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Effect of teacher collaboration and co-teaching on the response to reading intervention of elementary-aged students with learning disabilities

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THE EFFECT OF TEACHER COLLABORATION AND CO-TEACHING ON THE RESPONSE TO READING INTERVENTION OF ELEMENTARY-AGED STUDENTS WITH LEARNING DISABILITIES

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ABSTRACT

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The purpose of this study was to determine the effects of teacher collaboration and co-teaching on the response to literacy intervention of elementary-aged students with learning disabilities. The study utilized a multiple-baseline approach. The participants in this study included three second-grade students identified with learning disabilities, their special education teachers, and their classroom teachers from a north metro school district in Colorado. During the baseline phase, students received traditional pull-out literacy interventions and classroom instruction. During the intervention phase, the general education teacher and special education teacher collaboratively planned and co-taught the student's small group reading lesson. Students' literacy skills were monitored weekly using a variety of progress monitoring assessments. Students' oral reading fluency was monitored using the DIBELS Test of Oral Reading Fluency (Good & Kaminski, 2002). Sight word fluency was monitored using the Easy CBM word reading assessment (Alonzo & Tindal, 2007). Decoding fluency was measured using the DIBELS Test of Nonsense Word Fluency (Good & Kaminski, 2002). Overall reading levels were assessed using the Phonological Awareness Literacy Screening (PALS; Invernizzi et al., 2003). Results were analyzed based on a visual analysis and the percentage exceeding the median (PEM). Results varied among participants. Overall

results for oral reading fluency indicated that two students had a moderate response while the third student had a questionable response. The EasyCBM Word Reading assessment results resulted in two of the three students falling in the questionable range while the third student demonstrated a high effect size. A higher level of response was illustrated on the DIBELS Nonsense Word Fluency assessment with two out of three students falling in the high range and one student falling in the moderate range. Overall changes in reading level varied for each student. Student One regressed, Student Two increased his reading level, and Student Three remained the same. Teachers filled out a post-study Intervention Rating Profile (IRP) and participated in a teacher interview to measure the social validity of the intervention. The teacher interview and IRP indicated that teachers perceived the use of the co-planning and co-teaching intervention as beneficial for students with academic difficulties. Benefits of the co-planning and co-teaching intervention included the opportunity to learn from each other and the ability to create a bridge from the classroom to intervention setting. Teachers identified scheduling co-teaching opportunities and finding time to co-plan as barriers to the co-planning and co-teaching intervention.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

In the past 10 years, a great deal of instruction and research has focused on the impact of reading instruction based on the five components of reading posited by the National Reading Panel's report (National Institute of Child Health and Human Development, 2000). As a result, schools around the nation have designed literacy instruction to include phonics, phonological awareness, fluency, vocabulary and comprehension. Schools using a RTI model are able to target students who are not meeting literacy benchmarks and provide supplemental instruction. Despite these efforts, there continues to be a group of students, often students labeled with Specific Learning Disabilities, that is considered to be a low responder group to research-based literacy instruction. This group of students is often placed in intensive literacy interventions provided by special education without making the gains necessary to close the gap with their peers. Vaughn, Wanzek, Murray, Linan-Thompson, and Woodruff (2009) suggest that such reading interventions often lead to the increase of more basic, foundational reading skills as opposed to higher level skills, e.g., comprehension, which have proven more difficult to remediate. In addition, many critics of special education reading interventions suggest that the interventions focus a great deal of time on isolated skill practice and relatively less time on actually reading text (Vaughn, Levy, Coleman, & Bos, 2002; Yatvin, Weaver, & Garan, 2003). Moreover, the majority of these reading

interventions, especially in special education, take place in isolated settings without a clear link to the general education curriculum (Odden & Picus, 2008). Carter, Prater, Jackson, and Marchant (2009) suggest that special education students often receive fragmented services that do not connect student learning to the general education curriculum. As a result, students often are unable to link new strategies to the classroom curriculum and struggle to catch up to their peers (Torgesen et al.,1999).

Adding to the burden of creating effective interventions for students with learning disabilities is the need for teachers to recognize the need to collaboratively share the responsibility of students' progress (Friend & Pope, 2005). One of the professional collaborations essential in a public school setting is the collaboration between special education service providers and general education teachers. Friend (2000) suggests that despite special and general education teachers' beliefs that they are effectively collaborating for student success, teachers tend to use ineffective and time consuming methods when attempting to collaborate. School climate can also interfere with the collaborative practices as teachers often prefer to work on their own rather than utilize the time necessary to engage in joint decision-making (Friend & Pope, 2005). In addition, teachers often lack the time and training necessary to effectively collaborate in the school environment (Karge & McClure, 1995; Roache, Shore, Gouleta, & Obaldia Butkevich, 2003). Lack of research regarding the impact of collaborative practices on the literacy achievement of students with learning disabilities makes it difficult for educators to identify effective practices (Falk-Ross et al., 2009; Murawski & Swanson, 2001; Welch, 2000). In an age of budget cuts and lack of resources, schools around the nation are trying to meet the needs of more students with less time and money.

While collaboration and co-teaching may require time and training, the practice also offers the possibility of increasing student achievement (Friend, 2000; Friend, 2007; Kohler-Evans, 2006). Collaboration has the potential to ensure students receiving interventions outside the classroom are able to seamlessly move from one learning environment to the next while learning the same skills and strategies, thereby increasing the opportunities for improvement. Effective collaboration and planning is essential in ensuring that students are able to maximize time spent in classrooms as well as time spent in interventions. Without the link, many students may continue to have difficulty responding to isolated interventions and fall even farther behind their peers. When practiced effectively, collaboration might be the missing link to increasing the responsiveness to intervention for students with specific learning disabilities.

Purpose of Study

The purpose of this study was to determine the effects of teacher collaboration and co-teaching on the response to literacy intervention of elementary-aged students with learning disabilities. The study utilized a multiple-baseline approach. The participants in this study included three second-grade students identified with learning disabilities, their special education teachers, and their classroom teachers from a north metro school district in Colorado. During the baseline phase, students received traditional pull-out literacy interventions and classroom instruction. During the intervention phase, the general education teacher and special education teacher collaboratively planned and co-taught the student's small group reading lesson. Students were evaluated on their literacy skills weekly using a variety of progress monitoring assessments. Students' Oral Reading Fluency was monitored using the Dynamic Indicators of Basic Early Literacy

Skills Test of Oral Reading Fluency (DIBELS; Good & Kaminski, 2002). Sight word fluency was monitored using easyCBM's (Alonzo & Tindal, 2007) word reading assessments. In addition, decoding fluency was measured using the DIBELS Test of Nonsense Word Fluency (Good & Kaminski, 2002).

Research Questions

Q1 What effect does teacher collaboration and co-teaching have on the response to intervention on students identified with learning disabilities?

- Q1a What changes occurred in the students' oral reading fluency?
- Q1b What changes occurred in the students' sight word fluency?
- Q1c What changes occurred in the students' decoding fluency?
- Q1d What changes occurred in the in the students' overall reading level?

Rationale

One of the difficulties schools face when teaching students with learning disabilities is the slow rate of progress or seemingly non-responsiveness to research-based interventions (Vaughn et al., 2009). For this reason, the majority of students with learning disabilities receive interventions at the tertiary, or intensive, level for a great deal of their educational career. Students receiving such interventions spend more time out of the classroom and less time exposed to the general education classroom. While the more intensive level of instruction often provides students with discrete skills, students are not receiving the content necessary to close the gap between their own performance and the performance of their peers (Denton, Fletcher, Anthony, & Frances, 2006; Vaughn et al., 2009).

The sense of urgency for students to make progress in addition to the time necessary for students with learning disabilities to respond to interventions makes it essential for special education teachers and classroom teachers to maximize their time. However, many special education and classroom teachers do not effectively collaborate, which leaves students with skills that are isolated to one setting and thus creates the appearance that the student is nonresponsive to instruction (Friend, 2000; Vaughn et al, 2009). Educators need additional guidance regarding effective collaboration and co-teaching practices. However, a dearth of research exists regarding the direct impact of specific collaboration practices on student achievement (Ae-Hwa, Woodruff, Klein, & Vaughn, 2006). The hypothesis in this study was that structured collaboration and co-teaching would increase the students' responsiveness to intervention.

Delimitation of the Study

This study included three second-grade students from a north-metro school district who were identified as having a specific learning disability using the eligibility criteria from the state of Colorado.

Terms and Acronyms

Collaboration. Collaboration in the school environment encompasses a wide variety of activities including co-teaching, consultation, and professional development (McLaughlin, 2002). For the purposes of this study, collaboration was two teachers working together to increase student achievement. Activities included consultation, planning instructional activities, creating accommodations, and designing modifications.

Co-teaching. Two certified teachers who jointly deliver instruction to a heterogenous group of students within one classroom (Qi & Rabren, 2009). For the

purposes of this study, co-teaching included two teachers planning and delivering a lesson to the same group of students within the same instructional environment.

Literacy. One of the most common definitions of literacy is the ability to read and write (Heathington, 1987). For the purposes of this study, literacy included the act of reading, writing, and spelling.

Low responder. A student scoring significantly below grade level on academic measures throughout an intervention regardless of the intensity and duration (Vaughn et al., 2009).

Response to intervention (RTI). According to Hollenbeck (2007), RTI is "a multitiered process of providing support to struggling learners, either in the general education classroom or through supplemental instruction, while continuously assessing outcomes" (p. 137).

Specific learning disability (SLD). Students used in this study had been identified as students with a learning disability based on the Colorado Department of Education's Specific Learning Disability Guidelines (Colorado Department of Education, 2008). The definition involved two criteria including inadequate achievement when compared to the student's grade-level standards and age as well as insufficient progress in response to scientific, research-based interventions (Colorado Department of Education, 2008).

CHAPTER II

REVIEW OF LITERATURE

Despite the plethora of research available for developing literacy skills of students with learning disabilities, students often fall farther and farther behind their peers as schools struggle with the difficulty of remediating students with learning disabilities (Al Otaiba & Fuchs, 2002; Vaughn et al., 2009). While some of the students receiving services in special education will make gains, those gains are often not significant enough to close the gap between students' performance and the academic performance of their peers (Torgesen et al., 1999). Despite the use of research-based intervention strategies, a small group of students with learning disabilities will appear seemingly non-responsive to interventions (Al Otaiba & Fuchs, 2006; Vaughn et al., 2009). Students with learning disabilities often fail to use skills learned in intervention groups into the general education classroom, making collaboration between the interventionist and classroom teacher a key component to the students' success (McLaughlin, 2002; Wong, 1994). Barriers preventing effective collaboration often occur during the school day. The purpose of this literature review is to review the use of the Response to Intervention model, discuss the growing body of evidence regarding non-responders, identify effective literacy interventions for students with learning disabilities, and introduce research regarding teacher collaboration.

Students with Learning Disabilities

One of the first definitions of learning disabilities was published in 1962 in the book *Educating Exceptional Children* (Kirk & Kirk, 1983). The 1962 version of the definition described a learning disability as a discrepancy between a student's achievement and capacity to learn as measured by an intelligence or aptitude test (Kirk & Kirk, 1983). While the field of education has experienced a great deal of advancements since 1962, it was not until most recently that the definition of learning disabilities has been the focus of education (Gallego, Duran, & Reyes, 2006). In fact, it was not until the Individuals with Disabilities Education Improvement Act (IDEA 2004) that the federal government began to revisit not only the definition of learning disabilities but the methods by which learning disabilities are identified. In the past, educators relied on the IQ discrepancy model to identify students with learning disabilities; it compared a student's intelligence as measured by a formal IQ assessment to the student's achievement on a standardized assessment Professionals arguing against the IQ discrepancy model claim that the model has several flaws including an overreliance on IQ scores, an inability to support early intervention practices, an inability to discriminate between deficits in the child and deficits in classroom instruction, and the disproportionate representation of minority students identified as learning disabled (Hollenbeck, 2007; Vaughn & Fuchs, 2003). With regard to such flaws with the IQ discrepancy model, IDEA 2004 recognizes that the IQ discrepancy model may not be the most effective means for identifying learning disabilities; hence, the law allows states to use alternative means by which to identify students with learning disabilities (Gilbertson & Bluck, 2006; Hollenbeck, 2007). IDEA 2004 allows school districts to use Response

to Intervention (RTI) as a means for identifying learning disabilities (Gallego et al., 2006, Vaughn & Fuchs, 2003). The use of RTI to identify students with learning disabilities changes not only the way in which all students receive interventions but also allows the definition of a learning disability to evolve dramatically. Under an RTI model, the definition of a learning disability changes from a discrepancy between a student's cognitive abilities and achievement levels to a student not responding to or failing to make gains in response to intense, research-based interventions (Bradley, Danielson, & Doolitle, 2007; Fletcher, Denton, & Francis, 2005; Hollenbeck, 2007;Vaughn & Fuchs, 2003).

Colorado Definition

The state of Colorado uses a Response to Intervention model to identify students with a learning disability. The definition includes students who are non-responsive to research-based literacy interventions (Colorado Department of Education, 2008). The guidelines include eight areas in which a student might be identified with a learning disability: oral expression, listening comprehension, written expression, basic reading skills, reading fluency skills, reading comprehension, mathematical calculation, and mathematical problem solving. The definition involves two criteria including inadequate achievement when compared to the student's grade-level standards and age as well as insufficient progress in response to scientific, research-based interventions (Colorado Department of Education, 2008). Inadequate achievement can be established by six or more scores falling below the 12^{th} percentile on a curriculum-based measurement or any measure that provides a percentile rank or by scoring at or below 50% on grade-level or criterion referenced measures (Colorado Department of Education, 2008). Insufficient

response to scientific, research-based instruction is calculated using a gap analysis. A gap analysis is calculated by dividing the expected benchmark by the student's score. The gap is then used to determine if the student is making the progress necessary to close the gap with his or her peers. The definition also includes exclusionary factors which delineate that the student's performance cannot be due to a physical, emotional, or intellectual disability and the performance cannot be due to cultural or economic differences.

Non-Responders with Learning Disabilities

Despite a wealth of research that has focused on effective interventions of students with learning disabilities, a small group of students identified with literacy-related learning disabilities is seemingly resistant to making gains when provided effective literacy interventions. A great deal of the research has shown improvements in basic reading skills but has failed to show significant results in upper-level skills such as reading comprehension (Vaughn et al., 2009). This group of students has been called a variety of terms including low-responders, difficult-to-remediate, and treatment resisters (Al Otaiba & Fuchs, 2002; Vaughn et al., 2009; Vellutino et al., 1996; Wanzek & Vaughn, 2008). Non-responders have been defined by various researchers from those achieving below the 10^{th} percentile to below the 50^{th} percentile (McMaster, Fuchs, Fuchs, & Compton, 2005). Paired with low achievement, non–responders experience little to no growth in response to research-based interventions (McMaster et al., 2005). Yet another piece of the formula is the comparison of both growth and achievement patterns to classroom peers. However, the exact formula for identifying non-responding students has yet to be defined (McMaster et al., 2005). McMaster et al. (2005) estimate that 50%

of students with learning disabilities fall into the non-responsive category. More conservatively, Torgesen (2000) states that 2 to 6% of students will fall in the non-responder group in response to intervention. Despite the lack of exact numbers, researchers have become increasingly aware of the existence of treatment resisters and the immediate call to address the unique educational needs of this group of students.

Characteristics. The focus of past research regarding non-responders has been to define the characteristics or correlates of a non-responsive student. For example, Al Otaiba and Fuchs (2002) conducted a meta-analysis of 23 intervention studies that included non-responders. They identified several characteristics of students who were non-responders to intervention: weak phonological processing, rapid-naming ability, behavior and attention, and cognitive ability. Cognitive ability was inconclusive within the investigated studies. Five of the reviewed studies concluded that low verbal ability and low cognitive ability predicted non-responsiveness. However, seven of the reviewed studies concluded that cognitive and verbal ability and non-responsiveness were not related. The only characteristic with enough evidence to be a confirmed correlate with non-responsiveness was phonological processing. While some evidence was determined for rapid-naming, cognitive level, behavior, and attention, the nature of the studies did not lend themselves to making a direct correlation. Further conclusions were difficult to make due to the lack of studies including all of the characteristics.

