

THE EFFECTS OF DUET READING ON THE READING FLUENCY OF
ELEMENTARY STUDENTS WITH MILD DISABILITIES

Thesis

Presented in partial fulfillment of the requirements for the degree master of arts in
the Graduate School of The Ohio State University

By

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2017

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ABSTRACT

The purpose of this study was to examine the effects of duet reading, a reading fluency intervention, for increasing the reading fluency of three elementary school students with disabilities in a public elementary school. A pre-experimental A-B design replicated across three students was used to evaluate the effectiveness of the intervention. Each student worked one-on-one with the researcher.

Dependent measures included words read correctly per minute on novel grade level passages from AIMSweb and words read per correctly per minute on practiced grade level passages from AIMSweb. In addition, after intervention, students were given grade level passages in science to assess for generalization and data were collected on words read correctly per minute. At the conclusion of intervention, participants (students and their classroom teacher) completed a questionnaire indicating their levels of satisfaction with the procedures and outcomes of the intervention. Results of the study indicated no functional relation between duet reading on reading fluency when reading novel reading passages but do indicate a functional relation between duet reading and reading fluency on repeated readings.

ACKNOWLEDGEMENTS

I would like to acknowledge and thank Dr. Moira Konrad, my advisor; the teachers at Deer Run Elementary School in Dublin, OH; and the faculty in the Special Education program at The Ohio State University all of whom helped me design and execute this study.

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FIELD OF STUDY

Major Field: Educational Studies

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Chapter 1: Literature Review

At least one in five students has significant difficulties with reading acquisition (Therrien, 2004). The American Federation of Teachers (2007) reports that there is no other skill more imperative than reading and designated reading as the doorway to all other success. The 2011 National Assessment of Educational Progress (NAEP) revealed that 33% of fourth graders and 24% of eighth graders could not read at the Basic level, and therefore were not able to establish even minimal mastery of basic knowledge skills. On the 2009 NAEP, 26% of twelfth graders are unable to read at the Basic level. Students reading below a Basic level are unable to gain the overall meaning or make connections with the text and their own personal lives or take plain inferences from the text.

Reading difficulties are more prevalent for students with disabilities. These students will likely struggle with reading for their entire school careers and into adulthood (Lyon & Moats, 1997). If students do not read successfully in first grade, they are likely to continue struggling with reading (Bruck, 1992; Juel, 1988; Stanovich, 1986). In the area of reading fluency (commonly defined as a student's ability to read with speed, accuracy, and proper expression), one nationally representative study of 1,779 fourth-grade students suggests that 40% of US students are "nonfluent" readers (Daane et al., 2005).

A fluent reader is able to read accurately, at a normal rate, and with appropriate expression. Though definitions of fluency can vary, Samuels (1979)

defined reading fluency as the ability to read with speed and accuracy. Being a fluent reader is very important for readers because it allows for successful comprehension. LaBerge and Samuels (1974) theorized that reading fluency problems begin when readers have poor decoding skills, or when decoding is too slow, a “bottleneck” is formed that interferes with the flow of thought and does not allow comprehension, struggling readers often use a large amount of their cognitive resources on decoding and then do not have enough resources for comprehension.

The National Reading Panel (National Institute of Child Health and Human Development [NICHD], 2000) identified fluency as one of five critical components of reading. The National Reading Panel defines reading fluency as “the ability to read text quickly, accurately, and with proper expression” (NICHD, 2000).

Therrien (2004) noted one of the first empirically evaluated strategies to focus on fluency was the neurological impress method (NIM). The goal of this strategy is to increase fluency by having students and teachers read aloud simultaneously. Although preliminary findings for the method were encouraging, subsequent studies did not produce significant results, so this approach fell out of favor for a period of time. However, according to Flood, Lapp, and Fisher (2005), NIM is one of the easiest and most cost-effective strategies for improving children’s fluency. Heckelman (1969), as cited in Flood et al. (2005), described NIM as a multisensory approach to reading instruction that places “an impress,

an etching in of word memories on the natural processes” (p. 148). The method has been described by Heckelman, as well as several other colleagues, as a style of unison reading between the teacher and student. The method calls for the teacher and student to sit next to each other and as the teacher slides his or her finger along the words he or she speaks directly into the student’s ear and they read together in a fluent manner pausing only where punctuation indicates (Arnold, 1972).

Flood et al. (2005) conducted two studies to bring interest to NIM, which they contended has been overlooked in mainstream and special education environments over the past decades. The first study included 20 student participants in grades three through six who were all reading below grade level. Oral reading fluency was measured with one-minute probes in which students read a passage from a children’s book aloud to the tutor. The tutor counted the number of words the student read in the one-minute timing and subtracted the errors to calculate the fluency rate. The tutors also assessed the student’s fluency while reading silently. The tutors used timed passages that the students read silently for one minute. The total number of words was recorded. To measure comprehension, students read a passage and then responded orally to six comprehension questions that followed the passage.

Findings indicated that students improved after the five-week NIM training. In oral reading fluency, the students’ scores significantly increased from an

average of 97 words correct per minute to 112 words correct per minute. In silent reading fluency students' scores increased from an average of 132 words per minute to 154 words per minute. On the comprehension assessment, students' scores increased from an average of 3.2 questions correct to 4.5 questions correct. Flood et al. (2005) reported that statistically significant gains are unlikely in that short time period and therefore it can be concluded that the intervention caused such significant gains and was effective.

In the second study, comparable results were found. The study was conducted with 20 students in grades three through six who were identified as reading below grade level and were selected at random. All twenty participants were from underrepresented ethnic groups. Tutors were trained the same way as in Study 1 and data were collected the same way. Students received 10 minutes per day of NIM instruction.

Again, the students scored considerably higher after NIM training on all three measures: oral reading fluency, silent reading fluency, and comprehension. Statistically significant gains were found on all three measures. Oral reading fluency increased from an average of 62.4 words correct per minute to 87.3 words correct per minute. Silent reading fluency increased from an average of 88.6 words correct per minute to 114 words correct per minute. Comprehension increased from an average of 2.5 questions correct to 4.2 questions correct. The findings from these two studies indicate NIM is a promising intervention for

reading fluency and comprehension; however, inconclusive results from earlier studies call for more research in this area.

One fluency strategy that does have an extensive research base supporting its effectiveness is repeated reading, “a supplemental reading program that consists of re-reading a short and meaningful passage until a satisfactory level of fluency is reached” (Samuels, 1979 p. 377). Therrien and Kubina (2007) propose that one reason for the strong effect of repeated reading is related to automatic word processing. Repeated reading improves word recognition skills, therefore improving automatic word processing.

