity. In regard to the measurement tool used to obtain reading attitude scores, Kazelskis et al. (2005), suggested that score instability could change based on how students feel about themselves and their performance in the classroom rather than their attitude specifically about reading. For example, if a student has received complimentary remarks on a particular reading activity, his or her attitude might be reflected positively on the survey. This threat to internal validity was addressed by having the primary researcher, someone who

had little contact with the students, conduct the assessment. The pretests and posttests were given in the same location, on the same day of the week, and at the same time of day. A second threat to internal validity was repeated testing with the same or similar measurement instrument. Consequently, when measuring reading fluency, the primary researcher used different forms of the reading measurements written at the same reading level for the pretest and posttest to control this threat. Given there was only one form of the ERAS available, practice effects for the reading attitude measure could not be controlled.

Procedures

The primary researcher met with each participant one-on-one in school to complete the reading fluency and reading attitude pretest. The assessment administration time varied among students, but generally took from 10 to 15 minutes for both the pretest and posttest. Immediately after the pretest, students in the treatment group selected their books/audiobooks and were shown how to operate their MP3 players. The assisted reading method was explained to the students and teachers in the treatment group.

Three reading fluency scores from the DIBELS oral reading fluency measures were averaged after the assessment administration to determine a mean fluency score. Scores on the ERAS were also compiled following the meeting. Eight weeks after the pretest was administered, the primary researcher met with each participant again to administer the reading fluency and reading attitude posttest.

Materials

Students in the treatment group used MP3 players with downloaded audiobooks during the study. Two types of MP3 players were used: the iPod Shuffle and the Buslink Musica. Each student was given an MP3 player with audiobooks of his or her choosing downloaded on the device. The audiobooks were selected by each student from a list of books written at or just below that student's reading level. The students were also provided the hard copy of the book that corresponded with the audiobook to follow along while listening, directions for how to use their MP3 player, and a flat wooden stick to serve as a tracking tool. All materials were collected and stored in a plastic bag. When students finished the books, the teachers contacted the primary researcher and new audiobooks were downloaded onto their MP3 players. The materials were stored and used in the students' general education classrooms. However, students were permitted to take the materials to their special education classrooms to use if they were not in their general education classroom during SSR time on a given day.

Treatment Group Intervention

Students in the treatment group began using assisted reading as an intervention one to two days after the pretest was administered. Instead of participating in traditional SSR in their classrooms for 20 to 30 minutes a day, four to five days a week, they engaged in assisted reading by listening to digital audiobooks on their MP3 players. Students were allowed to stop reading/listening to a book at any time if they desired to abandon a book in order to start a new one since this same allowance is made in traditional SSR. The primary researcher monitored treatment fidelity by checking the audiobook recording hours downloaded on each student's MP3 player and keeping track of the number of books lent out and maintained weekly contact with the special education teachers via classroom visits and email. The students reported the number of chapters read if they stopped listening to a book in order to start a new one. One student was dismissed from the study due to lack of participation. Students in the control group continued participation in SSR after the pretest was administered and they were allowed to engage in SSR in either their general education classroom or resource room. The frequency of student engagement in traditional SSR was monitored and documented in the lesson plans of their classroom teachers. No students were dismissed due to lack of participation.

Results

This study addressed the following research questions: (a) Is there a significant difference between the reading fluency rates of the treatment and control groups, as reflected in the pretest and posttest fluency scores? (b) Is there a significant difference between the reading attitude scores of the treatment and control groups, as reflected in the pretest and posttest attitude scores? Each question was addressed using inferential statistical analysis, with all determinations of statistical significance of the findings made using an alpha of .05. Equality of variance was investigated and there was no departure from normality at any point for the reading fluency variable or the overall reading attitude variable (all $ps < .05$).

Research Question One

After an eight-week intervention (assisted reading with digital audiobooks and MP3 players) with a treatment group, is there a significant difference between the reading fluency rates of the treatment and control groups, as reflected in the pretest and posttest fluency scores?

A mixed between-within subjects ANOVA was conducted to determine if there were differences in mean scores for the treatment and control groups at the

onset of the study (pretest) and at the conclusion of the study (posttest). Table 3 presents means and standard deviations for each group over the two measurement periods. Initial examination of compound symmetry was found to be violated in all cases ($p > .05$); therefore, the more conservative Huynh-Feldt statistic is subsequently reported (Cohen, 1988). Analysis of variance results showed a statistically significant main effect for pretest and posttest scores ($F(1, 18) = 31.39, p < .001, \eta^2 = .64$) and a significant interaction between the two groups ($F(1, 18) = 10.45, p = .005, \eta^2 = .37$). Since the significant interaction precludes interpretation of main effects, an analysis of simple effects was initiated.