Further research led Al Otaiba and Fuchs (2006) to add orthographic knowledge and home background as characteristics. Al Otaiba and Fuchs conducted a two year intervention with kindergarten and first grade students. Teachers were trained to conduct research-based interventions and were evaluated for instructional fidelity on an ongoing

basis. There were four treatments: one year of intervention in kindergarten, one year of intervention in first grade, and two years of intervention or typical classroom instruction. Students were considered to be responsive to the intervention if their post-test scores were at or above the intervention groups mean. Over 90% of students who were non-responsive in kindergarten remained non-responsive in first grade. McMaster et al. (2005) also found that 70% of their initial non-responsive group remained non-responsive to further intervention. In addition, researchers determined that non-responsive students scored at least 1.5 standard deviations below their responsive peers in the areas of vocabulary, rapid naming ability, and problematic behaviors.

Berninger et al. (2002) also found that non-responsive students tended to have lower cognitive levels as well as lower language skills such as phonological processing, rapid naming ability, and verbal reasoning skills. However, Al Otaiba and Fuchs (2006) pointed out that other studies found verbal ability was not related to non-responsiveness.

Additional correlation studies have had similar findings. Hammill (2004) performed a meta-analysis to investigate correlates of responsiveness to intervention and literacy skills. Reading ability, conventions, and letter knowledge were found to have high correlations with responsiveness to intervention. Moderate correlations were found for written language, rapid naming ability, phonological awareness, intelligence, and memory. Spoken language and perceptual and motor had only a small correlation. Hammill suggested that skills containing graphological skills were most likely correlated with reading while other skills not related to grapheme knowledge, e.g., phonological awareness, were less likely correlated with the ability to read. Nelson, Benner, and Gonzalez (2003) also concluded that rapid-naming, problem behavior, phonological

awareness, alphabetics, memory, and cognitive ability had moderate effect sizes. Despite the significance found in other studies, Swanson, Trainin, Necoechea, and Hammill (2003) found rapid naming and phonological awareness had rather small effect sizes on word reading. The authors hypothesized that while the two processes played a role in the ability to decode and spell words, the majority of the research overemphasized the impact of both rapid naming ability as well as phonological awareness skills.

Time and intensity of reading intervention. Linan-Thompson and Hickman-Davis (2002) suggested that for reading instruction for students with learning disabilities to be effective, it needs to be sufficient in both length as well as frequency. The authors performed a study over a 13-week period that included 29 hours of instruction. They found that while some students were making small gains, they were not large enough to be measured over a short period of time such as the 13-week period used in their study. They suggested that students who were not responding as quickly to an intervention as their peers might need to have spent more time on each lesson. Jitendra et al. (2004) supported this finding in their two-year study including two intervention groups. During the first year, the intervention lasted seven weeks; however, better results were seen in the second year which lasted 16 weeks. Such findings support the need for long-term interventions to maximize the impact in student progress.

Several additional studies have measured the effect of additional intervention to investigate the response to intervention of initial non-responders. Wanzek and Vaughn (2008) conducted two studies to see the results of a 13-week intervention as well as to investigate the effect of a second intervention for students who did not initially respond to the first intervention. The second intervention included a double-dose of the first

intervention. Students in the double-dose group did not perform significantly different than the single dose group. Later research by Vaughn et al. (2009) was able to determine a difference in lower responders based on oral reading fluency (ORF) rates. Students who began the intervention with higher ORF made statistically significant results; however, students who began the intervention with lower ORF rates were unable to make significant gains. Even when provided with one-on-one support with an expert interventionist, the low-responding group showed minimal gains.

Another aspect that has been investigated is the effect of a smaller group size for students not responding to initial levels of intervention. Torgesen (2000) suggested that more intervention was not always the answer and that the intensity, or teacher-to-student ratio, must also increase. Wanzek and Vaughn (2008) agreed that increasing the intensity of an intervention should include lowering group size as well as increasing the amount of time spent on the intervention. To illustrate the effect of a smaller group size, Linan-Thompson and Hickman-Davis (2002) investigated the effects of three grouping formats including a 1:1 teacher to student ratio, a 1:3 teacher to student ratio, and a 1:10 teacher to student ratio. The results indicated that students in 1:1 groups did not make significantly higher gains than did students in the 1:3 groups. These findings led the authors to suggest that small groups of three students might be a more effective number of students per teacher since the 1:10 groups did not make as great of gains as the 1:3 and 1:1 groups. Foorman, Breier, and Fletcher (2003) and Berninger et al. (2002) also supported this finding, stating that research has shown that one-on-one instruction was no more effective than small group instruction. Additionally, Fuchs et al. (2010) suggested that effective small group instruction was powerful when it was both individualized as

well as data-based. Data-based or experimental teaching encompasses a variety of approaches that changes in response to repeated testing and data collection.

Effective Literacy Interventions

The National Reading Panel (NRP; National Institute of Child Health and Human Development, 2000) conducted a meta-analysis of effective literacy instruction based on experimental studies that were conducted from 1966-1997. The NRP evaluated 100,000 studies looking for evidence of effective reading instruction in the areas of alphabetic, fluency, and comprehension. To be included in the NRP's report, the study had to be in an English refereed journal, employ an experimental approach, and measure reading as an outcome (National Institute of Child Health and Human Development, 2000). The results of the NRP's report indicated five components of effective literacy instruction: phonological awareness, phonics, fluency, vocabulary, and comprehension. Even though students with learning disabilities were only included in the phonics portion of the meta-analysis, many researchers have focused on the effect of literacy interventions based on the five components.

Interventions with Instruction in Phonological Awareness

According to the NRP, phonological awareness is the ability to manipulate phonemes in syllables and words (National Institute of Child Health and Human Development, 2000). In addition, explicit instruction in phonological awareness may increase a student's reading level. The NRP indicated that instruction in phonological awareness was a key factor when teaching non-disabled students to read. Additional studies have found phonological awareness activities to be effective for students with learning disabilities as well (Linan-Thompson & Hickman-Davis, 2000; Manset-

Williamson & Nelson, 2005; Vaughn et al., 2006). Several strategies for teaching phonological awareness have been used in developing literacy interventions for students with learning disabilities; however, blending and segmenting has often been the focus of interventions. For example, in their reading intervention studies, Linan-Thompson and Hickman-Davis (2000) focused on manipulating, segmenting, and blending phonemes for five minutes in each of their 30-minute intervention sessions. Jitendra et al. (2004) also focused on blending, segmenting, and rhyming during the phonological awareness portion of the reading lessons. Similarly, Vaughn et al. (2006) focused on blending and segmenting sounds in words as well as phoneme discrimination including matching phonemes to words to isolating initial, medial, and ending sounds. While phonological awareness is considered to be a key element when planning interventions for students with learning disabilities, other research has suggested that phonological awareness activities should not take up a great deal of time (Torgesen, 2001). Such findings indicate that phonological awareness activities are essential for non-disabled students as well as for students with learning disabilities.

Interventions with Phonics Instruction

Phonics instruction is the teaching of the sound-letter correspondences in both reading and spelling (National Institute of Child Health and Human Development, 2000). The use of phonics was the only component discussed by the NRP that included students with learning disabilities. The NRP was able to conclude that systematic instruction of phonics skill is an effective practice when teaching learning disabled and non-disabled students to read. Further research has also supported the use of phonics instruction with students with learning disabilities. For example, Swanson (1999) conducted a meta-

analysis of effective reading interventions for students with learning disabilities that concluded that direct instruction of phonics was most effective when teaching whole word recognition.

Foorman et al. (2003) suggested that direct instruction occurred using a direct code approach in which students were first taught individual phonemes matched to the corresponding graphemes. The students should then be given the opportunity to practice decoding through the use of controlled or decodable texts. Similarly to these recommendations, Jitendra et al. (2004) demonstrated that students achieved gains in their decoding skills through the use of direct instruction of phonics skills using a specific instructional sequence including introduction, practice, and review. Jimenez et al. (2003) also used a specific instructional sequence that started with simple two letter words and progressed to harder word patterns. Researchers in this study used a computer program that offered word recognition practice, voice feedback, and decoding assistance. Results suggested students with reading disabilities made gains from their pre-test scores.

While phonics instruction has appeared differently throughout the research, the overarching desired outcome was an increase in decoding skills. These findings paralleled the NRP's investigations for students with learning disabilities that systematic instruction in phonics could increase a student's reading level (National Institute of Child Health and Human Development, 2000). The research in these studies indicated that systematic phonics instruction was an effective practice for students with learning disabilities.

Interventions with Fluency Instruction

Fluent reading is a necessary skill for students to gain comprehension (National Institute of Child Health and Human Development, 2000). Chard, Vaughn, and Tyler (2002) define reading fluency as both the speed and accuracy of decoding text. When a student is able to automatically decode words, the student is able to focus on comprehension of the text rather than laboriously focusing on decoding (Linan-Thompson & Hickman-Davis, 2002). Oral reading fluency is directly correlated to the comprehension of text. The faster a student is able to decode words, the more energy a student is able to devote to comprehending the text (Gersten, Fuchs, Williams, & Baker, 2001).

Linan-Thompson and Hickman Davis (2002) devoted five minutes to practice oral reading fluency in each of their reading lessons. Fluency practice included rereading of familiar text, partner reading, modeling, echo reading, and fluency games. All students in the treatment group made gains in the number of words they could correctly read in one minute. Chard et al (2002) also employed the use of repeated reading of familiar text strategy. Chard et al. conducted a synthesis of research based on strategies used to increase the reading fluency of students with learning disabilities. Strategies included repeated readings with and without a model as well as individual word practice. The results indicated that daily opportunities for repeated reading of texts were an effective practice. Several additional studies supported the use of repeated readings as an effective intervention for students with learning disabilities (Gersten et al., 2001; Therrien, Wickstrom, & Jones, 2006). For example, Tam, Heward, and Heng (2006) reported gains in oral reading fluency for all students when using leveled passages. The

researchers used randomly chosen leveled passages with students. First, students were introduced to unknown words and then asked to read the passage, with corrections from the teacher, three times as fast as they could. Only one student did not make gains in oral reading fluency.

Modeling fluent reading has also been shown to be effective at increasing the oral reading rate of students with learning disabilities. In one study, Vaughn et al. (2000) used partner reading to increase students oral reading fluency. Partner reading is when a more fluent reader is paired with a less fluent reader (Vaughn et al., 2000). The more fluent reader modeled fluent reading of the text and then the second reader read the text while the more fluent monitored for errors (Vaughn et al., 2000) . Students made increases in the number of words that they could correctly read in one minute; however, they did not make significant gains in their accuracy. Manset-Williamson and Nelson (2005) employed a "shadow reading" strategy in which the tutor read the text fluently while the students orally followed along slightly behind the tutor's pace (p. 66). All students in the experimental group made gains in the number of words they could correctly read in one minute. The results indicated that shadow reading might be a promising practice with regard to increasing students' reading fluency.

Interventions with Vocabulary and Comprehension Instruction

Comprehension is the ultimate goal of reading (National Institute of Child Health and Human Development, 2000). Comprehension is comprised of two cognitive processes: vocabulary development and the interaction between the reader and text (National Institute of Child Health and Human Development, 2000). In addition, prior to when the results of the NRP were published, Swanson (1999) performed a meta-analysis

of literacy instruction for students with learning disabilities; the results for comprehension interventions suggested that the use of a balanced approached that utilized both direct instruction and a cognitive approach was the most effective.

Gersten et al. (2001) performed a review of research involving comprehension interventions for students with learning disabilities. Their research focused on the effects of vocabulary instruction and the impact on reading comprehension. Researchers concluded that there was a direct correlation with a student's vocabulary knowledge and reading ability (Gersten et al., 2001). Students who were given the definitions of new words prior to reading the words in text were able to decrease the number of encounters the student would need to learn the word. Without the pre-teaching of vocabulary words, a student would need an average of eight encounters with a word to learn the definition of the word. However, when students were taught the definition prior to reading it in text, it took an average of two exposures of the word to learn the definition.

Linan-Thompson and Hickman-Davis (2002) used pre-reading strategies such as book walks to preview the text, activating prior knowledge, and discussing the main topic of the book. In addition, self- questioning and predicting were modeled throughout the reading of the text. Researchers concluded that all students made gains in reading comprehension through the use of these strategies.

Graphic organizers are also commonly used to support the reading comprehension of students. Ae-Hwa, Vaughn, Wanzek, and Shangjin Wei (2004) reviewed research of the use of graphic organizers to increase comprehension of students with learning disabilities. A graphic organizer is a visual display of information including Venn diagrams, story maps, framed outlines, and semantic maps (Ae-Hwa et al., 2004). The

results of the study indicated that the use of graphic organizers was an effective practice for increasing comprehension of students with learning disabilities. Boulineau, Fore Iii, Hagan-Burke, and Burke (2004) also investigated the use of a specific graphic organizer to increase the reading comprehension of students with learning disabilities. Students in this intervention used story maps to label the setting, themes, main characters, problem, and reactions of the story. Students were evaluated based on the number of story elements they could correctly identify. At the end of the intervention, students increased the number of elements they could correctly identify. Gersten et al. (2001) also concluded that direct instruction of common text structure was an effective practice for increasing comprehension of students with learning disabilities. The researchers hypothesized that direct teaching of text structure was an effective practice particularly given the delay learning disabled students had in developing awareness of text structure.

A wide variety of vocabulary and comprehension strategies have been investigated--from graphic organizers to book walks and self-monitoring strategies. Graphic organizers and explicit instruction of self-monitoring strategies show promising evidence as effective methods to increase the reading comprehension of students with learning disabilities. These findings parallel the results of the NRP (National Institute of Child Health and Human Development, 2000), which concluded that explicit instruction of cognitive strategies to increase comprehension and vocabulary was an effective practice for non-disabled students. In addition, the NRP also endorsed the use of graphic organizers and story maps.

Guided Reading

The results of the National Reading Panel suggest that balanced approaches including all five components are most effective at increasing the literacy skills of all students (Fountas & Pinnell, 1996; Iaquinta, 2006). Guided reading is a research-based approach to small group literacy instruction based on a balanced approach of the five components of reading (Iaquinta, 2006). The purpose of guided reading is to provide differentiated instruction at each students reading level (Fountas & Pinnell, 1996). Guided reading consists of a small group of students at the same reading level, working with the classroom teacher for a short period of time (Iaquinta, 2006). The teacher uses ongoing assessment and observations to target specific teaching points for each student in order to increase students' reading levels. The teacher focuses on phonics and phonological awareness through word work as well as fluency, vocabulary, and comprehension. First, the teacher selects an appropriate text at the students' level and then introduces the text to students in order to build background knowledge, vocabulary, and point out essential features of the text to support comprehension (Fountas & Pinnell, 1996). The teacher also points out specific word features or phonics patterns that students may need to know before accurately decoding the word. Students practice reading quietly to themselves as the teacher monitors each student's fluency, accuracy, and comprehension (Fountas & Pinnell, 1996). The small group model allows the teacher to individualize the lesson to each student's needs (Iaquinta, 2006). Guided reading is a widely used practice in general education classrooms as part of a balanced literacy approach; however, Schirmer and Shaffer (2010) point out that additional research is necessary to validate the effect of guided reading on student achievement.

Collaboration

Collaboration in the school environment encompasses a wide variety of activities including co-teaching, consultation, and professional development (McLaughlin, 2002). While many schools and teachers believe that collaboration is a daily occurrence, very few schools actually take the time necessary to effectively collaborate (Friend, 2000). McMaster et al. (2005) suggest the missing component when evaluating non-responsiveness in students is an evaluation of classroom instruction and interventions that could take place in the classroom. Remarkably, very little research is available regarding the effect of the collaboration between special education and general education teachers (McMaster et al., 2005). Past research has primarily focused on co-teaching between special and classroom teachers as a means for collaboration and the issues or trends within a co-teaching relationship. However, very little research is readily available regarding the impact of collaboration on student achievement (Ae-Hwa et al., 2006). In addition, the majority of the research takes place at the secondary or high school with little research at the elementary levels.

The meta-analysis conducted by Murawski and Swanson (2001) demonstrated the disparity of research regarding the effect of teacher collaboration and co-teaching on student achievement. Murawski and Swanson were only able to locate 37 studies that used quantitative data regarding the impact of co-teaching. Only six studies met the tri-fold criteria of having sufficient data to calculate an effect size, sustaining the interventions for more than two weeks, and meeting criteria for co-teaching. Only two of the six studies included students with learning disabilities. The criteria for co-teaching included co-planning and co-teaching in the same space to a heterogeneous group of

students and a classroom teacher paired with a specialist. The researchers found the highest effect size for improvement in reading and language arts. Co-teaching had a moderate overall effect size; however, the researchers cautioned that this result must be interpreted carefully due to the limited number of studies including this information.