Although extensive research indicates that repeated reading improves reading fluency and has the potential to improve comprehension (Therrien, 2004), very little research explains why it works. Therrien and Kubina (2007) sought to identify the reasons that repeated reading works so well in addition to when and with whom repeated reading should be used. Does repeated reading only improve word recognition or does it improve a variety of reading skills? Is providing word recognition practice within a connected text passage better than other instructional approaches? To address these questions, they designed a study in which students served as their own controls in a two-by-two design- contextual or acontextual words and order of training materials- contextual words followed by acontextual words or acontextual word followed by contextual words. The contextual word condition most likely would require higher linguistic

processing as students read connected text. The words that were out of context were described as “acontextual” words and were given to the student on a word list. The acontextual condition most likely did not require higher linguistic processing as students read words from the connected text paragraph in a list with the words randomly presented. After training, a transfer task was administered. During the transfer task, novel passages that contained a high percentage of the words used in the treatment condition was used.

During each intervention session, the number of word errors in the first reading and the number of readings required to meet criterion were recorded. Number of correct words per minute (CWPM) and number of word errors on the transfer passages were also recorded. Participants were students in third, fourth, or fifth grade who were reading below grade level, as measured by the Ekwall/Shanker Reading Inventory (2000). Students were randomly assigned to Condition 1 or Condition 2. During intervention, students read the easy passage quickly and accurately, then read the easy passage aloud until a rate of 93 CWPM was obtained. Next, students read the experimental passage (Condition 1) or words out of context (Condition 2) quickly and accurately. Students in Condition 1 repeatedly read the words in context out loud and students in Condition 2 repeatedly read the word list out loud until a rate of 93 CWPM was obtained and/or the passage words were read six times. The transfer passage was given right after the criterion was reached on the experimental passages.

Students were told to read the transfer passage as quickly and accurately as possible. All student participants completed both conditions.

Results indicated that when students re-read words in context, they read the words faster and with fewer errors. Students' reading speed increased and number of word errors decreased as they re-read the connected text passage. This allowed all the students to obtain a rate of 93 CWPM across the six readings that were conducted. In summary, this study provides evidence that reading words in context is more efficient than reading words out of context. These results also provide support for automatic word processing. This study indicates that repeated reading improves word recognition.

Therrien (2004) conducted a meta-analysis of repeated reading studies to determine if repeated reading is effective in increasing reading fluency and comprehension, determine the components within a repeated reading intervention that are important to the success of the program, and to determine if students with cognitive disabilities benefit from repeated readings. Findings indicate that repeated reading does in fact improve reading fluency and comprehension for students without disabilities as well as for students with cognitive disabilities. All students obtained a moderate mean increase in fluency and a smaller mean increase in comprehension. When students reread a passage, they read it more fluently and with better comprehension. Therrien also noted that all repeated reading interventions should be led by an adult. Therrien

may have recommended that the intervention be led by an adult because an adult is more likely to have more patience with a struggling reader. If a peer runs the reading intervention, a peer could become frustrated when the struggling reader does not remember the word. Similarly, an adult likely has more experience working with struggling readers and know more strategies to help the reader read more words with accuracy.

Additionally, during repeated reading interventions, students should (a) read the passage three to four times, (b) reach a performance criterion, and (c) receive corrective feedback.

A reading fluency intervention that combines elements of both NIM and repeated reading is duet reading. Although no published research on duet reading could be located, Engelmann (2005), who has conceptualized and studied many research-based reading intervention programs, developed a guide for implementing duet reading. He noted that slow-reading low performers can make significant progress in reading faster and more accurately when the duet reading procedure is used.

Engelmann explained that during duet reading the teacher and student sit next to each other and alternate reading words from the same passage. The teacher begins by reading the first word, and then the student reads the next words, and so on. Engelmann reports that the learner's performance will increase quickly. He also recommends that the passage is duet read twice and

that the teacher points under the word to be read throughout the passage, for best practice. According to Engelmann this procedure is successful with all slow readers and especially with students who pause before saying the word, touch the letters in the word many times before reading it, read the word incorrectly then read it correctly, or look at the teacher after every word to confirm they read the word correctly.

Engelmann (2005) lists five reasons for duet reading's effectiveness. First, duet reading changes the familiar reading context--duet reading is more like fast word reading rather than sentence reading. Second, the reading task is easier than reading isolated words because there are context clues for the student to rely on. Third, there is a "Simon says" effect. The student receives a model and hears the teacher say the words quickly and accurately. Fourth, duet reading prevents the student from looking ahead in anticipation of the next word to read. Instead, the teacher will be reading the next word. Fifth, the reading procedure pre-corrects words that appear many times throughout the story. The student will likely hear the word read correctly by the teacher, thus giving them a model and making it easier for the student to read when the student needs to read the word.

The purpose of this study was to examine the effects of an intervention package that included duet reading, an error correction procedure, and self-

graphing, on novel readings and on practice readings of elementary students with disabilities. The research questions for this study included the following:

1. What is the effect of duet reading on the reading fluency of elementary students with disabilities when reading novel reading passages?
2. What is the effect of duet reading on the reading fluency of elementary students with disabilities when reading repeated readings?
3. What are the students' and teachers' perceptions of duet reading's goals, procedures, and outcomes?

Chapter 2: Methodology

This chapter will discuss the participants and setting of the study, the definition and measurement of the dependent variable, the materials used, the experimental design, and the interobserver agreement and procedural integrity.

IRB Approval

First, a research protocol was submitted to The Ohio State University's Institutional Review Board for approval. Once approved, consent, assent, and parent permission were obtained for all participants.

Participants

Three elementary students with mild disabilities participated in this study. All three participants had reading fluency goals on their individualized education programs (IEPs) and received some pull-out reading instruction in the resource room.

Cole. Cole (age 8) was a third grade white male who received intervention support for reading, writing, school success skills, speech, and occupational therapy. He qualified for special education services under the category of Autism. The reading goals listed on his IEP included improving fluency and decoding skills in order to be on level with his 3rd grade peers. At baseline, his words read per minute was 63 and WCPM and the 50th percentile is 87 for third grade.

Jack. Jack (age 8) was a third grade Asian male in the third grade. He qualified for services under the specific learning disability category. The reading goals listed on his IEP included improving his decoding and fluency skills. At baseline, his words read per minute was 67 and WCPM and the 50th percentile is 87 for third grade.