Table 3. *Reading Fluency Means and Standard Deviations for Group by Time Period*

	Control		Treatment	
	Mean	SD	Mean	SD
WCPM Pretest	74.76	13.69	84.00	22.47
WCPM Posttest	79.33	12.47	101.03	24.88

Paired-samples *t*-tests were conducted to compare pretest and posttest scores for the control group and the treatment group. Results indicated a significant increase in posttest scores for both the control group ($t(9) = 3.55, p = .006, \eta^2 = .58$) and the treatment group ($t(9) = 4.69, p = .001, \eta^2 = .71$). Thus, both groups showed improvement in number of words read correctly per minute between the pretest and posttest periods; however, the treatment group demonstrated larger gains.

Next, independent-samples *t*-tests were conducted to compare the pretest and posttest scores for the treatment and control groups. Equality of variance was investigated at both time points and was not found to be violated at either the pretest or posttest ($ps > .05$). There was no significant difference in pretest scores for the groups ($t(18) = 1.11, p = .28, \eta^2 = .06$). However, there was a significant difference in posttest scores for the groups ($t(18) = 2.47, p = .02, \eta^2 = .25$). This shows that while the students in the treatment and the control groups did not differ at the onset of the study in terms of reading fluency, by the conclusion there was a significant increase in the number of words read correctly by the treatment group. This must be viewed in light of the descriptive statistics of the participants that revealed that the overall reading proficiency at the onset of the study was actually higher for the control group schools ($M = 94, SD = 2.03$) than that of the treatment group schools ($M = 91.26, SD = .55$).

Based on the findings, the null hypothesis of no difference in reading fluency rates between the treatment and control groups after the intervention was rejected. Consequently, the treatment group showed a greater increase in number of words correctly read per minute.

Research Question Two

After an eight-week intervention (assisted reading with digital audiobooks and MP3 players) with a treatment group, is there a significant difference between the reading attitude scores of the treatment and control groups, as reflected in the pretest and posttest attitude scores?

A two-way mixed factorial ANOVA was used to compare for mean differences in pretest and posttest scores on reading attitude between the treatment and control groups. Means and standard deviations for each group across the time periods are presented in Table 4. Analysis of variance results indicated that there were no statistically significant main effects for group ($F(1, 18) = 1.43, p = .25$) or time period ($F(1, 18) = .15, p = .71$). The obtained eta squared of .07 for group and $< .01$ for time as measurements of effect size obtained for this analysis were considered low (Cohen, 1988). There was not a significant group and time interaction ($F(1, 18) = 1.32, p = .27, \text{eta squared} = .07$).

Table 4. Reading Attitude Means and Standard Deviation for Group by Time Period

	Control		Treatment	
	Mean	SD	Mean	SD
Attitude Pretest	54.90	6.19	55.30	7.59
Attitude Posttest	53.00	8.11	59.10	10.45

As a result of these findings, the null hypothesis of no differences in reading attitude scores between students in the treatment and control group was accepted. Therefore, it can be concluded that reading attitude was affected neither by the intervention (assisted reading with audiobooks during SSR time) nor by the control situation (traditional SSR) across the onset and conclusion of the study.

Assisted reading with digital audiobooks had a more positive impact on reading fluency rates for the treatment group as compared to the control condition for the population examined. Students in the treatment group demonstrated a mean increase of 17.03 words correct per minute, while control group students only increased by a mean of 4.57 words correct per minute. Thus, students in both groups made gains, but the increase in number of words read correctly per minute by the

treatment group far outweighed gains by the control group ($\eta^2 = .25$). An examination of the reading attitude mean scores showed a slight increase in scores for the treatment group, whereas there was a slight decrease in scores for the control group. However, these results were not significant.

Discussion

Gains in Reading Fluency

The positive fluency findings provide an extension of both the Carbo (1978) study and the Gilbert et al. (1996) study. It is also worthy to note that Deno, Fuchs, Marston, and Shin (2001) conducted a large-scale study ($N = 2999$) aimed at using curriculum-based measurements to establish growth standards for students with disabilities. According to their research, students receiving special education could be expected to demonstrate an increase of .58 words correct per minute each week. In the context of the present study, using these findings, students would be expected to demonstrate an increase of 4.64 words correct per minute at the end of the eight-week implementation period, which parallels the improvement made by the treatment group ($M = 4.57$). Conversely, students in the control group improved their reading rates by an average of over 12 words beyond what is expected of a student receiving special education over the eight-week implementation period ($M = 17.03$).