Characteristics of Effective Collaboration

While schools and teachers differ greatly in their collaboration strategies, schools that are effective at collaborating share several characteristics. Gately and Gately Jr. (2001) identified eight categories of effective co-teaching. For each category, the researchers acknowledged that teachers need to evolve through several stages of development prior to achieving an effective teaching relationship. One category of effective co-teaching identified by the researchers was the development of communication skills. According to Gately and Gately Jr., communication develops over time, starting with a stage in which both teachers feel guarded until the beginnings of a give-and-take relationship evolve. The last portion of the communication stage is essential as it involves open communication for the benefit of all students. Physical space also evolves as the initial relationship often includes a stage of separateness and moves towards the development of a shared space where all students and teachers interact and share materials. In addition to sharing space and open communication, Gately and Gately Jr. also identified the need for both teachers to be familiar with the curriculum, have the time to plan and establish learning goals, and ensure that appropriate accommodations and modifications are in place for all. In an effective co-teaching partnership, the authors emphasized that both teachers are given the opportunity to present information and freely go back and forth between delivering instruction,

managing the class, and answering student questions. Lastly, both teachers must establish a plan for managing behavior as well as an assessment system that works for all students while maintaining the integrity of the curriculum. As teachers experiment with co-teaching, Gately and Gately Jr, suggest using evaluation tools such as rating scales to allow teachers to evaluate the effectiveness of their co-teaching as well as to reflect on areas of improvement.

Cook and Friend (1995) recommended that collaboration and co-teaching experiences should be structured prior to teachers engaging in a co-teaching model. They suggested teachers establish a planning structure and ensure that they had sufficient time to effectively collaborate. In addition, teachers and administrators should describe what the co-teaching program would look like and the specific goals for the co-teaching program. Teachers would also need to determine which students would be eligible to be in the co-taught class, specify the responsibilities, decide what type of services would be offered in the co-taught class, and design evaluation measures. Cook and Friend (1995) also recommended that teachers ask each other about instructional beliefs, discipline, and classroom routines, how the teachers would ensure each other had an equal role, and about any pet peeves that might be agitated in the classroom setting.

Wallace, Anderson, and Bartholomay (2002) looked at the themes that emerged from four collaborative high schools through focus groups and interviews. Two levels of themes emerged--one at the school level and one at the classroom level. The school level themes that emerged included a culture of caring and sharing all students, inclusive scheduling, block scheduling, joint professional development, and joint planning time. At the classroom level, teachers expressed the continuum of changing teacher roles, the

consultation nature of the special education teacher, equal roles for the special education teacher, and the shared responsibility between them. Similar results were found in Caron and McLaughlin's (2002) embedded case study of four elementary schools and two middle schools. The researchers used a quality indicator checklist to select exemplary schools. Schools that were effective at collaboration showed evidence of co-planning which included time to discuss end-of-semester results as well as evidence of accommodations and modifications for individual students. Another theme that emerged was sharing responsibility for all students. All co-teaching teams felt strongly that special education teachers were in the classroom to help any student who needed assistance, not just special education students. Teachers also reported having administrator support and a community of shared decision making for the betterment of the school.

Benefits of Co-Teaching

Luckner (1999) claimed that there are many benefits to a co-teaching model. Luckner conducted a qualitative study investigating the impact of co-taught classrooms that included classrooms taught by both a deaf and hard-of- hearing teacher and a general education classroom teacher. Teachers reported that they felt more able to meet the needs of a variety of students by having two teachers and two sets of expertise in one classroom. In addition, students reported benefiting from being able to experience multiple teaching styles. Additional benefits included the exposure of grade-level concepts and materials to students with disabilities, increases in language skills through interactions between both disabled and nondisabled peers, and the development of a sense of community. In a survey of teachers in a co-teaching relationship conducted by

Kohler-Evans (2006), teachers also reported that co-teaching was beneficial in several ways including having the ability to meet a variety of students needs within one classroom, a "fun" atmosphere, and the invaluable resource of having two adults within one room. Syh-Jong (2006) conducted a study of a co-teaching classroom in an eighth grade math classroom in Taiwan. Syh-Jong identified several benefits to the co-teaching model including higher overall test scores in the co-taught classroom than in the traditionally taught classroom. Students also reported they were exposed to multiple ways to solve problems and enjoyed having the flexibility to solve problems in different ways. Friend (2007) added that co-teaching had the ability to decrease the student- to-teacher ratio. In addition, Friend indicated out that co-taught relationships such as one between a general education teacher and special education teacher were more powerful as the classroom teacher brought content knowledge into the instruction while the special education teacher was able to help students acquire and demonstrate learning in a variety of ways.

Obstacles to Co-Teaching

Despite the positive experiences reported in many studies, several studies have demonstrated the difficulties surrounding effective collaboration including the lack of time to co-plan as well as the miscommunication regarding special education and classroom teachers' roles during collaborative planning. Friend (2007) claimed that the primary concern of teachers when entering a co-teaching relationship was the provision for sufficient plan time. For example, Karge and McClure (1995) conducted a survey of middle and high school resource room teachers. The survey indicated that teachers had time to meet with general education teachers; however, included in this time was also the

need to plan, complete paperwork, and meet with parents. In addition, teachers expressed concern over vague guidelines regarding collaborative practices as well as concern that their students were not getting the intense instruction necessary to make gains. Luckner (1999) concluded that while teachers acknowledged that joint plan time was essential to a co-teaching relationship, there was often no ability nor commitment to ensure that teachers were given the time necessary to make co-teaching effective.

King and Youngs (2003) noted the difficulty in determining the roles of teachers in a collaborative relationship. King and Youngs examined the collaborative practices of four inclusive secondary schools. The results indicated that special education teachers and classroom teachers throughout the schools had different opinions regarding their roles in the classroom. While some special education teachers were able to come into the classroom and model instructional techniques and assist the teacher with modifications and accommodations, other teachers felt the special education teachers were more of a "nuisance" than a help in the classroom and did not allow the special education teacher much, if any, instructional time. Harbort et al. (2007) noted a similar trend in their observational study of two co-teaching partnerships. Throughout the observations, special education teachers spent less than 1% of the time presenting information; whereas the classroom teachers spent an average of 30% of the time presenting. Special education teachers spent an average of 45% of the classroom time monitoring behavior. Scruggs, Mastropieri, and McDuffie (2007) added that special education teachers tend to assume more of a passive role while the classroom teacher tends to shoulder the instructional responsibilities. To avoid this pitfall, Friend (2007) encouraged teachers to outline

classroom roles, expectations, how discipline issues would be handled, and how grading would be completed.

Additional research has supported the differing views of responsibilities among co-teachers. For example, Fennick and Liddy (2001) conducted a survey of special education and classroom co-teachers teaching in collaborative classrooms. The survey results indicated that special education and classroom teachers' perceptions of their collaborative and instructional responsibilities were significantly different. Both teachers felt they were more responsible for student learning than their co-teaching partner. In addition, teachers reported having very little co-planning time, making instructional collaboration difficult. Luckner (1999) indicated the need for teachers to let go of egos and develop a commitment to a co-teaching relationship. Luckner added that successful co-teaching forces many teachers to change their old teaching styles and requires developed interpersonal skills.

Teacher's perception of the collaboration and co-teaching process also plays a role in the collaboration process. Hartas (2004) conducted a case study of a school focused on serving students with speech and language disabilities. Due to the nature of the students' disabilities, the teachers needed to collaborate with the speech language pathologist to meet the diverse needs of their students. Hartas found that over half the teachers felt they needed to have similar instructional beliefs and values to effectively collaborate with another professional. The speech language pathologists also noted the need for chemistry and compatibility to effectively collaborate with other professionals. Both groups acknowledged the need to be a good listener, a desire to work collaboratively, team work, communication, and a willingness to explain key components

to effective collaboration. The theme of time also arose in this study as teachers and speech language pathologist alike felt it was time for effective collaboration to take place.

Kohler-Evans (2006) claimed that teacher attitude might be a barrier when co-teaching is forced upon teachers due to regulations such as No Child Left Behind or district mandates. Very often, mandated co-teaching causes the special education teacher to feel uprooted from his/her classroom and classroom teachers to perceive that their classrooms have been invaded by an outsider. Syh-Jong (2006) reported teachers feeling uncomfortable or judged when students or the co-teacher questioned their instructional approach and classroom management style. Friend (2007) also claimed that teachers were often apprehensive to enter a co-teaching partnership for fear of being judged by the other teacher in the room. Kohler-Evans conducted a survey of teachers in a co-teaching relationship. Results of the survey indicated that over 90% of teachers reported co-teaching was a mandate and not a choice. For this reason, both Luckner (1999) and Kohler-Evans recommended that co-teaching should be a voluntary option rather than a mandated relationship.

Need for Professional Development

Another aspect of collaboration is the need for appropriate training and professional development regarding effective practices. Friend (2007) claimed that teachers must be given ample opportunity to gain an understanding of the co-teaching process, to observe co-taught classrooms, and to discuss how to implement co-teaching in their own classrooms. Roache et al. (2003) conducted a survey of special education teams, ESL teachers, and classroom teachers who were working together to meet the needs of exceptional students who were also English language learners (ELL). The major

theme resulting from the survey was the need for more professional development regarding each professional's role in the collaboration process. However, Brownell, Adams, Sindelar, Waldron, and Vanhover (2006) noted that even when appropriate training was provided, teachers responded to and implemented new strategies differently. In their qualitative case study, Brownell et al. determined the following characteristics affected teachers' abilities in implementing collaborative strategies: level of adoption, knowledge of curriculum and pedagogy, student-focused views of instruction, behavior management, and ability to reflect on student learning. Teachers who were easily able to implement new strategies were referred to as "high adopters." Teachers in the high adopter group were able to articulate the meaning behind their teaching strategies, chose engaging instructional styles, and implemented student-friendly behavior management systems. Based on a teacher survey, Kohler-Evans (2006) cited the lack of resources and training as primary reasons why teachers were unwilling to engage in the co-teaching model in subsequent years.

Collaboration and Literacy Achievement

Despite the abundance of information available on co-teaching, a great deal of research has not focused on the direct impact of co-teaching on student achievement (Falk-Ross et al., 2009; Murawski & Swanson, 2001). In fact, Wilson (2006) pointed to the dearth of research regarding measurable outcomes of co-teaching on the literacy achievement of students. Wilson pointed out that the lack of research might be due to the variety of co-teaching model and the difficulty of assessing the effectiveness of the model. Welch, Brownell, and Sheridan (1999) highlighted the need for additional research within their review of literature regarding team teaching. Welch et al. were able

to locate 40 articles regarding team-teaching; however, less than half of the articles reported measurable outcomes. Of the 23 that did report measurable outcomes, only 8 used experimental designs. Nineteen of the articles reported positive outcomes for students and five articles reported mixed results. The remaining articles did not include outcomes for students due to the nature of the articles as technical guides. Similarly, in their meta-analysis of co-teaching environments, Murawski and Swanson (2001) were able to cautiously conclude that co-teaching had a moderate effect on student achievement in the area of literacy. Caution was used in making conclusions due to the low number of studies available when calculating the effect size.

Wilson and Michaels (2006) evaluated the perceptions of secondary students participating in team taught classes. Students reported positive growth in their own literacy skills after experiencing co-taught classes. Similar results have been suggested by further research. For example, Falk-Ross et al. (2009) investigated the collaborative efforts of both language and literacy specialists. Over a year-long study, the researchers evaluated the impact of weekly collaborative meetings between the language and literacy specialists. At the end of the study, students who were in the intervention group scored higher on both language and literacy assessments than students in a comparison group. Researchers concluded that the collaboration model was successful at increasing the achievement of students and suggested that the model be expanded to other teaching relationships, e.g., between classroom teachers and specialists. Gerber and Popp (1999) paralleled the results of Wilson and Michaels; most students found a co-teaching model increased their achievement and the majority of participants felt the model was beneficial to all students. Other measurable outcomes were illustrated in Welch's (2000) study.

Welch conducted a study of the impact of co-teaching on three elementary classrooms. The three teachers were given the opportunity to participate in a video-based professional development course in addition to meeting monthly with the researcher for support. Reading fluency and word recognition were used to measure the impact of the co-teaching model on student achievement. All students, including the students with learning disabilities, performed higher on post-test assessments.

Marston (1996) compared the effect of three special education delivery models on student achievement. The models included a collaboration model that took place in the classroom, a traditional pull-out model, and a combination pull-out model paired with collaboration in the classroom. Marston's results revealed that teachers were more satisfied when serving students in a combination model. In addition, students in the combined model performed significantly better on pre-and post-reading assessments. Students in the combined model were able to read more words correctly per minute than the other two groups. Manset and Semmel (1997) also found that instruction was more effective when paired with consultation as opposed to pull-out instruction without classroom consultation.

While some studies credited co-teaching and collaboration models with increasing student achievement, not all researchers have been able to conclude that co-teaching and collaboration had a significant impact on student achievement. For example, Gelzheiser, Meyers, and Pruzek (1992) looked at both pull-out and pull-in literacy services for students with learning disabilities in six different elementary school settings. The pull-in model included services in the general education classroom paired with collaborative consultation with the classroom teacher. The most commonly used model included the

use of co-teaching paired with weekly-to bi-weekly co-planning meetings. Teachers also met informally on a daily basis to discuss lesson planning. Another approach included time spent using a pull-in delivery model as well as a pull-out delivery model. The last model involved the specialist coming into the classroom but teaching his/her own small group within the classroom setting. In this case, teachers collaborated regarding student progress. The results indicated no significant differences between the pull-in and pull-out models. One reason for differences in the results of the various studies might be fidelity of the interventions since the researchers in this study did not control or interfere with the academic interventions the various teachers were providing.

Despite the use of co-teaching and collaboration in the public school system for many years, there continues to be a dearth of knowledge regarding the direct impact of such models on the achievement of students. A need continues to exist to collect data on student outcomes to support the use of co-teaching (Friend, 2007). Co-teaching and collaboration has the possibility to dramatically impact the achievement of all students including students who are not responding to intense tiers of intervention. While many researchers have looked toward increasing time and intensity of interventions for students with learning disabilities, additional research is necessary to evaluate the impact co-teaching and collaborative models have on struggling students' responses to intervention in reading achievement.

CHAPTER III

PURPOSE OF STUDY

The purpose of this study was to determine the effects of teacher collaboration and co-teaching on the response to reading intervention of elementary-aged students with learning disabilities.

Research Questions

Q1 What effect does teacher collaboration and co-teaching have on the response to intervention on students identified with learning disabilities?

- Q1a What changes occurred in the students' oral reading fluency?
- Q1b What changes occurred in the students' sight word fluency?
- Q1c What changes occurred in the students' decoding fluency?
- Q1d What changes occurred in the in the students' overall reading level?

Methodology

Single-subject design was originally used in the field of psychology as a means for measuring behaviors; however, it has become more popular not only in the field of special education but the field of literacy as well (Barger-Anderson, Domaracki, Kearney-Vakulick, & Kubina, 2004; Odom et al., 2005; Snell, 2003). Researchers attribute this to a variety of factors: the diversity of special education populations, limited access to accessible populations, and the ability to use a smaller sample size (Barger-Anderson et al., 2004; Odom et al., 2005; Snell, 2003). Single-subject research allows

the researcher to determine the effects of an independent variable on a dependent variable by systematically introducing the independent variable while other variables are held constant (Kennedy, 2005). Functional relationships are used in single-subject designs to establish experimental control by establishing a consistent change on the dependent variable when the independent variable is systematically applied (Kazdin, 1982; Kennedy, 2005). Since the independent variable is systematically introduced, the researcher is able to determine the functional relationship between the independent variable and dependent variable (Kazdin, 1982; Kennedy, 2005). Functional relationships can be further illustrated by replicating the interaction of the two variables by using additional participants or applying multiple phases with only one participant (Kazdin, 1982; Kennedy, 2005).

The multiple-baseline design is a type of single subject design that allows the researcher to investigate behaviors across different participants, behaviors, or settings (Barger-Anderson et al., 2004). The multiple-baseline across subjects design consists of a baseline period which is staggered across the subjects as well as an intervention or treatment period (Barger-Anderson et al., 2004; Kazdin, 1982; Kennedy, 2005). The intervention phase is the phase in which the independent variable is applied. If more than one independent variable is introduced, the research design includes more than one intervention phase. Each phase is noted using letters. For example, an AB design includes two phases--a baseline and intervention phase containing one independent variable. In contrast, an ABC design uses three phases--a baseline phase and two different phases in which two separate independent variables are applied.