Andy. Andy (age 10) was a fifth grade white male who received special education support for several social-emotional areas, including inattention, hyperactivity/impulsivity, learning problems, executive functioning, defiance/aggression, and peer relationships. He qualified for special education services under the category of Other Health Impairment, for ADHD. The reading goals listed on his IEP included improving fluency and decoding. At baseline, his words read per minute was 80 and WCPM and the 50th percentile is 121 for fifth grade.

Setting

All data collection and the intervention took place in the elementary school the students attended, in a special education resource classroom. This public elementary school was located in a suburb of Columbus, Ohio, and served approximately 400 students with and without disabilities.

During intervention, no one else was in the resource classroom, so the environment was quiet. The professionals who were consulted for this study were

the student's general education classroom teachers as well as the student's special education teacher.

Definition of Dependent Measures and Data Collection Procedures

There were two primary dependent variables of interest. First, data was collected on words read per minute on novel grade level passages from AIMSweb. During the first read, the student read the passage aloud for one minute. The teacher recorded the number of words read correctly.

The second variable was words read per minute on practiced grade level passages from AIMSweb. These data were collected during the fourth read. The student read the passage a fourth time aloud for one minute. The teacher recorded the number of words read correctly.

In addition, during intervention, students were given grade level passages in science to assess for generalization and data were collected on words read per minute. The generalization phase was completed the same way that baseline was done.

At the conclusion of intervention, participants (students and their classroom teacher) completed a questionnaire indicating their levels of satisfaction with the procedures and outcomes of the intervention.

Materials

Reading passages from AIMSweb. AIMSweb passages are available for grade K-8 as a progress-monitoring tool for curriculum-based measurement. According to AIMSweb, each grade-level passage was written and researched by experienced educators and have been tested in the field. See Appendix A for a sample reading passage.

Data Sheet. The experimenter used a data sheet to record the number of words read correctly during the first and fourth reading. Appendix B shows the data sheet.

Hot and Cold Student Graph. A student graphing component was included in the study. The student self- recorded how many words he read correctly during the first read (Cold Read) and during the fourth read (Hot Read). The student colored the number of words read correctly on the bar graph blue for the cold read and red for the hot read. See Appendix C for a sample completed graph.

Timer. The experimenter used the timer on her mobile smart phone to record the number of words read correct per minute.

Reading passages from ReadWorks for the generalization condition. ReadWorks provides over 2,200 K-12 non-fiction and literary reading passages, each has a research-based question designed to support student comprehension. According to ReadWorks, ReadWorks is built on the highest

quality research, using the influential findings of the National Reading Panel (NRP) and RAND Reading Study Group.

In addition to the written research, ReadWorks was developed by collaborating with researchers and practitioners in the country, as well as teachers and principals in classrooms across the nation.

Independent Variable

The independent variable in this study was duet reading. In a duet reading intervention, the teacher and student read the same passage and alternate reading each word. During the second reading, the teacher begins reading every other word and during the third reading, the student begins reading every other word. This ensures that the student reads all of the words in the passage.

Experimental Design

A pre-experimental A-B design, replicated across three students, was used to evaluate the effectiveness of the intervention. This study focused on words read per minute. Baseline data were collected on words read per minute until a stable pattern was observed. Intervention began with the student who showed the most stable baseline and the greatest need for intervention. The remaining students would then be given another baseline probe, and the next participant for intervention would be determined, based on stable baseline data and need for intervention.

Procedures

Baseline. During baseline, students read aloud a novel, grade-level passage from AIMSweb for one minute. They then read that same passage silently two more times. Finally, they read that same passage aloud for one minute. When students hesitated on a word, the experimenter provided the word for them (and counted it as an error); however, no other error correction was implemented.

Duet Reading. During each intervention session, the student read a passage, or part of a passage, four times. During the first read, the Cold Read, the teacher started the timer for one minute, and the student read aloud, while the teacher followed along with a copy of the same passage, marking errors. Errors included words read incorrectly, word omissions, word insertions, and skipped lines. Self-corrections within 3 seconds were not counted as errors. After one minute, the student stopped reading. The teacher told the student how many words he read correctly, and the student colored in that number on the “Cold” column on the Cold and Hot Read Graph, a self- graphing component.

The second and third reading were read duet style. Specifically, the teacher and student sat next to each other so that both student and teacher could read from the same passage. Highlighted passages were created to help the teacher and student know which words to read. The teacher always read the highlighted words. The teacher and student took turns reading every other word.

During the second read, the teacher read first. For the third reading, the student began reading first. During the second and third readings, the teacher read with excellent expression to avoid typewriter style output. The teacher pushed the pace forward by reading each next word as soon as the student read the last word. The teacher provided a standard error correction immediately following any error. ("That word is _____. What word?" The student repeated the word. Teacher said, "Yes. That word is _____." The student went back to the beginning of the sentence to begin duet reading again.)

During the fourth reading, the experimenter followed the same procedures as the cold read, except this reading was referred to as the "Hot Read", and the student self-graphed his data on the "Hot" column on the Cold and Hot Read Graph.

When the bar graph was completed the teacher provided feedback and asked the student if his cold read or hot read was faster. If the hot read was faster, the teacher praised the student for improving his reading. If the cold read was faster, the teacher would have provided an encouraging statement about improving fluency in the next session; however, this never occurred. The teacher then, thanked the student for his hard work.

Generalization

A generalization assessment was also used post- intervention phase. The student read a grade level science passage from ReadWorks. The same

procedures that were used during baseline were used during the generalization phase. The student read the science passage once aloud for one minute. Then, read the passage twice, silently. The student then read the passage a fourth time, aloud. During the first and fourth readings, the number of words read correctly was recorded. See Appendix D for a sample of a generalization passage.

Interobserver Agreement

Interobserver agreement (IOA) was conducted at 12% of the intervention sessions. The second observer independently recorded words correct per minute (WCPM) and errors during the Cold and Hot reads. IOA was then calculated by dividing the number of agreements by the number of disagreements and multiplying the quotient by 100.

Treatment Fidelity

Procedural reliability was assessed using a checklist (see Appendix E). The checklist with approximately thirty steps was used by the second observer during the intervention phase of the study. The number of steps varied depending on how many errors needed to be corrected. The second observer observed 12% of the sessions and used the checklist to verify that each planned step of the intervention was in fact implemented. Procedural reliability was then calculated by dividing the number of steps completed correctly by the total number of steps on the checklist and then multiplying by 100.