Lack of Gain in Reading Attitude

Reading attitude scores increased over the implementation period for the treatment group and decreased for the control group, but the finding was not statistically significant. Given that SSR time is normally devoted to reading based on the students' unique literary interests, one must wonder if students in the treatment group were affected by the limitation that they had to engage in assisted reading with digital audiobooks in order to continue as participants in the study. One explanation may be that students in the control group were only ever presented with the option of SSR, whereas the students in the treatment group varied from the traditional practice. Did the students in the treatment group feel a lack of self-determination as a result? Traditional SSR allows for self-selected reading of any material, including books from home, classroom libraries, and school libraries. Did treatment group students feel restricted by the reduced number of book choices they had due to the fact that many books had not been converted to audio format at the time of the study? Might there have been a significant positive increase in reading attitude if students were given the option of listening to audiobooks while following along during SSR time, instead of having it mandated? Interviews with

treatment group participants, conducted informally after completion of the post-testing, indicated that the lack of self-determination may have played a role in the nonsignificant findings in recreational reading attitude.

When considering the results from research question one, which pertained to more significant gains in reading fluency for treatment group participants, one must wonder if a significant increase in academic reading attitude would have been found had there been a longer time period between the pretest and posttest measurement points. Put simply, would treatment group students begin to see and feel their improvement in reading fluency and therefore, report a more positive attitude regarding academic reading as a result of their success? A longer intervention period may have enabled students to realize the transference of skills acquired through the practice of assisted reading with audiobooks to their independent reading.

Educational Implications

The research presented in this study helps guide instructional planning for students with reading disabilities. The implications presented include: (a) offering assisted reading as an accommodation to promote differentiated instruction during SSR, (b) adding assisted reading to a balanced literacy program, (c) implementing assisted reading as an evidence-based intervention for students at risk for reading failure, and (d) encouraging assisted reading during recreational time.

Assisted Reading as an Option to Accommodate Reading Difficulties During SSR

The results support the importance for teachers to provide more options for students during the time normally devoted to SSR. The significant findings in reading fluency support the educative value of assisted reading with digital audiobooks as an accommodation for students with reading disabilities. When considering which method to choose for students, practitioners must consider students' readiness levels, interests, and learning profile (Tomlinson, 2004). Oftentimes, allowing student choice yields a positive experience for the student (Cooper & Tomlinson, 2006) thus teachers should provide students with the option of listening to audiobooks while following along with the text during SSR time. Also, providing this option to students promotes differentiated instruction.

Assisted Reading as an Addition to a Balanced Literacy Program

Effective elementary literacy instruction balances holistic literacy experiences, such as reading authentic literature; and skills instruction, such as phonics and the teaching of comprehension strategies (Pressley, Roehrig, Bogner, Raphael, & Dolezal, 2002). Students need both holistic and direct instruction to grow and develop as readers (Carbo, 2005; International Reading Association, 1999). Although

most students with reading disabilities benefit tremendously from direct instruction in phonics (Bender, 1999; Mercer & Mercer, 2005), experiences with authentic literature and exposure to good books is a necessary part of an effective reading program. Students who struggle with reading should not be limited to skills-based instruction alone (Carbo, 2005; Pressley et al., 2002). In fact, direct instruction in phonics should consume one quarter or less of a total reading program (Carbo, 2005). Assisted reading with audiobooks provides meaningful access and increases exposure to literature (Gilbert et al., 1996). Teachers should evaluate whether an overemphasis on skills-based instruction is occurring in the reading programs of students with reading disabilities and consider adding assisted reading with digital audiobooks to their programs as a means of increasing exposure to authentic literature and improving reading fluency.

Assisted Reading as an Evidence-based Intervention

The Individuals with Disabilities Education Improvement Act (2004) has created significant changes in the identification of students with learning disabilities with the elimination of the criterion that a severe discrepancy between achievement and intelligence be present in order for a student to qualify as learning disabled (R340.17, 2004). A new pathway for determination of eligibility, called Response to Intervention, emerged as a result in the change in legislation (Jennings, Caldwell, & Lerner, 2006). Ultimately, Response to Intervention is both an identification and prevention model which features multiple tiers of evidence-based interventions focused on the individual needs of the student (Justice, 2006). These multi-tiered interventions are aimed at reducing deficits in reading and are implemented throughout the period of possible identification of a disability. A key premise of Response to Intervention is the implementation of evidence-based strategies (Jennings et al., 2006; Justice, 2006). Given the research presented in this study and existing research supporting the use of assisted reading (Carbo, 1978; Chomsky, 1976; Gilbert et al., 1996; Hollingsworth, 1978; Hoskisson & Krohm, 1974; Koskinen et al., 2000), assisted reading with digital audiobooks could be added to teachers' battery of interventions to implement throughout the Response to Intervention tiers.