The baseline, or pre-intervention phase, allows the researcher to measure the pre-intervention level of the dependent variable repeatedly over a period of time. First, a researcher establishes a baseline for each participant; then when a change is noted in the first participant, the researcher systematically introduces the independent variable across the participants. The intervention is applied to one behavior or participant at a time; the other behavior or participants remain in the baseline conditions until each participant or behavior receives the intervention. After the initial baseline period for the first participant is stabilized and consistent over time, the researcher introduces the independent variable with that participant (Kazdin, 1982; Kennedy, 2005). Before introducing the independent variable, the researcher looks at the baseline data for a predictable, steady state or consistent pattern within the dependent variable (Kennedy, 2005). This allows the researcher to contribute change in the dependent variable to the independent variable rather than an outside, extraneous variable (Kazdin, 1982; Kennedy, 2005). If a baseline trend is not consistent and has scores with high variability, the researcher cannot attribute the change to the independent variable. Once a change in the first participant's behavior is detected and consistent, the researcher introduces the treatment to the next participant and continues the process until all subjects have reached the treatment phase (Gall, Gall, & Borg, 2007; Kazdin, 1982; Kennedy, 2005) .

A multiple baseline approach is often used in the field of education since it does not require that subjects return to baseline conditions and eliminates the need to withdraw treatment (Barger-Anderson et al., 2004; Gall et al., 2007; Kazdin, 1982; Kennedy, 2005). Many single-subject designs require the researcher to return to baseline conditions in order to demonstrate the functional relationship between the independent

variable and dependent variable (Kazdin, 1982; Kennedy, 2005). If the dependent variable returns to the baseline level when the independent variable is withdrawn, the researcher is able to demonstrate a functional relation between the variables. However, the multiple baseline design allows the researcher to apply the independent variable to one participant or behavior at a time while the other participants or behaviors remain in the baseline conditions. If the dependent variable changes when the independent variable is introduced and remains stable or unchanged in the baseline conditions, the researcher is able to demonstrate a functional relationship between the variables (Kazdin, 1982; Kennedy, 2005). This allows the researcher to demonstrate a functional relationship without withdrawing the intervention. Such a characteristic is essential to educational studies as it is not only undesirable but often impossible for students to return to baseline conditions (Barger-Anderson et al., 2004; Kazdin, 1982; Kennedy, 2005). For example, when teaching a student reading skills, it is not possible to have the student unlearn strategies and skills learned in an intervention.

While multiple-baseline design eliminates the ethical dilemma of treatment withdrawal, the very nature of the multiple-baseline design has led some to criticize the approach. For example, some behaviors or participants can be left in the baseline phase, without intervention, for an extended period of time. However, there are several ways to avoid having a participant remain in the baseline phase for an extended period of time. First, researchers should limit the number of behaviors or participants they use in the design, which will limit the number of subjects or behaviors in the baseline phase (Kazdin, 1982; Kennedy, 2005). Since the intervention is staggered across the participants or behaviors, limiting the number of participants or behaviors limits the time

each participant or behavior is in the baseline phase and not receiving the intervention. For example, if a researcher chooses to use 10 participants in a multiple baseline study, the tenth participant must wait until all other participants receive the intervention before entering the intervention phase. The tenth participant in the example study would spend a great deal longer in the baseline phase and significantly less time receiving the intervention than the other participants. To alleviate this lengthened time, the researcher can also limit the baseline phase to a few days or observations to avoid prolonging the baseline phase for the last participant or behavior (Kazdin, 1982; Kennedy, 2005). Limiting the baseline phase also assists the researcher in ensuring the last participant is not deprived of the intervention for an unreasonable amount of time. For designs using more than one behavior or subject, the researcher could also introduce treatment for two behaviors at once because additional behaviors or subjects still in the baseline phase act as the control while allowing the researcher to minimize time spent in the baseline phase (Kazdin, 1982). While two behaviors or participants are receiving the treatment, the other behavior or subjects are still receiving the baseline conditions. As long as the behaviors or participants in the baseline conditions remain stable, the changes in the behaviors or participants during the intervention phase can still be attributed to the independent variable.

Participants and Setting

The subjects in this study included three second-grade students identified with learning disabilities, their special education teachers, and their classroom teachers from a north metropolitan school district in Colorado. Each participant was selected from a different classroom within the district to avoid overlapping the intervention among the

participants, especially in the baseline phase. Subjects were recommended for inclusion in the study based on being identified with a learning disability in the area of reading based on the Colorado Department of Education's Specific Learning Disability Guidelines (Colorado Department of Education, 2008). The definition involved two criteria including inadequate achievement when compared to the student's grade-level standards and age as well as insufficient progress in response to scientific, research-based interventions (Colorado Department of Education, 2008). Inadequate achievement was established by six or more scores falling below the 12th percentile on a curriculum-based measurement or any measure that provides a percentile rank or by scoring at or below 50% on grade-level or criterion-referenced measures (Colorado Department of Education, 2008). In addition to meeting the specific learning disability criteria, students also had a good history of attendance.

In addition to the student, the participants also included each student's special education teacher and classroom teacher. Teachers who had second grade students identified with learning disabilities were selected on a voluntary basis. To rule out extraneous variables, the classroom teacher and special education teacher were not currently engaged in collaborative planning or the co-teaching process. Due to the limited time of this study, classroom teachers and special education teachers already had a common knowledge of the district's guided reading model.

Intervention

The intervention (independent variable) consisted of two collaborative planning sessions and two co-taught, small group-guided reading lessons per week. Co-teaching took place in the student's classroom during their small group reading lesson. The co-

teaching was structured using a planning template and adapted guided reading lesson plan based on the recommendation of Carter et al. (2009) to structure teacher collaboration (see Appendix A). The teachers used the collaborative planning template to discuss the Individual Education Program (IEP) goals that would be addressed in the lesson. The teachers mutually determined the skill or strategy to focus on during the lesson based on student need. The template allowed the teachers to plan how the specific skill would be taught. This ensured that each teacher was using similar terminology when the skill was practiced in the classroom and the special education setting. The last section of the template allowed teachers to plan additional opportunities for the student to practice the new skill in the classroom as well as in the special education setting.

The adapted lesson plan followed the district's current guided reading lesson plan format with the addition of a section to identify which teacher would address each section of the lesson (see Appendix B). This ensured that the lesson was equally taught by both teachers. The current guided reading model within the school district consisted of a small group of students, typically three to five, in a small group reading lesson with the teacher. The teacher used leveled text at the students' instructional reading level for each lesson. The lesson consisted of word work or phonics practice, an introduction of the leveled text including the purpose for reading the text, review of new vocabulary or concepts, a reminder to use learned strategies, and a comprehension discussion. After the leveled text was introduced, students read the text aloud while the teacher monitored individual student's reading. Each guided reading lesson was approximately 10-12 minutes in length and occurred on a daily basis. After each collaborative planning session, both teachers co-taught the guided reading lesson in the general education classroom.

Dependent Measures

The dependent variables in this study included oral reading fluency (ORF), sight word fluency, and decoding skills as measured by the DIBELS Test of Nonsense Word Fluency (Good & Kaminski, 2002). In addition, a pre- and post-intervention reading level was measured using the Phonological Awareness Literacy Screenings (PALS; Invernizzi, Meier, & Juel, 2003). Assessment data in this study were tracked weekly. Oral reading fluency was monitored using the DIBELS Test of Oral Reading Fluency (Good & Kaminski, 2002). The DIBELS was also used to monitor decoding skills using the Test of Nonsense Word Fluency. Sight word fluency was monitored using the easyCBM word reading assessments (Alonzo & Tindal, 2007).

The Phonological Awareness Literacy Screenings (PALS) was administered to assess the reading level of each student prior to the beginning of the study as well as after the study was complete (Invernizzi et al., 2003). PALS includes a spelling component, reading words in isolation, and reading grade level text. PALS is designed for first through third grade students. PALS offers a variety of data including an overall summed scored as well as a reading level. In addition, the test offers additional subtests for students scoring below grade level including a Concept of Word subtest, Alphabet Knowledge subtest, and a Phonemic Awareness subtest (Invernizzi et al., 2003). The first part of the test is a spelling portion wherein students are asked to spell words and receive points for spelling specific patterns or clusters of letters correctly. The student is then asked to read isolated lists of words starting with their grade level list. If the student can read 15 out of the 20 words on their grade level, the student moves on to reading the corresponding grade level passage. If the student is unable to read 15 or more of the 20

grade level words, the student moves to below-grade level lists until the student is able to read 15 words on a list. PALS encompasses a variety of levels including Readiness, Preprimer A, Preprimer B, Preprimer C, Primer as well as first through sixth grade. The student's accuracy on the grade level text is recorded as well as a fluency score based on a scale of 1 to 3. The last section is six multiple choice comprehension questions based on the passage the student has read. Reliability coefficients for the entry level tasks of the PALS range from .81-.96. In addition, due to the wide range of teachers scoring the PALS, an inter-rater reliability is calculated and ranges from .93-.99.

Additional statistical analysis demonstrated significant results in the areas of content, construct, and concurrent validity for the PALS assessment (Invernizzi et al., 2003). For example, content validity was cross-checked by teachers using a rubric. Concurrent validity was evaluated using several commonly used reading assessments such as the Developmental Reading Assessment (DRA) and Qualitative Reading Inventory-II (QRI-II; Invernizzi et al., 2003). Correlations with both of these assessments ranged from .73-.82 (Invernizzi et al., 2003).

Oral Reading Fluency was assessed using the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Test of Oral Reading Fluency (Good & Kaminski, 2002). DIBELS Oral Reading Fluency (ORF) has a test-retest reliability of .92-.97 as well as an alternate- form reliability of .89-.94. DIBELS also has a criterion-related validity of .52-.91(Good & Kaminski, 2002). DIBELS Test of Oral Reading Fluency has multiple forms for progress monitoring and consists of a one-minute timed reading of a grade level text. The student is presented with the text and told to read out loud. If the student pauses for three seconds, the tester gives the student the word and tells the student to keep reading.

At the end of the minute, the tester tells the student to stop. Students are given credit for each word they read correctly within the one minute time limit. Scores fall into three categories depending on the time of year and grade level: at risk, some risk, and low risk.

The DIBELS Test of Nonsense Word Fluency (NWF) measures a student's ability to apply the alphabetic principle to decode words (Good & Kaminski, 2002). Such skills include applying sound-letter correspondences to words as well as blending sounds into words. The student is presented with a page of consonant-vowel-consonant (CVC) and vowel-consonant words (VC) and is given one minute to produce as many letter sounds as he/she can. The test is scored based on the number of correct letter sounds students are able to produce in one minute. Similar to the DIBELS ORF, scores for the test of NWF fall into three categories depending on the time of year and grade level: at risk, some risk, and low risk. The test consists of over 20 alternate forms for progress monitoring. The benchmark for the assessment is 50 letter sounds by the middle of first grade; however, the assessment can be used to progress monitor the rate of progress of students scoring below this benchmark in other grade levels (Good & Kaminski, 2002). The predictive validity of the DIBELS NWF in January of first grade with Oral Reading Fluency was .82 and .60 for May of second grade (Good & Kaminski, 2002). In addition, the one-month, alternate-form reliability for NWF in January of first grade was .83 (Good & Kaminski, 2002).

The easyCBM assessment system was developed at the University of Oregon (Alonzo, Tindal, Ulmer, & Glasgow, 2006). The easyCBM Word Reading Fluency assessment measures a student's ability to fluently read both sight words and words following predictable patterns (Alonzo & Tindal, 2007). Students are given a chart

containing leveled words and asked to read as many words as they can in one minute. If a student pauses for three seconds, the administrator gives the student the word and the student continues on to the next word. The assessment is measured based on the number of correctly read words in one minute. In a pilot study, Alonzo and Tindal (2007) measured the reliability of the word lists of each of the lists including grades kindergarten through third grade. A Rasch analysis was used to determine the estimation of difficulty, the standard error of measurement, and the mean square fit of each word. Using this information, 20 equivalent lists were generated at each level including kindergarten through third grade. Later research by Alonzo and Tindal (2009) looked at the relationships between the alternate forms of the assessment as well as the test-retest reliability. For example, the relationship between the alternate forms of the first grade word reading assessment was calculated at.95-.96. The test-retest reliability of the first grade forms was calculated at .94-.95.

Procedures

Approval was obtained from the University of Northern Colorado's Institutional Review Board to conduct research on human subjects (see Appendix F). Upon obtaining permission from the cooperating school district (see Appendix G), volunteer subjects were identified from special education programs within the cooperating elementary schools. The researcher solicited volunteers within the district's pool of special education teachers. Special education teachers verified they had a second grade student identified with a learning disability on their caseload. The researcher then verified with each classroom teacher his/her willingness to participate in the study. In addition, the

researcher ensured that the parents of the student were willing to have their student participate.

After consent/assent from all parties was obtained (see Appendix A), the baseline phase began. The baseline phase was staggered two weeks apart during a 12-week period. During the baseline phase, each student was given the PALS (Invernizzi et al., 2003) assessment by the classroom teacher. If the assessment had already been administered, the protocol was examined by the researcher as well as another trained teacher to verify the accuracy of the results. Students were given the DIBELS (Good & Kaminski, 2002) and easyCBM (Alonzo et al., 2006) assessments based on their instructional level. Fuchs and Deno (1982) and Hosp and Hosp (2003) both recommend monitoring students in first through second grade on their instructional level to ensure that assessment materials are sensitive to small changes. Each assessment was scored by both the special education teacher as well as the researcher. When both the researcher and special education teacher were not available at the same time, the assessments were audio recorded and scored at a later time. In addition to data collection during the baseline phase, the researcher observed each student's classroom and intervention setting in order to describe that student's instructional setting. Information gained from the observations included teacher practices, communication between the special education and classroom teacher, and student behaviors in both the classroom and special education setting. Observations were kept in the researcher's field notes.

At the start of the intervention phase for each student, the researcher trained the teachers in the use of the collaborative planning template and the adapted guided reading lesson plan. The researcher reviewed each component of the template and lesson plan

and assisted the teachers in using the lesson plan to guide their instruction. The researcher then observed and coached the teachers through their first co-taught lesson plan. The teachers and researcher met after the lesson to debrief and answer questions as needed.

After the teachers for the first student had been trained in using the collaborative planning template and adapted lesson plan, the intervention phase was initiated. The intervention phase included two collaborative planning sessions and two co-taught lessons per week. The researcher observed and rated a minimum of five lessons per student using a researcher-developed observation checklist to ensure intervention fidelity (see Appendix D). Students were administered the DIBELS Test of Oral Reading Fluency (Good & Kaminski, 2002), the DIBELS Test of Nonsense Word Fluency (Good & Kaminski, 2002), and the easyCBM Test of Word Reading Fluency (Alonzo et al., 2006) on a weekly basis to monitor the students' responsiveness to the intervention.

While the first student received the intervention phase, the second and third students remained in the baseline phase. After the first student received the intervention for two weeks, the intervention phase began for the second student beginning with his or her teachers being trained. The third student remained in the baseline phase for an additional two weeks prior to receiving the intervention.

After the 12-week period, each of the teachers involved in the study were interviewed by the researcher to determine the impact of the intervention on the teacher's practices (see Appendix D). The interview addressed the benefits of the collaborative planning and co-teaching process, changes to his/her personal teaching practices, teacher

observations in changes in the student, barriers to the collaboration process, and plans to use collaboration in the future. Teacher interviews were audio recorded and transcribed.

In addition, teachers were asked to complete a 20-question Intervention Rating Profile to determine the social validity of the collaboration intervention from the teachers' perspectives (see Appendix D; Witt & Elliott, 1985). The Intervention Rating Profile asks teachers 20 questions regarding the intervention usefulness. The survey utilizes a six-point scale, ranging from strongly agree to strongly disagree (Witt & Elliott, 1985). For the purposes of this study, the survey was adapted to address academic problems as opposed to behavior problems, the original purpose of the survey.