Social Validity

A social validity questionnaire was given to each participant as well as a teacher validity questionnaire given to one of the special education teachers.

The questionnaire (see Appendix F) for the student participant asked five questions that were answered using a rating scale. The questions asked about how the student liked participating in duet reading. Following the likert scale style questions, there were two short answer questions and then one multiple-choice style question all about how the participant liked duet reading. The directions in the questionnaire were read aloud to all participants. The first question was read aloud to all the participants and the researcher explained how to choose an answer and ensured the participant understood how to fill out the questionnaire and answered any questions the participant had. The researcher read the entire questionnaire to Cole, as it was determined he may have difficulty completing the questionnaire independently.

A questionnaire (see Appendix G) for the teacher was also created and began with 11 questions based on what the teacher thought of duet reading and their likelihood of using duet reading in their own classroom. Following the first 11 questions, there were two yes/no questions, and then two short answer questions.

Chapter 3: Results

This chapter will discuss the results of the interobserver agreement, procedural reliability, and the dependent variables of the words correct per minute (WCPM) on novel passages and WCPM on practiced passages. Additionally, social validity data will be presented.

Interobserver Agreement

Interobserver agreement (IOA) was assessed on 7 occasions (12.2% of intervention sessions). Interobserver agreement was calculated across all participants for WCPM on both novel (“cold”) and practiced (“hot”) passages during the intervention phase. The second observer independently recorded WCPM and errors during the cold and hot reads. IOA was then calculated by dividing the number of agreements by the number of disagreements and multiplying the quotient by 100. The mean IOA for WCPM across all participants was 95.7% (range: 84.5%–100%). Table 3.1 shows means and ranges for IOA data for each participant.

Table 3.1 shows IOA data.

Name	Mean IOA	Range
Cole	90%	84.5-97%
Jack	99.1%	97.5-100%
Andy	98%	98%

Procedural Reliability

Procedural reliability was assessed on 7 separate occasions (12.2% of intervention sessions). The observations were conducted to ensure procedural integrity across sessions and participants, during the intervention phase. The second observer used a checklist with approximately thirty steps. The steps were outlined for each of the four readings of the intervention. The observer marked a check mark next to each step that was present during the observation. The number of total steps depended on the numbers of errors the student made during duet reading. The mean procedural reliability across all sessions was 95.7%. Procedural reliability ranged from 88% to 97% across all participants and sessions.

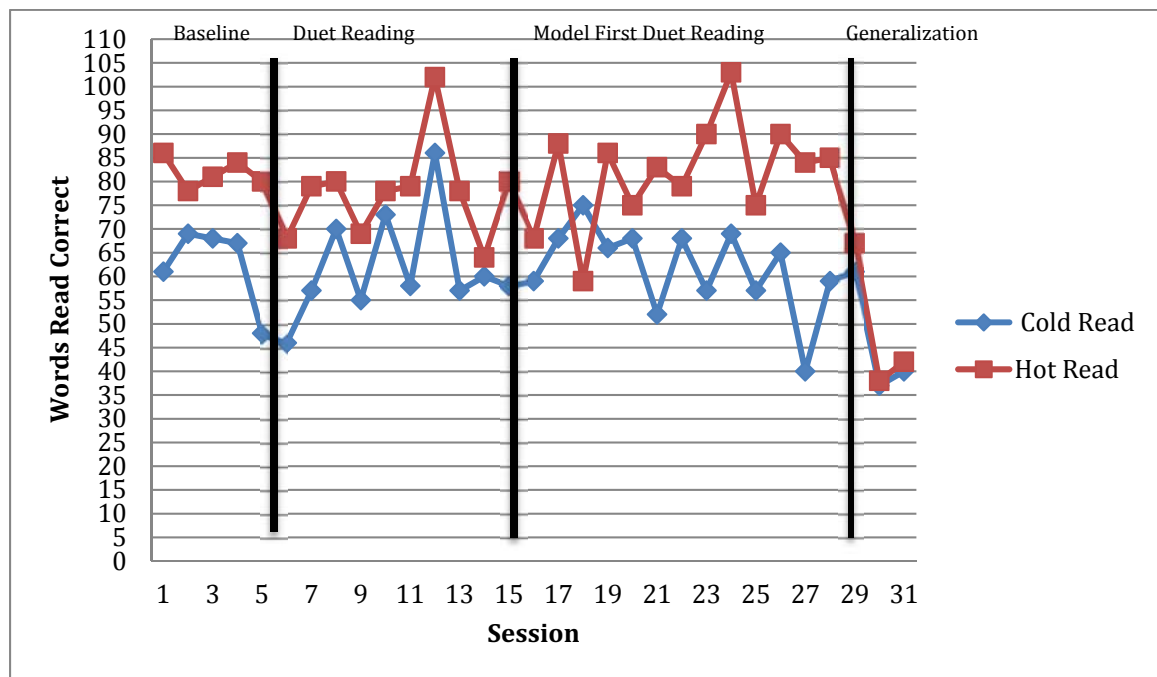
Table 3.2 Table of Treatment Fidelity Data.

Participant	Mean Treatment Fidelity	Range
Cole	91.1%	88.0–93.9%
Jack	97.0%	n/a
Andy	96.0%	n/a

Participant Outcomes

Cole.

Figure 3.1- Graph of Cole's data across all experimental conditions.



Cole showed the greatest need for intervention so he began intervention first. Cole's cold read baseline data were stable ranging from 48 to 69 WCPM with a mean score of 62.6 WCPM and a descending data point right before intervention. During intervention, Cole's cold read WCPM maintained at a level similar to baseline with a mean of 61 WCPM (range: 40–86).