Assisted Reading for Recreation

Students who struggle with reading require increased exposure to literature in order to automatically recognize and recall words, and spending time with text promotes overall reading ability (Allington, 2009; Yopp & Yopp, 2003). Providing access to materials needed to implement assisted reading with digital audiobooks in students' recreational time could be a step toward increasing the exposure students have to literature. School and public libraries should allow students to check out

MP3 players with downloaded audiobooks for home use. Teachers could support families of students with reading disabilities by training parents in the method and by offering suggestions in their newsletters for integrating assisted reading with audiobooks into recreational time.

Limitations

This study had limitations that affect the interpretation and generalizability of the results. First, a relatively small sample size was used in this study. Ten students participated in the treatment group and ten in the control group. These group sizes make generalizability more difficult (Cohen, 1988). However, the results support existing research with similar populations (Carbo, 1978; Gilbert et al., 1996). Second, the teachers used a variety of supplemental reading programs other than the commercially-produced curriculum subscribed to by the district and therefore, the consistency of instruction across schools varied. Third, there is a possibility students did not fulfill the requirements of the study as intended given the tendency for students, especially those with learning disabilities and Attention Deficit Hyperactive Disorder (ADHD), to lose focus. No evidence suggests that treatment or control group students did not participate in assisted reading with digital audiobooks or traditional SSR respectively during the time allotted, but the possibility should be considered.

Future Research

Additional studies could include extending the implementation period and allowing for students to use assisted reading with audiobooks as an option rather than requiring its use. It would be sensible to increase the intervention period and allow the students the option of using an MP3 player with downloaded audiobooks instead of insisting that they use the intervention throughout the study. Students could also introduce themselves to the book by listening while following along to the first couple of chapters and then read the rest of the book on their own. Another option is to alternate listening while following along to a digital audiobook to its completion and reading books without audio support. This would allow the students increased self-determination and may increase reading attitude.

Evaluating the use of assisted reading with audiobooks against other instructional methods such as repeated reading and other programs such as Read Naturally® would add to the existing research (Hasbrouck, Innot, & Rogers, 1999). In a review of developmental and remedial reading practices in the area of fluency, Kuhn and Stahl (2003) found that repeated reading produced statistically significant

improvement in reading rate and oral reading expression on practiced passages. Conversely, they also raised the question:

Does this understanding develop simply from the amount of practice students undergo with regard to word recognition, or is there something more specific to their reading of connected text and their emerging sense of its relation to oral language that allows for this understanding to develop? (p. 18)

Even though the National Reading Panel (2000) has found repeated reading to be a favorable method for improving reading fluency, it remained unclear whether its benefits were transferable to novel texts or if there was a negative impact on reading attitude. This causes one to consider: If assisted reading with audiobooks provides increased and scaffolded practice with word recognition, is there a need for students to engage in repeated reading if there may be detrimental effects on reading attitude?

Future research could examine other variables such as reading prosody and reading comprehension. In this study, fluency was defined as the number of words read correctly per minute, but reading fluency encompasses more than just reading accuracy and rate. Rasinski (2004) cautioned that improving reading rate should not be the chief goal; teachers should also assess and instruct in the areas of expression, volume, phrasing, and smoothness. Research should be conducted to determine if listening to highly trained orators read books aloud has a positive impact on reading prosody. Hearing what fluent reading sounds like and how readers interpret the text with their voices may prompt students to do the same.

There is a direct link between reading fluency rates and comprehension (Allington, 1983; Hudson, Lane, & Pullen, 2005; Samuels & Farstrup, 2006). When a reader does not have to spend time decoding words, the mind is available for understanding of the text to occur (LaBerge & Samuels, 1974). It is worthy to note, the treatment group made significant growth in reading fluency rates over the eight-week intervention period, increasing from a mean score of 84 to 101.03 words correct per minute. This is a gain of 2.13 words per week. It has been estimated that increases of 15 to 20 words correct per minute are required to make a positive impact on comprehension. Consequently, students who increased at the rate of one to two words per week could be expected to demonstrate growth in comprehension after 10 to 20 weeks of instruction (Deno & Markell, 1997). It can be assumed that students in the treatment group improved their comprehension because their mean increase was 17.03 words correct per minute, but additional

studies that specifically measure reading comprehension would make a definite contribution to existing research.

Conclusion

The present study adds to the existing knowledge base by studying the effects of assisted reading methodology with commercially-produced digital audiobooks and MP3 players. Results showed that upper elementary students with reading disabilities demonstrated a greater increase in reading fluency rates when assisted reading with digital audiobooks was utilized as compared to the control group that participated in SSR. Reading attitude findings were not significant. Based on existing literature and the present study, the future of assisted reading with digital audiobooks appears to be bright. This method will, hopefully, find its way into the reading programs of students with reading disabilities as a means of further differentiating instruction in reading.



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