Analysis of Data

Due to the PALS (Invernizzi et al., 2003) administration being limited to a pre- and post-assessment, the analysis was limited to a narrative description of changes between the two scores of each participant. Additional assessment data were not analyzed using inferential statistics due to the nature of the data and risk of serial dependency (Gall et al., 2007; Kazdin, 1982; Kennedy, 2005). Serial dependency occurs in single-subject design due to the observations being continuous where each behavior is dependent on the previous session (Gall et al., 2007; Kazdin, 1982; Kennedy, 2005). The use of inferential statistics should not be used in cases of serial dependency due to the assumption in inferential statistics that all observations are independent of one another (Gall et al., 2007; Kazdin, 1982; Kennedy, 2005). To avoid serial dependency, the data were graphed and analyzed by the researcher using a visual analysis.

The visual analysis included evaluating both the within-phase data as well as the between-phase data. For the within-phase, the level of trend, magnitude, and variability

was noted for each participant's baseline and intervention phases following Kennedy's (2005) recommendations. First, the level--or mean of each phase--was calculated and graphed (Kennedy, 2005). The trend line was then analyzed for the slope, or direction of the data, as well as the magnitude or rate of change, which would illustrate the type of and strength of relationship that existed between the variables (Kennedy, 2005). The best-fit line was also used to visually inspect the variability of the data, or how close the data were to the line, to evaluate the relationship between the independent variable and dependent variable.

The next step in the visual analysis included an investigation of between-phase patterns. The immediacy effect, or how quickly the data change when a phase is changed, was evaluated to see if the independent variable had an immediate effect on the dependent variable or if the dependent variable responded slowly to the introduction of the independent variable (Kennedy, 2005). The data were also evaluated for changes in the level and trend between the phases. The phases were evaluated to determine the strength of the change or if the data showed a slow-immediacy effect or a rapid-immediacy effect (Kennedy, 2005). The between-phase step also included looking for overlap or the degree to which similar data in other phases exist (Kennedy, 2005). The percentage of non-overlapping data (PND) was calculated as suggested by Olive and Franco (2008) in which the percentage of scores in the intervention phase that exceed the highest score in the baseline phase is calculated. Scruggs and Mastropieri (1998) suggest that PND scores above 90% indicate a highly effective intervention, scores from 70 to 90% indicate an effective intervention, and scores falling between 50 to 70% are

considered questionably effective. Scores falling below 50% are considered ineffective (Scruggs & Mastropieri, 1998).

In addition to visual analysis, the percentage of data points exceeding the median (PEM) was calculated following the procedure described by Ma (2006). The first step in calculating the PEM was to draw a horizontal line in the baseline phase. In the case of an odd number of data points, the line was placed through the median. If there was an even number of data points, the line went between the two middle points (Ma, 2006). The percentage of data points above the median line in the treatment phase was then calculated. According to Ma (2006), the PEM would fall between 0-1 and have the same meaning as an effect size. Accordingly, an intervention with a PEM of .9 and above is considered highly effective, a .7 to .9 is considered moderately effective, and below .7 is considered questionably or not effective (Ma, 2006). However, upon calculating the PEM, it was concluded that the PEM did not accurately illustrate the data and was not always supported by the visual analysis. For example, Student Three's Oral Reading Fluency did not increase at a significant rate and was not notable through the visual analysis; however, the PEM suggested that the intervention had a moderate effect on the number of words read correctly. For this reason, it was determined that the PND more appropriately illustrated the effect of the co-planning and co-teaching intervention. Ma (2006) pointed out that PEM is not always sensitive to the magnitude of the data; that might have contributed to the disparity between the visual analysis and the PEM in this study.

Additional analysis included teacher interviews, field notes, and the Intervention Rating Profile results. Results of the interview included an analysis of responses to the

teacher interviews. The results of the survey were based on the mean score for each question and common trends. Field notes were analyzed to look for extraneous variables and other aspects that might impact the results as well as the study.

Reliability

Each measure of the dependent variable was scored by both the researcher and a special education teacher; a consensus was reached prior to recording the student's scores. To ensure intervention fidelity, the observation checklist was used during observations (see Appendix D). Scores above 90% were considered to be a high level of fidelity and that the co-planning and co-teaching process was being implemented appropriately.

Social Validity

Both the Intervention Rating Profile and teacher interviews were used to evaluate the usefulness of the intervention from the teachers' perspective. The teacher interviews allowed the researcher to gain an understanding of both the barriers and benefits in engaging in collaborative planning and the co-teaching process.

Limitations of the Study

The limited number of subjects and nature of the single-subject design prevented the results of the study from being generalized to the general population. The purpose of a single-subject design was to determine the effect of an independent variable within a single experiment (Kennedy, 2005). Nonetheless, several precautions were taken to ensure the internal validity of the study: the use of repeated measures as well as replicating the results by using more than one subject. While every attempt was made to eliminate the effect of extraneous variables, it is important to acknowledge that reading

and writing instruction was embedded throughout the school day. While all students received similar instruction, the variability among classroom instruction and general education teacher could not be eliminated. In addition, maturation effects are also important to consider within a study especially when working with elementary students. The maturation effect threatens internal validity because it is assumed that even without treatment, some behaviors and skills can develop over time as a child matures (Kazdin, 1982; Kennedy, 2005). Since this study took place over several months within the school year, it can be assumed that some improvement in literacy skills could be attributed to student maturation. In addition, Student One only had two scores in each of the baseline phases. Kennedy (2005) suggests that a minimum of three scores are necessary to ensure a valid baseline. The use of only two data points in the baseline phase might have contributed to the lack of variability in the data.

CHAPTER IV

RESULTS

The purpose of this study was to determine the effects of teacher collaboration and co-teaching on the response to literacy intervention of elementary-aged students with learning disabilities. The effect of collaborative planning and co-teaching was monitored using the DIBELS Test of Nonsense Word Fluency (Good & Kaminski, 2002), DIBELS Test of Oral Reading Fluency (Good & Kaminski, 2002), easyCBM Test of Word Reading (Alonzo & Tindal, 2007), and the PALS literacy assessment (Invernizzi et al., 2003).

Research Questions

Q1 What effect do teacher collaboration and co-teaching have on the response to intervention on students identified with learning disabilities?

- Q1a What changes occurred in the students' oral reading fluency?
- Q1b What changes occurred in the students' sight word fluency?
- Q1c What changes occurred in the students' decoding fluency?
- Q1d What changes occurred in the in the students' overall reading level?

Setting

The study occurred in a large northern school district in a metropolitan area of approximately two million people. The district serves approximately 42,000 students. Approximately 14,000 students served by the district qualify for free and reduced lunch

services. An estimated 6,300 students are considered English language learners (ELL) and 3,700 students receive special education services. Information regarding the students and their schools was obtained through file reviews, reviewing school and district websites as well as teacher interviews.

Student One

Student One is an eight-year-old male in a Title 1 school. In addition to receiving special education services, Student One receives ELL language acquisition services. The school serves approximately 450 students of which 86% are on free and reduced lunch. The special education teacher is in her fourth year of teaching and the classroom teacher is in her 11th year of teaching. Prior to the beginning of the study, Student One received special education services both inside and outside of the classroom. The special education teacher frequently provided special education services inside the general education classroom to meet with a small group of students separate from the classroom teacher. In addition to the small group provided by the special education teacher, Student One also received small group instruction from his classroom teacher. The small group focused on literacy skills in addition to oral language development appropriate for an ELL student. Despite the amount of time the special education teacher spent inside the general education classroom, the classroom teacher and special education teacher did not plan together or communicate frequently. The classroom teacher and special education teacher did have a monthly half day collaboration meeting to discuss what each teacher was doing with the student. Prior to the beginning of the study, Student One was reading at the Preprimer A or beginning first grade level.

The first co-planning session was led by the researcher to introduce the co-planning process. The first co-taught lesson was taught by the teachers with the support and feedback of the researcher. After introducing the process, the special education teacher and classroom teacher met independently to co-plan and co-teach each lesson. The researcher conducted a minimum of five observations. To address Student One's ELL needs, both teachers were careful to include each element of the Guided Reading Template (see Appendix B) as well as incorporate best practices for ELL students. Examples of additional strategies used included allowing the student to verbalize thoughts to a peer, ensuring pictures were paired with new vocabulary prior to introducing a new book, and providing sentence frames to help the student plan oral responses. Both teachers co-taught the guided reading group that included a total of five students inside the general education classroom. While the classroom teacher and special education were meeting with the small group, the other students were working on independent work such as independent reading, listening to books on tape, and using the computers.

Five observations were conducted and monitored to ensure the co-planning and co-teaching process was followed using the Observation Checklist (see Appendix D). The average score on the observation checklist was 91%, indicating that the teachers implemented the co-teaching model with fidelity. During the first lesson, the teachers did not remember to script the specific language they were going to use to introduce a strategy. For the first three observations, the teachers neglected to plan additional times for the student to practice the new skill throughout the school day. In subsequent weeks,

the teachers planned times for the student to practice the skill additional times throughout the day.

Student Two

Student Two is an eight-year-old male in an elementary school with just over 500 students. Approximately 30% of the students in the school receive free and reduced lunch. Prior to implementing the co-teaching intervention, Student Two received special education services outside the general education teacher from a first year special education teacher. His classroom teacher had over 22 years of teaching experience. Student Two received a small group literacy intervention outside of the classroom four days a week. Communication and collaboration between the classroom teacher and special education teacher occurred inconsistently, often in the hallway or in the teacher's lounge. At the beginning of the study, Student Two passed Preprimer A, or beginning first grade level, on the Phonological Awareness Literacy Screening (PALS; Invernizzi et al. 2003).

As with Student One, the first co-planning session was led by the researcher to introduce the process; the first co-taught lesson was taught by the teachers with the support and feedback of the researcher. After the initial training, the teachers were able to independently assume the collaboration process. The teachers co-taught guided reading in the general education classroom twice per week. The group included three students, two of whom were receiving special education services. The other students in the classroom were doing spelling tasks, writing, reading independently and completing worksheets at independent centers as the teacher rotated through the guided reading groups.

Five observations were conducted and monitored to ensure the co-planning and co-teaching process was followed using the Observation Checklist (see Appendix D). The average score on the observation checklist was 96%, indicating a high level of fidelity when implementing the co-teaching intervention. The first lesson the teachers co-planned and co-taught independently was difficult to complete due to its length. The teachers had not spent a great deal of time planning how each section of the lesson would be taught, which made it difficult to get through the lesson without conferring with each other. Subsequent lessons included time in the co-planning session to determine how each section of the lesson would be taught and the time allotted for each section. One issue that arose was the amount of time traditionally set forth to complete the lesson was not always sufficient to complete all the items the teachers had planned. For longer books, the teachers decided to plan multiple lessons based on one text.

Student Three

Student Three is an eight-year-old male attending a Title 1 school with approximately 68% of the students receiving free and reduced lunch services. The school serves 490 students. Student Three received special educations services from a veteran teacher with years of experience. The special education teacher had recently transitioned from teaching in the general education classroom to teaching special education. She had over 15 years experience teaching reading intervention in the primary grades. Student Three's classroom teacher was in her second year of teaching. Previously, the special education teacher and classroom teacher collaborated on an inconsistent basis and had discussed the student every few months. The student was pulled out of the general education classroom for a special education reading intervention and met with the

classroom teacher individually during guided reading time. On the PALS assessment, Student Three passed a Preprimer B, which is expected at the end of the first trimester of first grade.

As with Students One and Two, the first co-planning session was led by the researcher to introduce the process and the first co-taught lesson was taught by the teachers with the support and feedback of the researcher. After introducing the process, the special education teacher and classroom teacher met twice weekly to co-plan each lesson. For the first two weeks of the intervention, the teachers co-taught guided reading in the general education classroom twice. However, due to the noise level in the classroom during center-bases activities, the co-teaching took place in the special education room the last four weeks of the study. The small group from the classroom consisted of three special education students.

Five observations were conducted and monitored to ensure the co-planning and co-teaching process was followed using the Observation Checklist (see Appendix D). The average score on the observation checklist was 91%, indicating a high level of fidelity when implementing the intervention. One of the difficulties that obstructed the co-teaching was the need for the guided reading lessons to be taught equally by both teachers. The veteran special education teacher had a great deal of experience and training in teaching literacy and often dominated the lessons. The lesson plan was equally taught for only one of the five lessons. Throughout the observations, it was suggested that the special education teacher allow the classroom teacher to take an equal role in teaching each lesson.

Visual Analysis

Oral Reading Fluency

The first research question addressed changes in each student's oral reading fluency (ORF). Oral reading fluency was assessed using the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) test of Oral Reading Fluency (Good & Kaminski, 2002). The student was presented with the text and told to read out loud. If the student paused for three seconds, the tester gave the student the word and told the student to keep reading. At the end of the minute, the tester told the student to stop. Students were given credit for each word they read correctly within the one minute time limit. Each student was administered the assessment at his instructional level. Fuchs and Deno (1982) and Hosp and Hosp (2003) both recommend monitoring students in first through second grade on their instructional level to ensure that assessment materials are sensitive to small changes. Since all the students were reading at a first grade level, the first grade passages were administered. Descriptive statistics and the effect of the co-planning and co-teaching intervention are illustrated in Tables 1 and 2. Overall results of each student's performance including trend lines are displayed in Figure 1.

Table 1

Oral Reading Fluency Descriptive Statistics by Phase

Participant	Baseline Phase		Intervention Phase	
	M	Slope	*M*	Slope
Student One	11.5	1	14	.4
Student Two	21.6	.01	23.125	.68
Student Three	12.83	-1.11	13.83	.03

Table 2

Percentage of Non-Overlapping Data for Oral Reading Fluency

Participant	Median	PND	Effect Size
Student One	11.5	80%	Effective
Student Two	22	62.5%	Questionable
Student Three	12	0%	Ineffective

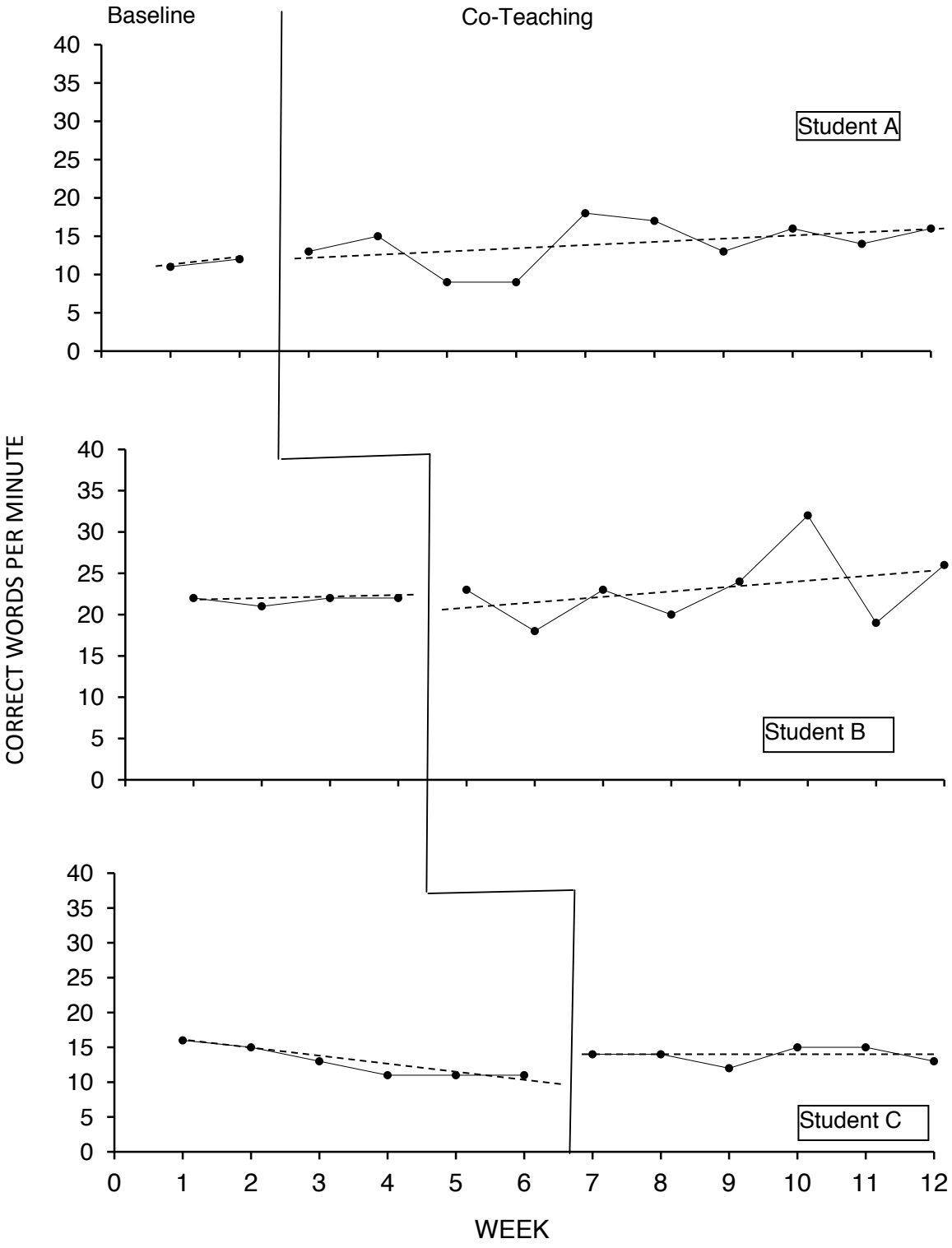

Figure 1. Student oral reading fluency scores including trend lines.