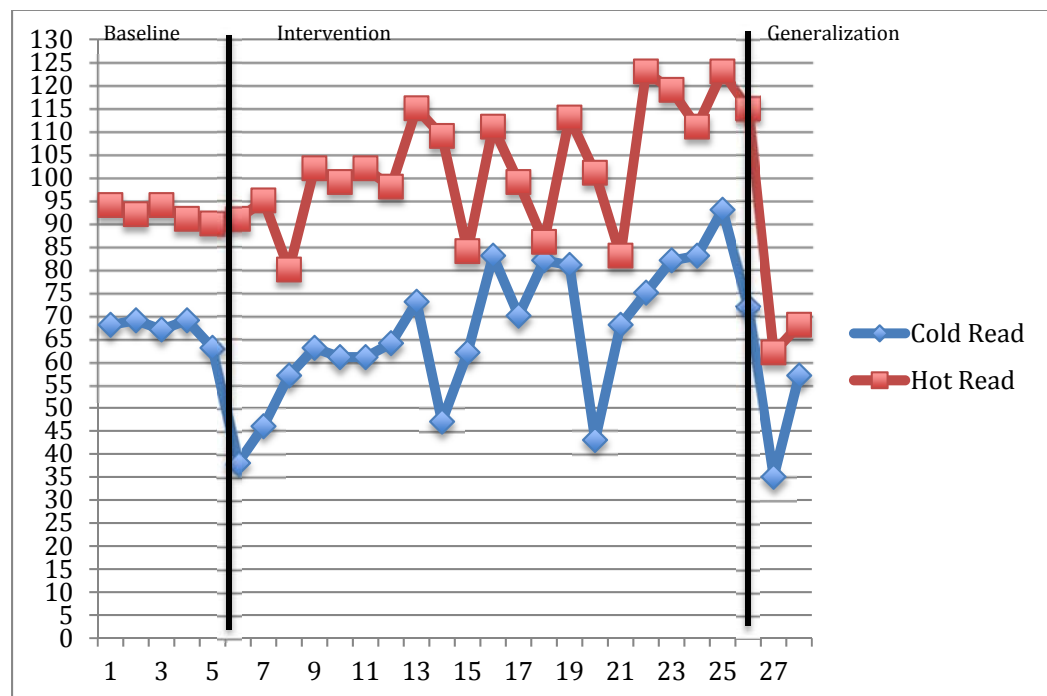
For Hot Reads, Cole's baseline data were stable, ranging from 78 to 86 WCPM and a mean score of 82.25. During intervention, his mean WCPM was 95

words per minute (range: 59–103) and a high level of variability. At session number sixteen, it was determined that no effect was observed; therefore, a change in the intervention was implemented. First, the passage was read aloud by the experimenter to Cole, as a model. After the experimenter read the passage, the intervention continued as in the previous duet reading condition.

During the generalization phase, Cole's cold read ranged from 37-40 WCPM from with a mean score of 38.5 WCPM. Cole's hot read ranged from 38-42 WCPM with a mean score of 40 WCPM.

Jack.

Figure 3.2- Graph of Jack's data across all experimental conditions.



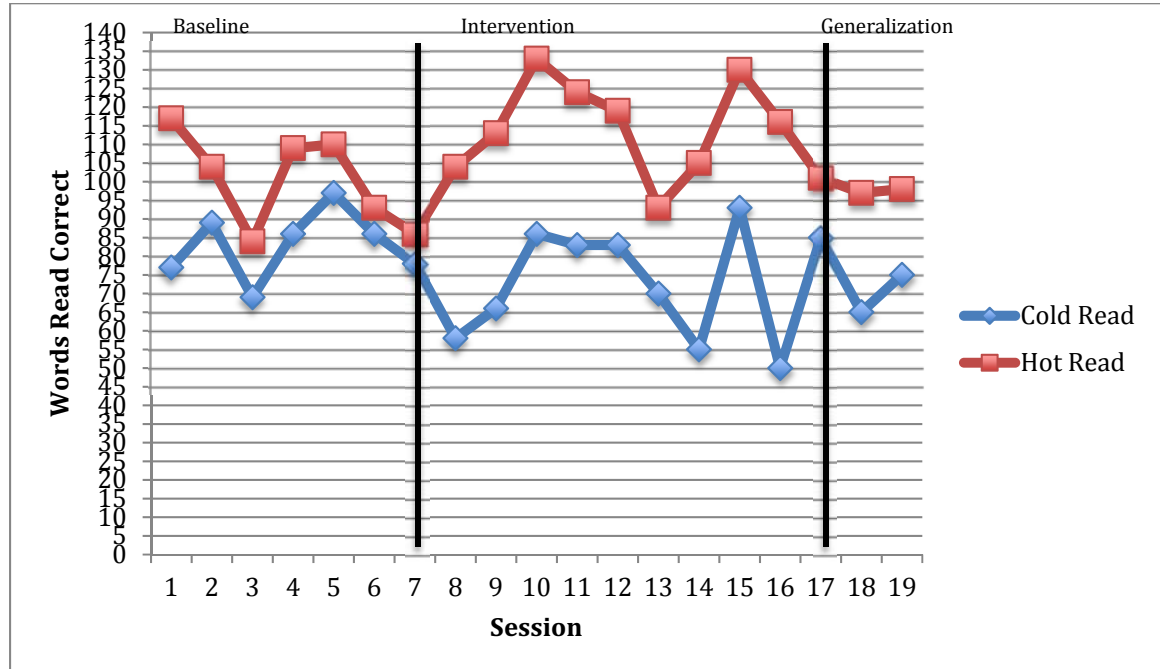
Jack showed a higher need for intervention than Andy, therefore, Jack began intervention next. Jack's cold read baseline data were stable ranging from 63 to 69 WCPM with a mean score of 67.2 WCPM and a descending data point right before intervention. During intervention, Jack's mean cold read WCPM was 66.6 and ranged from 38- 93 WCPM.

For Hot Reads, Jack's baseline data were stable, ranging from 91 to 94 WCPM with a mean score of 92.7 WCPM. During intervention, his mean WCPM was 102.2 with a range from 80- 123 WCPM.

During the generalization phase, Jack's cold read ranged from 35 to 57 WCPM with a mean score of 46 WCPM. Jack's hot read ranged from 62-68 WCPM with a mean score of 65 WCPM.

Andy

Figure 3.3- Graph of Andy's data across all experimental conditions.



Andy was the last participant to begin intervention. Andy's cold read baseline data were stable ranging from 77 to 97 WCPM with a mean score of 80 WCPM and a descending data point right before intervention. During intervention, Andy's cold read WCPM mean was 74.5 with a range of 50-93 WCPM.

For Hot Reads, Andy's baseline data were stable, ranging from 84 to 117 WCPM with a mean score of 104 WCPM. During intervention, his mean WCPM was 111.2 with a range of 86-133 WCPM.

During the generalization phase, Andy's cold read ranged from 65-75 WCPM with a mean score of 70 WCPM. Andy's hot read ranged from 97-98 WCPM with a mean score of 97.5 WCPM.

Table 3.3 shows all three participants' data throughout all phases of the intervention.

Participant	Mean WCPM for Cold Reads		Mean WCPM for Hot Reads		Mean WCPM for Post-Duet Generalization	
	Baseline	Duet	Baseline	Duet	Baseline	Duet
Cole	62.6	61	82.2	95	n/a	38.25
Jack	67.2	66.6	92.7	102.2	n/a	55.5
Andy	80	74.5	104.4	111.2	n/a	83.75

Social Validity

On both the student and teacher social validity questionnaire, the first set of questions was based on a rating scale: 1 (not at all), 2 (a little), 3 (a lot). The student questionnaire had five items, and the teacher questionnaire had 15 items. The student questionnaire then had three short answer questions. The teacher questionnaire had four short answer questions.

Cole reported a 13/15 for the first five questions. Cole reported that he liked taking turns reading back and forth with the teacher “a lot,” having the teacher tell him the correct word “a lot,” and that he liked coloring in the hot and cold graph “a lot.” On the short answer questions he reported that he thought duet reading was, “A little too long,” and that he liked that duet reading, “Helps me. Read more words.” Cole also reported that he prefers duet reading over silent reading.

Jack reported a 11/15 for the first five questions. He reported that he did not like “at all” having the teacher tell him the correct words when he read them wrong, he did like coloring in the hot/cold graph “a lot,” and that duet reading helped him be a better reader “a lot.” He reported that he did not like when “we read back and forth” and that he liked “coloring in the graph” the most. Lastly, he reported that he prefers duet reading over silent reading.

Andy reported a 13/15 for the first five questions. He reported that he thought it was important for him to read better and faster “a lot,” liked having the

teacher tell him the correct word “a lot,” and thought duet reading helped him become a better reader “a lot.” He reported that he did not dislike anything about duet reading and that he liked to “read with the teacher” the most about duet reading. And finally, he reported that he preferred duet reading over silent reading.

The special education teacher who observed three sessions and answered the social validity teacher questions reported a 27/33. She reported that she would be able to train paraprofessionals or other volunteers to conduct duet reading “a lot,” that duet reading, the error correction and self-graphing procedures appear easy to implement “a lot.” The teacher reported that she would supplement repeated reading with duet reading, would not replace repeated reading with duet reading, and that she would, “try this with some of my students.”

Chapter 4: Discussion

This chapter will present a discussion of the research questions, limitations to the study, directions for future research, and implications for practitioners.

Research question #1: What is the effect of duet reading on the reading fluency of elementary students with disabilities when reading novel reading passages?

There does not appear to be a functional relation between duet reading on reading fluency when reading novel reading passages. Each participant had little to no increase in their mean number of words read correct during the intervention condition. Cole's average cold read during baseline was 62 WCPM and his average intervention cold read was 61 WCPM. Jack's average cold read during baseline was 67 WCPM and his average intervention cold read was 66 WCPM. Andy's average cold read during baseline was 80 WCPM and his average intervention cold read was 74 WCPM. None of the participants had a significant increase in average cold read WCPM. These findings may explain why there is little research showing the effect of duet reading. The findings of this study provide research on duet reading, while there is currently little to no research on duet reading.

Although no published research on duet reading could be located, Engelmann (2005), who has conceptualized and studied many research-based

reading intervention programs, developed a guide for implementing duet reading. He noted that slow-reading low performers can make significant progress in reading faster and more accurately when the duet reading procedure is used.

Research question #2: What is the effect of duet reading on the reading fluency of elementary students with disabilities when reading repeated readings?

There does appear to be a functional relation between duet reading and reading fluency on practiced passages. All participants increased their number of words read correct after duet reading was conducted on repeated readings. Cole's average baseline hot read was 82 WCPM and his average intervention hot read was 95 WCPM. Jack's average baseline hot read was 92 WCPM and his average intervention hot read was 102 WCPM. Andy's average baseline hot read was 104 WCPM and his average intervention hot read was 111 WCPM. This improvement on reading fluency on repeated readings is consistent with the current research on repeated readings. This research study suggests that duet reading is an effective intervention for improving reading fluency when reading repeated passages.

The findings in this study support Samuels' (1979) findings of the strong effect of repeated reading on reading fluency. One fluency strategy that does have an extensive research base supporting its effectiveness is repeated reading, "a supplemental reading program that consists of re-reading a short and

meaningful passage until a satisfactory level of fluency is reached” (Samuels, 1979 p. 377). In this study, every participant increased the words read correctly after they read the passage more than once. This study also supports the findings of Therrien and Kubina (2007) who found when students re-read words in context, they read the words faster and with fewer errors. Students’ reading speed increased and number of word errors decreased as they re-read the connected text passage.

Lastly, Engelmann (2005) suggests that the success of duet reading is partially due to the modeling aspect used in the intervention. Engelmann (2005) says that there is a “Simon says” effect. The student receives a model and hears the teacher say the words quickly and accurately. Duet reading included modeling, in which the teacher models how to read each word, as the student and teacher alternate words. The teacher also modeled appropriate expression and pace.

Research question #3: What are the students’ and teachers’ perceptions of duet reading’s goals, procedures, and outcomes?

The teacher reported a positive opinion of duet reading. She reported it was something worth trying with her own students and supplementing with repeated reading interventions. She did not report that she would replace repeated reading with duet reading most likely due to the lack of evidence that

this study presented in supporting the positive effect of duet reading on improving reading fluency.

The student reports of duet reading were less conclusive. Two of the participants reported they liked reading back and forth with the teacher “a little.” Two of the participants reported that they liked having the teacher tell them the correct word. All three participants reported that they enjoyed coloring the hot and cold graph.

All of the participants reported that duet reading helped them become a better reader. All of the students reported that they preferred duet reading over silent reading. One participant reported not liking reading back and forth with the teacher or having the correct words told to him when he made a mistake. Lastly, one participant reported that duet reading took longer than he preferred.

Limitations

The most significant limitation was use of a design that did not allow for experimental control. Had there been improvements in the intervention condition, my design would not have allowed me to conclude with certainty that the effects were a result of my intervention. However, given that there were not clear changes from baseline to intervention for any of the participants, this limitation is less concerning. What is of greater concern is there were not changes—indicating this intervention was not effective. The intervention was initially designed for a multiple baseline across participants, however, when a robust

effect was not observed with participant 1, the design was changed. If multiple baseline across participants design had been used, the interventionist would have had to wait much longer to see if an effect would occur which would also put participant 2 and 3 at a disadvantage, as they would have to wait a longer time to begin intervention. Based on their baseline data, it was obvious they were in need of a reading intervention so the design was changed to a pre-experimental A-B design in order to begin participant 2 and 3 in intervention.