Student One. The first step to the visual analysis involved inspecting the baseline to monitor the stability of the baseline data. For Student One, there was an increase of one word per minute during the two weeks in the baseline phase, which could suggest some of the change in Student One's ORF might be due to maturation effects. However, the level of the intervention phase was higher than the baseline phase. The mean score of Student One in the baseline phase was 11.5 correct words per minute. The mean score in the intervention phase was 14 correct words per minute. A 2.5 word per minute increase from the baseline phase to the intervention phase was evident between the phases. The trend illustrated a positive slope of .4 with low magnitude indicating a gradual change. The slope in the baseline phase was 1.0, a one word increase from week one to week two. The variability of the scores during the intervention phase ranged from 13 to 18 words per minute. The immediacy of the change in Student One's performance was gradual, suggesting that the change in the student's performance was steady over time. The percentage of non-overlapping data (PND) was calculated using a method outlined by Olive and Franco (2008) in which the percentage of scores in the intervention phase that exceed the highest score in the baseline phase is calculated. Scruggs and Mastropieri (1998) suggest that PND scores above 90% indicate a highly effective intervention, scores from 70 to 90% indicate an effective intervention, and scores falling between 50 to 70% are considered questionably effective. Scores falling below 50% are considered ineffective (Scruggs & Mastropieri, 1998). The PND for Student One was 80% and fell within the effective range

.

Student Two. Investigation of the baseline stability for Student Two showed very little variance in the baseline scores ranging from 21 to 22 words per minute in the four week period. The low variance within the baseline scores indicated that the baseline was stable for Student Two. The mean score of Student Two in the baseline phase was 21.7 correct words per minute. The mean score in the intervention phase was 23 correct words per minute. The difference in level between the two phases was a1.3 mean words per minute increase that Student Two could read from the baseline phase as compared to the intervention phase. The trend of the intervention phase indicated a slope of .68, an increase from a slope of .01 in the baseline phase. The variability of the scores ranged from 18 to 32 words per minute, which included some variability between the scores. Similar to Student One, Student Two demonstrated a slow immediacy effect. The PND for Student Two was 62.5%, which suggests that the co-planning and co-teaching intervention was questionably effective at increasing Student Two's oral reading fluency.

Student Three. The baseline for Student Three indicated a negative trend with scores ranging from 11 to 16 words per minute. The baseline included some variance and consistently decreased over time, indicating some instability within the baseline that could be contributed to extraneous variables. The mean score of Student Three in the baseline phase was 12.8 correct words per minute. The mean score in the intervention phase was 13.8 correct words per minute. The difference in level between the two phases illustrates a 1.0 increase in the level of the data from the baseline phase to the intervention phase. The trend of the intervention phase indicated a relatively flat slope of .03. However, the trend of the data changed markedly from a slope of -1.11 to a .03 from the baseline phase to the intervention phase.

The variability of the scores ranged from 12 to 15 words per minute, which indicated little variability between the scores. The PND was calculated to determine the effect of the intervention on Student Three's oral reading fluency. All of the scores in the intervention phase overlapped with the scores in the baseline phase, indicating a PND of 0%. The PND shows that the co-planning and co0teaching intervention was ineffective at increasing Student Three's oral reading fluency. The PND supports the limited changes seen in the visual analysis.

Sight Word Fluency

The second research question measured the impact of co-planning and co-teaching on the students' sight word fluency. The easyCBM Word Reading Fluency instrument (Alonzo & Tindal, 2007) was used to measure sight word fluency. The easyCBM Word Reading Fluency assessment measures a student's ability to fluently read both sight words and words following predictable patterns (Alonzo & Tindal, 2007). Students are given a chart containing leveled words and asked to read as many words as they can in one minute. If a student pauses for three seconds, the administrator gives the student the word and the student continues on to the next word. The assessment is measured based on the number of correctly read words in one minute. Students were administered the first grade sight word passages based on the recommendation of Fuchs and Deno (1982) and Hosp and Hosp (2003) to monitor first and second grade students at their instructional level to ensure that assessment materials are sensitive to small changes. Descriptive statistics and the effect of the co-planning and co-teaching intervention are illustrated in Tables 3 and 4. Overall results of each student's performance including trend lines are displayed in Figure 2.

Table 3

Sight Word Fluency Descriptive Statistics by Phase

Participant	Baseline Phase		Intervention Phase	
	M	Slope	*M*	Slope
Student One	9	0	9.1	.006
Student Two	13.75	-1.1	20.625	0.51
Student Three	7.83333	1	9	-.51

Table 4

Percentage of Non-Overlapping Data for Sight Word Fluency

Participant	Median	PEM	Effect Size
Student One	9	40%	Ineffective
Student Two	13.5		Effective
Student Three	9.5		Ineffective

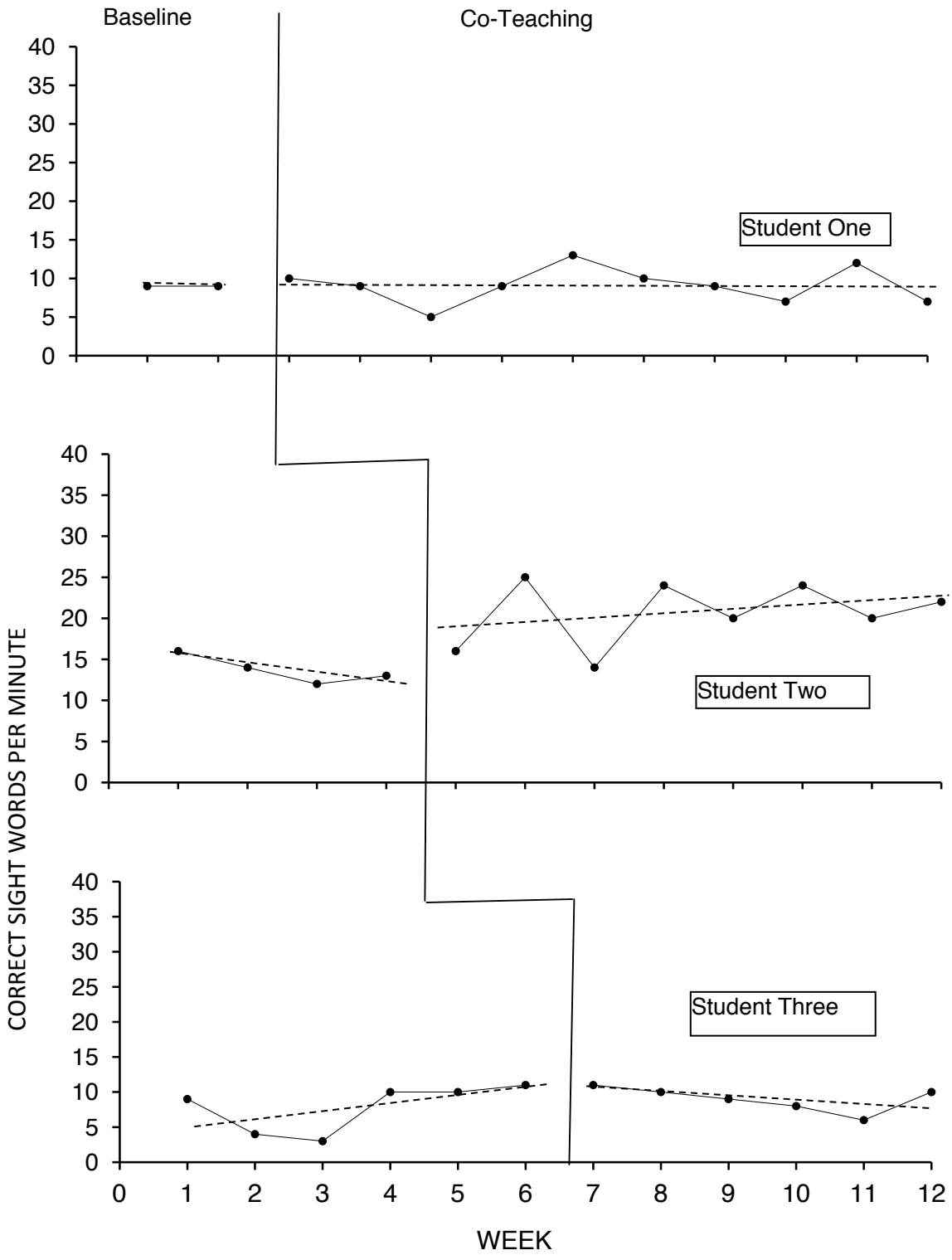

Figure 2. Student sight word fluency scores including trend lines.

Student One. The baseline for Student One was stable as the words read correctly were nine words per minute for the two week baseline phase. The mean score of Student One in the baseline phase was nine correct words per minute. The mean score in the intervention phase was 9.1 correct words per minute. A small .1 increase in the level from the baseline phase to the intervention phase was detected. The trend illustrated a relatively flat slope of .006, indicating a small amount of slow growth in sight word fluency. The variability of the scores during the intervention phase ranged from 5 to 13 words per minute. Immediate change was not evident when implementing the co-planning and co-teaching intervention. The PND for Student One was 40%, indicating that the intervention was ineffective at increasing Student One's sight word fluency. . Both the visual analysis and PND suggest that the co-planning and co-teaching intervention did not create a significant increase on Student One's sight word reading fluency.

Student Two. Student Two's baseline had a downward trend with a slope of -1.1. The variability of the scores in the baseline phase ranged from 12 to 16 words per minute, suggesting that extraneous variables might have impacted the student's progress. The mean score of Student Two in the baseline phase was 13.75 correct words per minute. The mean score in the intervention phase was 20.6 correct words per minute. A 6.85 words per minute change in the level from the baseline phase to the intervention phase was evident. The trend of the intervention illustrated a positive slope with a higher magnitude of change when compared to Student One and Student Three. The variability of the scores during the intervention phase ranged from 5 to 13 words per minute, indicating some variability from the overall trend. In comparison to Student One and

Student Three, Student Two's change was immediate. The PND for Student Two was 75%, which falls in the effective range. Both the visual analysis and PND suggest that the co-planning and co-teaching intervention were effective in increasing Student Two's sight word fluency.

Student Three. The baseline for Student Three illustrated a positive trend with a slope of 1.0. The scores ranged from 3 to 11 words, which indicated some variability between the scores within the baseline phase. Such variability indicated that the baseline phase might not have been stable and the results might have been impacted by extraneous variables. The mean score in the baseline phase for Student Three was 7.8 correct words per minute. The mean score in the intervention phase was nine correct words per minute. The difference between the baseline and the intervention phase demonstrated a 1.2 change in the level of the data from the baseline phase as compared to the intervention phase. The trend illustrated a negative slope of -.51. Scores varied from 6 to 11 words per minute. Very little change was detected using a visual analysis. Additionally, 100% of the scores in the intervention phase overlapped with the scores in the baseline phase, indicating a PND of 0. Student Three's data indicated, through the visual analysis and PND, that the co-planning and co-teaching intervention was not effective at increasing his sight word fluency. The visual analysis as well as the PEM suggested that there was little change in Student Three's sight word fluency.

Nonsense Word Fluency

The third question investigated the effect of co-planning and co-teaching on each student's decoding fluency as measured by the DIBELS Test of Nonsense Word Fluency (NWF; Good & Kaminski, 2002). The NWF measures a student's ability to apply the

alphabetic principle to decode words (Good & Kaminski, 2002). Such skills include applying sound-letter correspondences to words as well as blending sounds into words. The student is presented with a page of consonant-vowel-consonant (CVC) and vowel-consonant words (VC) and is given one minute to produce as many letter sounds as he can. The test is scored based on the number of correct letter sounds the student is able to produce in one minute. The NWF is typically administered at the first grade level and was used based on recommendations of Fuchs and Deno (1982) and Hosp and Hosp (2003) to monitor students at their instructional level. All three students were reading at the first grade level. Descriptive statistics and the effect of the co-planning and co-teaching intervention are illustrated in Tables 5 and 6. Overall results of each student's performance including trend lines are displayed in Figure 3.

Table 5

Nonsense Word Fluency Descriptive Statistics by Phase

	Baseline Phase		Intervention Phase	
Participant	*M*	Slope	*M*	Slope
Student One	27	-2.0	32.6	.97
Student Two	30.75	3.10	47.75	1.79
Student Three	18.17	2.26	35.67	7.66

Table 6

Percentage of Non-Overlapping Data for Nonsense Word Fluency

Participant	Median	PEM	Effect Size
Student One	27	90%	High
Student Two	30.5	100%	High
Student Three	16	66.7	Questionable

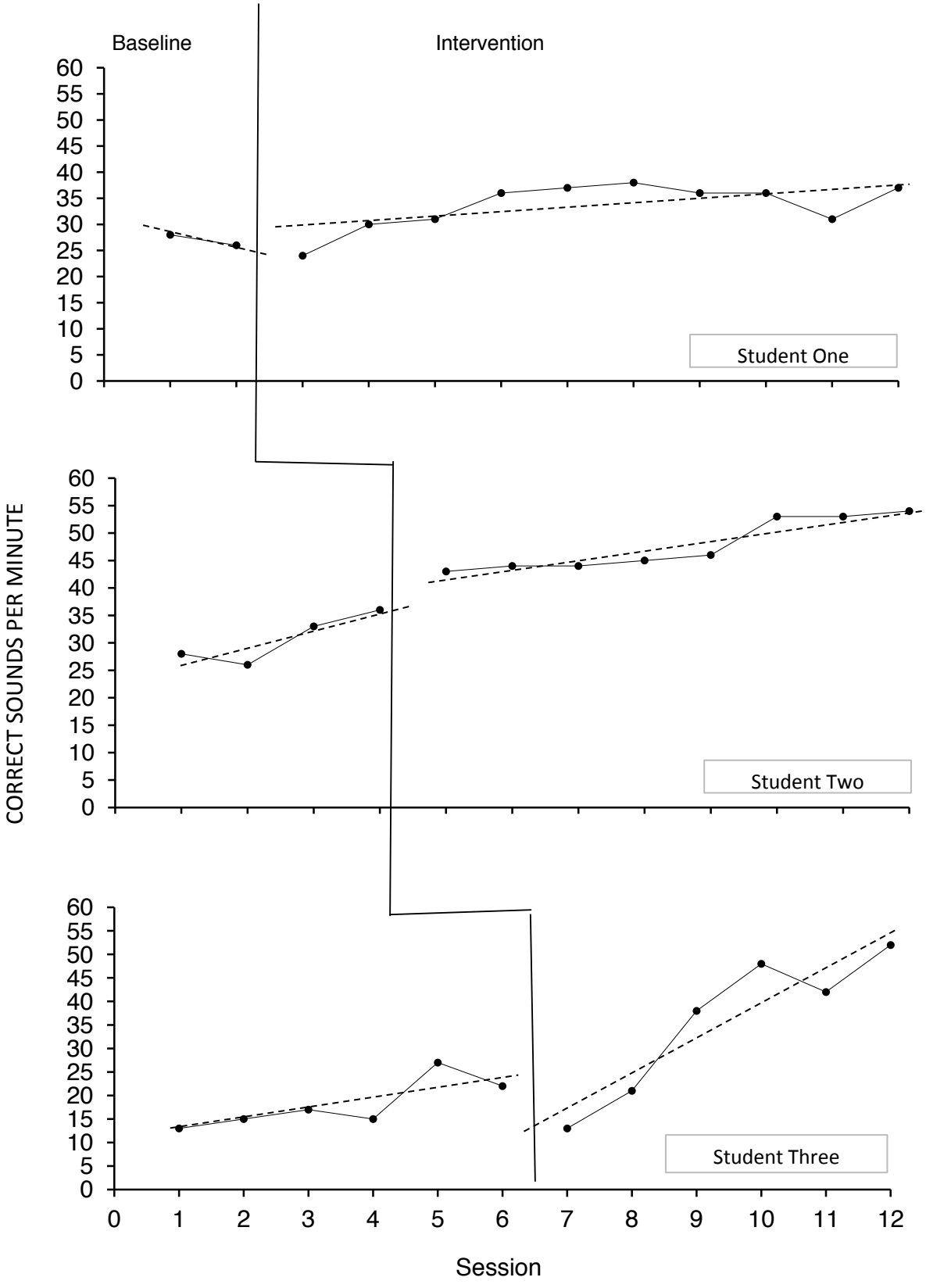

Figure 3. Student nonsense word fluency scores including trend lines.