One possible explanation for the ineffectiveness of the intervention is the AIMSweb passages may not have been of equivalent difficulty. For instance, some topics may have been more familiar to participants than topics on other passages. If a topic in one passage was familiar to a participant, this may have assisted the student in reading a higher number of words correctly. Conversely, unfamiliar topics in passages may have caused the participants to read at a slightly slower rate and with less accuracy.

Another limitation to this study could be the limited number of fidelity data. A second observer observed 7 sessions, which was only 12% of intervention sessions. Mean interobserver agreement across all observation was 94%. Mean procedural fidelity was collected for 12% of sessions. Mean procedural fidelity across all observations was 94%. The variability in procedural fidelity was due to the error correction procedure. The interventionist did correct every error but did not always go back to the beginning of the sentence when each error was

made. The averages for IOA and procedural fidelity could have increased or decreased with more observation sessions.

Additionally, a limitation to this study was IOA for Cole was very difficult to measure. Cole's speech was difficult to understand; therefore, his reading accuracy was difficult to measure. This difficulty led to IOA decreasing and being more difficult to measure. Had his speech not been an issue, IOA would have been much higher and had greater stability. The researcher and second observer concurred that his reading was difficult to understand therefore, leading to uncertainty as to whether or not he read words correctly.

Lastly, a limitation is that there is no way to be certain that the participant read silently during the baseline and generalization conditions. This limitation is usually dealt with by requiring the participant to read aloud to make certain he/she is actually reading the passage more than once.

Future Directions

Future researchers should address the limitations discussed by using an experimental design, such as a multiple baseline across students, collecting sufficient IOA and treatment integrity data, and taking measures to ensure passages are of equivalent difficulty. Additionally, future researchers could collect data on students without learning disabilities. Perhaps, duet reading would be more effective on students who are reading at or above grade level to improve fluency and expression.

If an effect is observed using this intervention during future research, it would also be recommended that the examiners include a maintenance procedure. Researchers should look at how long the effects maintain once duet reading has ended.

Future researchers could conduct this study with a minor change in the baseline and generalization conditions. Rather than having the students read the passage “silently to themselves,” the student would read the passage aloud in order to ensure the repeated reading actually occurs. Additionally, data on the generalization measure should be collected before and after intervention. This would allow for a more accurate comparison to verify if the skills generalize into of areas of academia.

Future researchers could collect data on students in a whole group or small group settings, rather than one-on-one. This could be done in the classroom during reading instruction with the entire class or small groups choral reading every other word, alternating with the teacher.

Implications for Practice

Teachers should continue using reading fluency interventions that they already know work and that have empirical research support. When using a repeated reading intervention, teachers could try duet reading as a variation of repeated readings.

Teachers should consider highlighting the passages, as was done in this study. The highlighted passages helped the researcher know which word to read, as it can become confusing to keep track of while taking turns. It was also helpful during the error correction procedure when teacher and student had to go back to the beginning of the sentence when an error was made. It can be difficult to remember if teacher or student began reading the sentence.

Teachers may want to revise the baseline and generalization condition to replace silent reading with the student reading aloud to ensure that the student actually reads the passage more than once. Teachers should collect data when using duet reading to confirm its effect and if no effect is observed, teachers should discontinue duet reading.

Teachers should use a self-graphing component as it was observed to be motivating for the participants. The participants liked to see how much they increased their words read on the graph. It was a useful visual representation for the students, rather than just telling them the numbers of words read each time. When the students completed their self-graphing, it provided immediate feedback on how they improved their reading. Immediate feedback was also very motivating for the students. They knew of their improvement right away.

It may be beneficial for teachers to set a goal for the students as well. Goal setting may increase motivation as well and help the student to reach even

higher numbers of words read. Goals could be posted in the classroom to serve as a visual reminder to the student of what he/she is trying to achieve.

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APPENDIX A: AIMSweb Passage

Albert was a goldfish in a bowl. He ate a breakfast of green and brown flakes each morning. Then he watched the children go off to school.	14 26 27
Albert hated being stuck in his bowl because he could only swim around in circles. He'd rather go to school. Poor Albert couldn't even read a book. The pages would get soaked!	39 51 59
Albert was quite a smart fish. He could do flips under water. He could spell his name in the pebbles on the bottom of his bowl. No matter how brilliant Albert was though, he still had a problem. Only the cat spoke to him. And the cat was not particularly nice to him.	72 86 99 112
"I'll eat you up one day," the cat would tell Albert when they were all alone in the house. "I'll gobble you right up. You will be surprised to discover that no one will miss you."	127 141 148
It seemed to Albert that everyone loved the cat. No one seemed to notice the cat was mean. No one seemed to care that the cat hated books and wasn't smart. The cat couldn't even spell his own name, but the children played with him every day.	161 175 188 195
One day the cat dipped his paw in Albert's fishbowl. To save himself, Albert swam to the very bottom of his fishbowl. He hid behind some rocks. When the children came home from school that day, they saw the cat was wet. They didn't see Albert hiding behind the rocks in the bottom of his fishbowl, and that scared them.	207 220 232 246 255
"You are a very naughty cat!" they shouted.	263
Finally one of the children found Albert hiding in the bottom of the bowl. "I found him! I found our wonderful fish!" Albert felt happy that his family loved him after all.	276 289 295
Now the cat gets locked in the basement every day, and the children read books to Albert every night.	307 314

APPENDIX B: Data Sheet

Duet Reading Data Collection

Date/ Session #	1st Reading COLD	Notes for Untimed Reads	4th Reading HOT	Additional Notes	Student ____	
BL						
BL						
BL						
BL						
BL						
Date/ Session #	1st Reading COLD	Notes for Untimed Reads	4th Reading HOT	Additional Notes		
INT						
INT						
INT						
INT						
INT						

APPENDIX C: Hot/Cold Self- Graphing Sheet

Cold Read	and Hot	Read	Reading	Fluency	Progress	Charts							
Name:													
Number of Words Read Correctly	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
100													
95													
90													
85													
80													
75													
70													
65													
60													
55													
50													
45													
40													
35													
30													
25													
20													
15													
10													
Type	Cold	Hot	Cold	Hot	Cold	Hot	Cold	Hot	Cold	Hot	Cold	Hot	

APPENDIX D: Generalization Passage

ReadWorks

A Baby Polar Bear Grows Up

A Baby Polar Bear Grows Up



Polar bears live in ice and snow. A polar bear baby is a cub. A cub is born with its eyes closed. It does not have much hair. A cub drinks its mother's milk. The mother keeps the cub warm.

The cub grows bigger. Soon the cub can walk. Its mother shows it how to hunt. She shows it how to swim. The cub likes to play. It rolls in the snow.

The cub grows stronger. The cub learns to swim. It can find its own food. Now the cub can live by itself.

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APPENDIX E: Treatment Fidelity Checklist

Grashel, K. Intervention Fidelity Checklist for _____ (date) / _____ (session #) Duet Reading

First Reading

_____ Sits at table next to student (rather than across the table).

_____ Places unhighlighted passage in front of student.

_____ Says, "You are going to read this passage for one minute. I will be able to help you with words you do not know. Put your finger on the first word. Ready? Begin."

_____ Sets timer for one minute.

_____ If the student gets stuck on a word for more than three seconds, tells student the correct word and tells student to continue reading. (This correction will be counted as an error.)

_____ When the timer beeps, tells student, "stop reading."

_____ (Counts words read correctly.) Says, "You read _____ words correctly in one minute. Now you can record this on your graph. You will color this number in the cold read column under today's date _____ using the blue color."

_____ Monitors as student colors in bar graph to self-graph performance.

Second Reading

_____ Places highlighted passage in front of student.

_____ Says, "Now we will begin duet reading. I will start reading the first word, then you will read the next word and we will continue reading the entire passage, taking turns reading every other word. The words that I will read this time are highlighted yellow. Ready?"

_____ Alternates reading with student.

_____ Presses pace forward (i.e., immediately reads next word after student reads).

_____ Tracks with finger under words being read.

When the student makes an error, provides immediate error correction for each error. "That word is _____. What word?" The student repeats the word. Teacher says, "Yes. That word is _____. Now go back to the beginning on this sentences and begin reading again." [The teacher will record this error. Teacher and student should still alternate words, with the teacher reading the yellow words.]

_____ Error 1	_____ Error 2	_____ Error 3	_____ Error 4	_____ Error 5	_____ Error 6
_____ Error 7	_____ Error 8	_____ Error 9	_____ Error 10	_____ Error 11	_____ Error 12
_____ Error 13	_____ Error 14	_____ Error 15	_____ Error 16	_____ Error 17	_____ Error 18

Grashel, K.
Third Reading

Duet Reading

Places **highlighted** passage in front of student.

Says, "Now we will begin duet reading again. We might be able to read it faster this time. You will start reading the first word, then I will read the next word and we will continue reading the entire passage, taking turns every other word. The words that you will read this time are highlighted yellow. Ready?"

Alternates reading with student.

Presses pace forward (i.e., immediately reads next word after student reads).

Tracks with finger under words being read.

When the student makes an error, provides immediate error correction for each error. "That word is _____. What word?" The student repeats the word. Teacher says, "Yes. That word is _____. Now go back to the beginning on this sentence and begin reading again." [The teacher will record this error. Teacher and student should still alternate words, with the teacher reading the yellow words.]

_____ Error 1	_____ Error 2	_____ Error 3	_____ Error 4	_____ Error 5	_____ Error 6
_____ Error 7	_____ Error 8	_____ Error 9	_____ Error 10	_____ Error 11	_____ Error 12

Fourth Reading

Sits at table **next** to student (rather than across the table).

Places **unhighlighted** passage in front of student.

Says, "You are going to read this passage again for one minute. Put your finger on the first word. Ready? Begin."

Sets timer for one minute.

If the student gets stuck on a word for more than three seconds, tells student the correct word and tells student to continue reading. (This correction will be counted as an error.)

When the timer beeps, tells student, "stop reading."

(Counts words read correctly.) Says, "Now you can record _____ for number of words read correctly. You will color this number in the hot read column under today's date _____ using the red color." [Teacher guides and monitors to be sure student is graphing correctly.]

Monitors as student colors in bar graph to self-graph performance.

Provides feedback as follows. Says, "Was your hot read faster than your cold read?" [Student responds,]

If hot read was faster: "Great work. You're getting faster and stronger at reading!"

If hot read was not faster: "We'll have another chance to get faster next time we meet. Thank you for working hard today."

APPENDIX F: Student Social Validity Questionnaire

Social Validity Student Questionnaire

How did you like duet reading?

1. I think it is important for me to read better and faster.	Not at all 1	A little 2	A lot 3
2. I like taking turns reading back and forth with the teacher.	Not at all 1	A little 2	A lot 3
3. Having the teacher tell me the correct word when I read it wrong helped me read with fewer mistakes.	Not at all 1	A little 2	A lot 3
4. I liked coloring in the graph to show my progress.	Not at all 1	A little 2	A lot 3
5. Duet reading helped me become a better reader.	Not at all 1	A little 2	A lot 3

6. What did you not like about duet reading?

7. What did you like most about duet reading?

8. Remember before you started duet reading, Mrs. Grashel asked you to read the passage silently before doing the hot read. If you could chose one way or another, would you rather do...

duet reading

or

silent reading

APPENDIX G: Teacher Social Validity Questionnaire

Social Validity Teacher Questionnaire

What do you think of duet reading?

Complete this questionnaire after you have observed a minimum of 3 duet readings.

1. I feel that duet reading helped the students read with better accuracy.	Not at all 1	A little 2	A lot 3
2. I feel that duet reading increased the number of words that students read per minute.	Not at all 1	A little 2	A lot 3
3. I feel that duet reading improved the students' reading expression.	Not at all 1	A little 2	A lot 3
4. I would be able to train paraprofessionals or other volunteers to conduct duet reading with my students.	Not at all 1	A little 2	A lot 3
5. I plan use the duet reading intervention with my students in the future.	Not at all 1	A little 2	A lot 3
6. Duet reading (back and forth reading with the teacher) appears easy to implement.	Not at all 1	A little 2	A lot 3
7. The error correction procedure appears easy to implement.	Not at all 1	A little 2	A lot 3
8. The self-graphing procedure appears easy to implement.	Not at all 1	A little 2	A lot 3
9. It is important for my students to improve their oral reading fluency.	Not at all 1	A little 2	A lot 3
10. Have you ever implemented repeated reading?	Not at all 1	A little 2	A lot 3
11. Would you continue to use repeated reading by itself?	Not at all 1	A little 2	A lot 3

12. Would you supplement repeated reading with duet reading? Yes or No

13. Would you replace repeated reading with duet reading? Yes or No

14. Suggestions to improve the duet reading intervention...

15. Other observations or comments...