Student One. The baseline for Student One decreased two words per minute within the two week baseline phase, which indicates some variance in the scores. However, with the variability ranging from 26 to 28 correct sounds per minute, the baseline was relatively stable. The mean score of Student One in the baseline phase was 27 correct sounds per minute while the mean score in the intervention phase was 32.6 correct sounds per sounds per minute. The difference in levels between the two phases revealed a 5.6 increase in the mean number of sounds the student could indentify from the baseline to intervention phase. The slope of the line in the intervention phase was .97, which revealed a change in trend as the slope of the baseline phase was -2.0. The variability of the scores during the intervention phase ranged from 24 to 38 sounds per minute. The immediacy of the change was gradual, actually decreasing from the baseline scores the first week of the intervention. However, a positive trend was notable from the second week of intervention. The PND for Student One was 90%, implying that the intervention had a high level of response within Student One's Nonsense Word Fluency.

The PND supported the findings from the visual analysis and suggested that the co-planning and co-teaching intervention had a high effect on Student One's decoding fluency.

Student Two. The slope of the baseline for Student Two was 3.10, indicating some gains made by the student prior to beginning the study could be contributed to maturation effects. Despite the existence of a positive trend in the baseline phase, a change in the level was evident between the baseline and intervention phases. The mean score of Student Two in the baseline phase was 30.75 correct sounds per minute while the mean score in the intervention phase was 47.75 correct sounds per minute. The overall

trend in the intervention phase was a positive slope of 1.79, which was a decline in the slope when compared to the baseline phase. However, the difference in level between the two phases illustrated an increase of 17 sounds per minute. The variability of the scores during the intervention phase ranged from 43 to 54 words per minute. An increase in the number of sounds per minute Student Two could identify in one minute was seen immediately, indicating the student's responsiveness to the intervention. One hundred percent of the scores in the intervention phase did not overlap with the scores in the baseline phase, which indicates a PND of 100% or a high effect size. The visual analysis as well as the results of the PND illustrated significant changes in Student Two's ability to decode nonsense words based on the co-teaching and co-planning intervention.

Student Three. The baseline for Student Three had a slope of 2.26 and the scores had some variance from 13 to 27 sounds per minute. Despite the positive trend in the baseline phase, Student Three had a significant increase in both the level and slope of the data within the intervention phase. The mean score of Student Three in the baseline phase was 18.17 correct sounds per minute as compared to the mean score in the intervention phase of 35.67 correct sounds per minute. The difference in levels between the two phases depicted a 17.5 change in the number of sounds Student Three correctly identified from the baseline phase to the intervention phase. The variability of the scores during the intervention phase ranged from 43 to 54 sounds per minute. The immediacy of the change was slow; the scores decreased the first two weeks of the intervention prior to exceeding scores in the baseline phase. The PND for Student Three was 66.7%.

Reading Level

The Phonological Awareness Literacy Screening (PALS; Invernizzi et al., 2003) was administered to assess the reading level of each student prior to the beginning of the study as well as after the study was completed. PALS is designed for students in the first through third grade and includes a spelling component, reading words in isolation, and reading grade level text. The assessment assigns reading levels based on a developmental scale including Readiness, Preprimer A, Preprimer B, Preprimer C, Primer, and First through Sixth grade. At the beginning of first grade, a student should be able to read at the Readiness to Preprimer A level and progress to the Primer level by mid-first grade. The end of the year expectation for a first grade reader is to pass the first grade passage. Grade level expectations for a second grader would be to pass the first grade passage in the fall and the second grade passage at the end of the year. An overview of each student's reading level at the beginning and end of the study is presented in Table 7.

Table 7

Reading Levels as Measured by the Phonological Awareness Literacy Screening

Participant	Pre	Post
Student One	Preprimer A	Readiness
Student Two	Preprimer A	Primer
Student Three	Preprimer B	Preprimer C

Student One

At the beginning of the study, Student One was able to read at the Preprimer A level, which is the beginning of first grade. He was able to read 12 out of 20 Preprimer sight words and decode the Preprimer A passage with 85% accuracy. Results of the spelling portion indicated that Student One could demonstrate an understanding of beginning and ending sounds and short vowel sounds. Higher level skills such as digraphs, long vowel patterns and "r" controlled words were not in place. In addition, Student One demonstrated mastery of phonological awareness skills based on the phonemic awareness tasks that included both blending and segmenting.

At the end of the study, Student One passed a readiness level, which is a beginning first grade level that is slightly below the Preprimer A level. The difference between the scores showed a slight regression over the period of the intervention. The regression might have been due to Student One's language acquisition needs and not having control over the language of the text presented. He struggled with some of the vocabulary words on the passage that was presented to him, which made it difficult to decode and comprehend the text accurately. Student One was able to read 12 of the Preprimer words and read the Readiness passage with 86% accuracy. On the spelling portion of the PALS, Student One gained one digraph from the study pre-test.

Student Two

Prior to beginning the study, Student Two was able to pass a Preprimer A passage with 89% accuracy. Student Two was able to read 13 words on the Preprimer list. On the spelling portion, Student Two also demonstrated an understanding of beginning and

ending sounds as well as short vowels. In addition, he was able to demonstrate knowledge of blending and segmenting on the phonemic awareness tasks.

At the end of the study, Student Two was able to pass a Primer level with 90% accuracy, which is considered mid-first grade. The differences in scores indicated growth from the pre-assessment. Student Two was able to read 17 words from the Preprimer list and demonstrated knowledge of digraphs, "r"-controlled words, and long vowel spellings. At the Primer level and above, multiple choice comprehension questions are included in the assessment. Student Two was able to answer all six multiple choice comprehension questions correctly.

Student Three

During the baseline phase, Student Three was able to pass a Preprimer B passage on the PALS assessment with 86% accuracy. A Preprimer B is expected at the end of the first trimester of first grade. Student Three was able to read 14 words on the Preprimer word list and demonstrated blending and segmenting on the phonemic awareness tasks. In addition, on the spelling portion of the assessment, Student Three was able to demonstrate beginning and ending sounds as well as short vowels.

At the end of the study, Student Three did not demonstrate a change in reading level and maintained his ability to read a Preprimer B passage. He was able to again read 14 words and increased his accuracy on the Preprimer B passage from 86% to 98% accuracy. When the Preprimer C passage was administered, Student Three fell within the frustration range and was able to decode the passage with 74% accuracy.

Social Validity

Survey

At the end of the study, teachers were asked to complete an Intervention Rating Profile to determine the social validity of the co-teaching and collaboration intervention as perceived by the participating teachers (see Appendix E; Witt & Elliott, 1985). The Intervention Rating Profile asks teachers 20 questions regarding the intervention usefulness. The survey utilizes a 6-point scale: 6—*Strongly Agree*, 5—*Agree*, 4--*Slightly Disagree*, 3—*Slightly Agree*, 2—*Agree*, and 1--*Strongly Disagree* (Witt & Elliott, 1985). Thus, a score of 1 would indicate that the participant strongly disagreed with the statement while a score of 6 would indicate the participant strongly agreed with the statement. For the purposes of this study, the survey was adapted to address students' academic problems as opposed to their behavior problems, which was the original purpose of the survey. Table 8 summarizes the mean response to each question.

Table 8

Teachers' Mean Responses to the Intervention Rating Profile

Question	Mean
Teachers are likely to use this intervention because it requires little technical skills.	4.2
Teachers are likely to use this intervention because it requires little training to implement effectively.	3.8
Most teachers would find the intervention suitable for the academic problem described.	4.8
Most teachers would find this intervention appropriate for academic problems in addition to the one described.	4.8
The child's academic problems severe enough to warrant use of this intervention.	5.8
This intervention would be appropriate for use *before* making a referral.	5.4
This intervention would not be difficult to implement in a classroom with 30 other students.	3.8
This intervention is practical in the amount of time required for parent contact.	4.2
This intervention is practical in the amount of time required for contact with school staff.	4
This intervention is practical in the amount of time required for record keeping.	4.8
This intervention is practical in the amount of out-of-school time required for implementation.	3.8
This intervention would not be disruptive to other students.	4.4
It would not be difficult to use this intervention and still meet the needs of other children in the classroom.	4.6
This intervention should prove effective in changing the child's academic problems.	5.6
This would be an acceptable intervention for the child's academic problems.	5.8
This intervention would not result in negative side effects for the child.	5.8
This intervention would not result in risk to the child.	6
This intervention would not be considered a "last resort."	5.6

All of the teachers strongly agreed that the co-planning and co-teaching intervention did not result in a risk to the child. In addition, the results of the survey indicated that the teachers agreed (i.e., mean scores between 5.0 to 5.9) that (a) the intervention would not result in a negative effects for the child, (b) the intervention would be acceptable for the child's academic problems, (c) the student's academic concerns were severe enough to warrant the intervention, and (d) the intervention should prove effective in changing the student's academic problems. In addition, teachers agreed that they could use the co-planning and co-teaching intervention prior to making a referral. For example, several teachers mentioned using the intervention during the RTI process. Teachers slightly agreed (i.e., mean scores from 4.0 to 4.9) that it would not be difficult to use the co-teaching/collaboration intervention and still meet the needs of other children in the classroom, and that the intervention would not be disruptive to other students. The responses also indicated the teachers slightly agreed that the amount of record keeping, amount of contact with school staff, and amount of parent contact were practical. In addition, teachers slightly agreed that other teachers were likely to use this intervention because it required little technical skills and that teachers would use the intervention suitable for the academic problems described as well as academic problems in addition to the one described. The following were areas in which the teachers indicated they slightly disagreed (i.e., mean scores between 3.0 to 3.9): (a) teachers were likely to use this intervention because it requires little training to implement effectively, (b) this intervention would not be difficult to implement in a class with 30 other students, and (c) this intervention was practical in the amount of out-of-school time required for

implementation. Mean scores did not fall below 3.0, indicating that the teachers did not strongly disagree or disagree with any of the survey statements.

Teacher Interview

At the end of the study, each teacher was asked to complete a short interview (see Appendix C). Five of the six teachers participated in the end-of-study interview. Due to the stress of the end of the year and budget cuts, Student Three's general education teacher did not wish to participate in the interview. The teachers' responses to the interview were audio recorded and transcribed. Responses included the ability to build capacity in one another, the ability to provide seamless instruction, qualitative changes in students, barriers to co-teaching, and the desire to continue the co-planning and co-teaching process in the future.

Increased capacity of two teachers working together. One of the overarching responses to the interview was that co-planning and co-teaching allowed teachers the opportunity to learn new teaching strategies from each other. This was especially evident for the teachers working with Student One and Student Two as the teaching pairs included both a veteran teacher and a new teacher. Student Three's classroom teacher was in her second year of teaching and was able to benefit from the modeling provided by the veteran special education teacher. Student Three's general education teacher commented frequently throughout the study how the intervention had changed her teaching for the better. For example, one of the first strategies that Student Three's teachers worked on together involved words chunks. The special education teacher used a magnetic letter strategy during word work to reinforce this skill. The classroom teacher

was then able to use the same strategy using magnetic letters and incorporated it into her own classroom the next day.

Student Two had a similar situation; his special education teacher was in her first year of teaching. During the interview, his special education teacher expressed how she had learned a variety of decoding strategies from the veteran classroom teacher and was able to take the strategies and ideas within her own groups: "Well, I used some of the strategies that she uses; I learned from her. Even being a first year teacher never really using CLIP [a district based reading intervention], I kind of understood how to use it in my own groups." The co-planning and co-teaching process embedded the opportunity for the teachers to gain new skills and understanding within the context of the school day without a great deal of outside training.

Other benefits to co-planning and co-teaching that emerged were the increased capacity of two teachers working together as compared to one teacher working in his or her own classroom. Two teachers working side-by-side allowed teachers to reach higher levels of instruction as opposed to just one teacher working isolated. Teachers working together were able to utilize two different sets of skills to create one powerful lesson. Student One's classroom teacher spoke about the power of two teachers working together: "I think just that we both bring different expertise and lenses to the work that we do and then [are able to] problem solve while looking through those [lenses]." Student One's special education teacher also felt that co-planning and co-teaching supported the problem solving process:

> Well, the most beneficial piece that I thought was the collaborative planning and being able to actually sit down together and analyze the assessments, and just pluck each other's brains about what's best for supporting students with ESL and supporting special needs and bridging the two.

The ability to co-plan and co-teach Student One was especially crucial as Student One had both special education and ELL needs. The teachers needed to thoughtfully implement lessons that met *all* of the student's needs. Having two teachers planning together allowed the teachers to share the burden and grow together as teachers.

Furthermore, teachers felt that they were able to change their teaching for the benefit of every student in ways that would not be possible if they were teaching and planning on their own. As one teacher explained,

> We went from being best practices teachers to being diagnostic and being like [the] super differentiation type. That I feel proud of and I feel like I couldn't have done it on my own, but because of working closely together, we both [had the] mindset that [this] is where we wanted to go and that's how we got there.

The power of having two teachers was echoed by Student Two's classroom teacher and special education teachers. Student Two's classroom teacher expressed how co-planning helped her see other opportunities for learning:

> When we would co-plan, there were things M. would come up with in the story that I was not focusing on …maybe I was just focusing on the main chunk of word or whatever and I might have missed the point that there was humor in one of the books and she got oh, this was a funny one. I was looking at the word parts and she was looking at the whole comprehension piece.

Student Two's special education teacher felt that they were able to bring new ideas and thoughts to the table: "Planning was nice because we came up with new ideas together." Having multiple perspectives and backgrounds helped the teachers incorporate new ideas and strategies into each lesson.

Seamlessness. An additional theme that emerged was the ability to focus on the same skills and strategies in the classroom and intervention setting: "We were bridging to some extent …you know, [prior to co-teaching] I was trying to work on the same word

work and what not, but it wasn't like all the same stuff and so I felt like some of it got lost and it was fragmented."

Teachers were able to work together to use similar language to focus on the same skills and strategies rather than creating isolated environments. The "bridging" of the two settings allowed the teachers to ensure each student received seamless and generalized instruction not only when the teachers were co-teaching but when teachers were teaching on their own as well. Classroom teacher two felt that the students changed their perception of their teachers as well: "It makes the kids perceive it better that they don't just leave here [the general education classroom] and what you do in there [the special education room] is not carrying over into here and vice versa. Wow, you guys work together."

Special education teacher of Student Three felt that the conversations that took place during the co-planning were what contributed to the merging of the two environments: "…for me it wasn't the benefit of the instruction and learning, but it was the benefit of saying, 'oh, he is doing this for you …so if we do this here, this is something you can do there.'" The process of working together allowed the teachers the opportunity build learning environments in which students focused on the same targeted skills and strategies regardless of the location of the instruction or person delivering instruction.

Student change. All of the teachers noticed a variety of qualitative changes in each of the students. The general education classroom teacher of Student One noticed that he was more engaged throughout the day as well as in small group lessons.

> Engagement, I would say because like earlier we were teaching separately. I was kind of doing [oral language and literacy model], but not as detailed as this and he

> was just really lost most of the time. And so what I saw with him is that because we were able to zero in on what he needed, he was just like engaged and then you could see like kind of that trajectory happening.

Student Two was perceived by the classroom teacher as more confident throughout the school day. When asked about changes in Student Two, the classroom teacher stated: "He seems more confident. I think it is him seeing his teachers work together and how he is held more accountable." In addition, the special education teacher commented that Student Three was displaying independent and generalized use of learned reading strategies.

> Now he matches the print, he self corrects… based off of the top of my head I'd say he self- corrects 67% of the time and attempts a few more times even if he can't figure out the word. He cross-checks beginning, meaning, picture and that's impressive.

Despite the variety of environments, all the teachers were able to identify qualitative changes in each student while using the co-planning and co-teaching process.

Barriers. Despite many of the benefits brought forth by the co-planning and co-teaching process, the teachers had to deal with several barriers: the time necessary to collaborate, the difficulty of scheduling co-teaching time, ensuring other students in the classroom were actively engaged in independent work, and making sure each teacher received the opportunity to teach an equal amount of the lesson.

***Time*.** All the teachers in the study commented that it was difficult to find the time necessary to co-plan for each lesson. The general education classroom teacher for Student Three spoke of the difficulty of trying to meet twice weekly, e.g., the constraints of meetings:

> So we would end up planning on the fly. Ok, we have to do it at 8:05 and it's 7:35. So that was a definite down side that we were not organized enough for you to say 'Let's plan two books out. We will meet tomorrow. We will definitely talk

> about what we saw. How we want to adjust it' and I think that really would have been a little bit more beneficial. Time was an issue for us. I think if we were able to plan a little bit more than some of those things might have come out.

Despite the amount of time necessary to co-plan, Student One's teachers noted how the process became easier and more efficient over time.

> It's interesting to see the progress. We meet on a regular basis and our planning got better because we knew each other better because we had a better idea about the students… because we were just getting more laser-like focus. But it took, you know, a long time to get to that level of planning.

In addition to finding the time to meet, teachers had difficulty scheduling time to co-teach. When asked about barriers to co-teaching, the general education classroom teacher for Student Two brought up scheduling issues, especially around state assessment time: "Testing time was difficult because M. had things that got in the way and we could not co-plan easily but we were dedicated. We said we would do it and we did. We really collaborated weekly." Despite the difficulties of scheduling around meetings and assessments, the teachers were committed to helping each student benefit from the co-teaching process.

Co-teaching twice a week rather than each day also proved to be difficult for Student Two's teachers.

> It was also tricky because we only did it twice a week and she [their classroom teacher] would see them for reading four of five days a week so I think it was hard for her. She had to skip between books and hard on the kids too, to see one book one day, then the next day a different book, then going back.

While it wasn't easy to schedule co-teaching into any of the students' classrooms, Student One and Student Three's teachers avoided the issue of having different lessons every other day by co-teaching on consecutive days.

Other students. Another aspect of the co-teaching process was ensuring that the other students in the class were engaged in independent work. The district utilizes a guided reading model where the classroom teacher pulls small groups of students based on their reading level while the other students are engaged in literacy centers. Literacy centers involve a variety of independent activities: listening to audio books, working on the computer, practicing learned skills, playing literacy games, and writing. Both Student One and Student Three's special education teachers had difficulty adjusting to the activity and noise in the room while co-teaching the small group. One teacher remarked,

> The management requirements escalated for us. That was a big piece and the noise…. I found that the kids were often looking over at the computers all the time. They were hard to engage because of the things going on around them. So that was the tough part of it especially for me because I am so used to being in a small room and not accustomed to having a level of 'with-it-ness' that is required of a gen. ed teacher.

Student Three's special education teacher and classroom teacher decided to move the small group into the special education room. However, this meant that the classroom teacher needed to find someone to cover her class while she co-taught in the special education classroom.

Roles. Ensuring that each teacher had the opportunity to teach an equal part of the lesson also proved difficult. This was especially evident in the situations where one of the teachers had more experience than her co-teacher:

> I think it made me a little bit more aware on a personal level of how controlling I am. It was my room, I sat down, I took control. Part of that was simply a lack of take control on her part, but I think I have to own 75% of that as [the feeling that] this is my group and I am in control.

The difficulty of sharing the lessons was echoed by another veteran teacher: "I had to me more careful not to be the boss, I had to step back and make sure that I did not

impede. I am used to teaching the whole lesson and so that was one thing is making sure I was taking turns."

Future co-teaching plans. Each of the teachers interviewed discussed plans to use co-planning and co-teaching in the future by employing a variety of ways to bring what they learned from the co-planning and co-teaching forward to subsequent school years. Even if she did not have the opportunity to co-teach with each classroom teacher next year, Student One's special education teacher hoped to co-plan around each grade level theme next year. Student One's classroom teacher articulated a goal for her collaborative practices next year: "My one goal, I would like to do a lot more, but my one goal is if we can analyze student work to understand student's needs beyond any other planning, that's what I would like to do."

Student Two's special education was hard at work thinking about plans for next year and trying to ensure she would have time built into her schedule for more co-planning and collaboration.

> I definitely want to use it [co-planning and co-teaching] with all the grades I work with. Time built into the day. I kind of clustered my students into the same classroom so that I am able to do more co-teaching and push in, so I want to do it with math and reading.

Student Two's classroom teacher was hoping to have the opportunity to collaborate with specialists in the future but was concerned about the difficulty of scheduling: "You know maybe M. and I will do something on our own. And the push-in part rather than the pull out, perhaps um, you know depending on the structure."

While Student Three's special education teacher did not want to commit to using co-planning and co-teaching on a twice-a-week basis, she talked about meeting with each

classroom teacher monthly and determining what would be the most helpful way to collaborate.

> I would actually love to do a lot more of it [co-planning and co-teaching] at least in a less formal way, but more consistent. Does that make sense? In other words, I would love to sit down with a teacher once a month, once every two weeks and say "what are you seeing? Here is what I am doing. What are you doing? Do you want to see that? Can I come see that?"

Summary of Data Findings

Results among the dependent variable varied for each student. Based on the visual analysis and PND, Student One demonstrated that the co-planning and co-teaching intervention was effective at increasing his oral reading fluency and highly effective at increasing his decoding skills. The intervention was ineffective at changing Student One's sight word fluency. In addition, Student One demonstrated a decrease in reading level going from a Preprimer A to a Readiness reading level on the PALS assessment.

Student Two demonstrated a questionable effect size for oral reading fluency; however, the visual analysis detected a slight increase in the level and slope of the data in the intervention phase. Student Two's scores fell in the highly effective range for nonsense word fluency and the effective range for sight word fluency, which was supported by the visual analysis. Student Two was the only student to increase his reading level from a Preprimer A to a Primer level over the 12-week study timeline.

Similar to Student One, Student Three's word reading fluency scores fell in the questionable or ineffective range and did not show significant growth. Student Three demonstrated low growth in response to the intervention overall as his sight word fluency also fell in the ineffective range. Student Three's nonsense word fluency scores fell in the questionable range. Slight increases were detected in the visual analysis; however,

the results of the PND indicate that the growth was not significant from baseline to intervention over the 12-week period. Student Three maintained his reading level throughout the study.

Overall results for oral reading fluency showed that in one of the three students, the co-planning and co-teaching intervention was effective at increasing the number of words read correctly per minute. When looking at oral reading fluency, the other two students had questionable or minimal responses to the intervention. The easyCBM Word Reading assessment results revealed that two of the three students had minimal responses to the intervention. However, the remaining student demonstrated a moderate response to the intervention as measured by the EasyCBM Word Reading assessment. Overall findings for the DIBELS Nonsense Word Fluency assessment demonstrated a higher level of response to the intervention; two out of three students' responses fell in the high range. The remaining student's response to the intervention fell within the questionable range. Overall changes in reading level varied for each student. Student One regressed, Student Two increased his reading level, and Student Three remained the same.

The Intervention Rating Profile was administered to each teacher. The results of the survey indicated that teachers perceived the use the intervention as beneficial for students with academic difficulties. The results suggested that teachers found the intervention appropriate for students who struggled with academics and that the amount of record keeping and parent contact was practical. However, the survey indicated that the amount of out-of-school time and ease of implementing the intervention might make it difficult for teachers to implement. In addition, the responses indicated that teachers

might not use the intervention due to the amount of training necessary to implement the intervention effectively.

The end of the study interview gave teachers the opportunity to share their insights regarding the benefits and barriers of co-teaching. Benefits included the opportunity to learn from each other and the ability to create a bridge from the classroom to intervention setting. In addition, teachers observed increased student engagement, confidence, and the ability to use learned strategies independently. Scheduling co-teaching opportunities and finding time to co-plan were barriers to each co-teaching pair. At times, teachers found it difficult to share the role of teaching. Despite the barriers to the co-planning and co-teaching process, each of the teachers interviewed planned to use co-planning and co-teaching in the future.

CHAPTER V

DISCUSSION

The purpose of this study was to determine the effects of teacher collaboration and co-teaching on the response to reading intervention of elementary-aged students with learning disabilities using a multiple-baseline design. The study included three pairs of teachers including a special education teacher, a second grade general education teacher, and three second grade students identified with learning disabilities. The effect of collaborative planning and co-teaching was monitored using the DIBELS Test of Nonsense Word Fluency (Good & Kaminski, 2002), DIBELS Test of Oral Reading Fluency (Good & Kaminski, 2002), easyCBM Test of Word Reading (Alonzo & Tindal, 2007), and the PALS literacy assessment (Invernizzi et al., 2003). Teachers met twice weekly to co-plan small group guided reading lessons and co-taught guided reading twice a week in the general education classroom.

Research Questions

Q1 What effect does teacher collaboration and co-teaching have on the response to intervention on students identified with learning disabilities?

- Q1a What changes occurred in the students' oral reading fluency?
- Q1b What changes occurred in the students' sight word fluency?
- Q1c What changes occurred in the students' decoding fluency?
- Q1d What changes occurred in the in the students' overall reading level?

Discussion

The Response to Intervention (RTI) model provides all students with the opportunity to receive the instruction necessary to make progress within the general education curriculum. While the majority of students will respond to interventions provided, students identified with learning disabilities often require more time receiving intense interventions in order to make progress. Unfortunately, the need for more intense instruction often results in students with learning disabilities being pulled out of their general education classrooms and sent to isolated settings without a clear link to the general education curriculum (Odden & Picus, 2008). Pull-out intervention models have the potential to create holes in student learning and provide fragmented instruction that does not connect students' learning to the general education curriculum (Carter et al., 2009). As a result, students are often unable to link newly learned strategies to the classroom curriculum and struggle to catch up to their peers (Torgesen et al.,1999). One of the criticisms of reading intervention is the lack of generalization of learned skills to new materials. However, focusing on generalization is key to intervention planning, especially when addressing the needs of students with learning disabilities. When providing interventions to students needing the most intense level of support, educators must ensure they are collaborating to provide each student the best possible outcome and to facilitate the generalization of newly learned skills from the intervention setting into real world application. Co-planning and co-teaching offer such a possibility as students are given the opportunity to hear the same message from both their special education and general education teacher within the same classroom while ensuring that the student is receiving both the general education content and achieving IEP goals and objectives. In a

co-planning and co-teaching situation, each student is given the opportunity to bridge what he or she learns in the intervention setting to the general education setting. Co-planning and co-teaching allow both the special education teacher and classroom teacher to align their instruction to target the needs of individual students while creating a seamless day for each student. The co-planning and co-teaching model allows students to receive the intensity of intervention necessary to foster the growth necessary while providing each student with an individualized link to the general education curriculum.

This study utilized a multiple-baseline approach. The limited number of subjects and nature of the single-subject design prevented the results of the study from being generalized to the general population. The purpose of a single-subject design is to determine the effect of an independent variable within a single experiment (Kennedy, 2005). Nonetheless, several precautions were taken to ensure the internal validity of the study including the use of repeated measures as well as replicating the results by using more than one subject. While every attempt was made to eliminate the effect of extraneous variables, it is important to acknowledge that reading and writing instruction was embedded throughout the school day. All students received instruction that aligned with the district curriculum frameworks based on the state standards; however, instructional styles varied among the classroom teachers. The various instructional styles might have contributed to some individual differences across the subjects. In addition, maturation effects are also important to consider within a study, especially when working with elementary students. The maturation effect threatens internal validity because it is assumed that even without treatment some behaviors and skills will develop over time as a child matures (Kazdin, 1982; Kennedy, 2005). Since this study occurred over several

months within the school year, it is assumed that some improvement in literacy skills could be attributed to student maturation.

Reading

Despite the limitations of this study, progress was seen in each of the students. While some gains were evident throughout the study, students made a limited amount of progress; results varied among the dependent variables. One measure that showed gains for each student was the DIBELS Test of Nonsense Word Fluency (Good & Kaminski, 2002). Two of the three students demonstrated a high effect size for nonsense word fluency. These results might be attributed to the fact that decoding sounds and words in isolation is a lower level skill than reading words in context. Students might have needed more time to develop higher level skills such as oral reading fluency and word reading fluency. For example, only one of the three students showed a moderate effect for oral reading fluency and two of the three students had minimal or no effect size for oral reading fluency, which is a higher level skill than decoding nonsense words in isolation. Students also varied in changes to their reading levels. One student demonstrated a slight regression, one student improved his reading level, and one student remained the same.

The differences in responsiveness could be contributed to the varying time spent in the intervention. The time spent in the intervention phase ranged from 10 to 6 weeks, which may not have been long enough for students to develop the skills necessary to demonstrate responsiveness on higher level tasks that required the students to read words in context. The need to allow students with learning disabilities to receive interventions over a sufficient length of time is supported by Linan-Thompson and Hickman-Davis (2002) and Jitendra et al. (2004). Linan-Thompson and Hickman-Davis suggested that

for reading instruction for students with learning disabilities to be effective, it needs to be sufficient in both length as well as frequency. Teachers needed time to develop collaborative relationships as they were both learning and then implementing the co-planning and co-teaching intervention. Both of Student One's teachers commented that it took several weeks to establish a co-planning and co-teaching routine; however, Student Two and Student Three's teachers were not given the same amount of time in the intervention phase, which could have ultimately contributed to the amount of growth each student made. Guided reading in the classroom typically takes place over a brief period of time; each small group spent 10 to 12 minutes with the teacher daily. When looking at such a short amount of time, a longer period of time might have been necessary for a cumulative effect to take place..

Co-Planning and Co-Teaching

The teacher interview and Intervention Rating Profile (IRP) illustrated the benefits and barriers to the co-planning and co-teaching process. The results of the survey indicated that teachers perceived the use of the intervention as beneficial for students with academic difficulties. However, the survey indicated that some of the barriers to co-planning and co-teaching included the amount of out-of-school time and training necessary to effectively implement the intervention. The interview identified finding the time as a barrier to co-plan and co-teach; it also highlighted the difficulties some teachers had in sharing the role of teaching. Moreover, the interview underscored specific benefits to the process, e.g., the opportunity to learn from each other and the ability to create a bridge from the classroom to intervention setting. In addition, teachers

observed increased student engagement, confidence, and the ability to use learned strategies independently.

Benefits

Prior research has determined that teachers have found a variety of benefits of co-teaching and collaboration. For example, both Kohler-Evans (2006) and Syh-Jong (2006) found that teachers reported that co-teaching was beneficial in several ways including having the ability to meet a variety of students' needs within one classroom, higher test scores, a "fun" atmosphere, and the invaluable resource of having two adults within one room. Similar benefits were identified by teachers in this study. In the post-study interview, teachers were able to identify several benefits to the process: increasing their own teaching skills, gaining new ideas, and the power of having two teachers working together in one classroom. In addition, teachers spoke of observable effects for each student such as increased engagement and confidence. An additional identified benefit was that teachers were able to create a bridge between special education interventions and the classroom. Teachers found that through co-planning and co-teaching, they were able to ensure that students were learning the same skills and strategies in both the intervention setting and the general education classroom. This allowed students to avoid the confusion of learning two separate curricula and concentrate on targeted skills. The teachers felt the time spent co-planning and co-teaching gave them the opportunity to link each student's learning and avoid the fragmented nature of a traditional pullout model. All of the teachers interviewed had plans for using co-planning and co-teaching in the future, indicating that they found the process beneficial to their teaching.

As indicated on the IRP, all six teachers agreed that the co-planning and co-teaching intervention would be effective at improving the academic outcomes for students and that the intervention was acceptable for the students' academic concerns. Teachers slightly agreed that it would not be difficult to use the co-planning and co-teaching intervention and still meet the needs of other children in the classroom, and that the co-planning and co-teaching intervention would not be disruptive to other students. The teachers also slightly agreed that other teachers were likely to use this intervention because it required few technical skills, and that teachers could use the intervention suitable for the academic problems described. Such findings suggest that the teachers in this study found the co-planning and co-teaching process to be a beneficial process for both the teachers and students involved. The visual analysis and percentage exceeding the median (PEM) supported the teachers' observations as each student made individual gains.

Barriers

While the results of this study supported many of the benefits of the co-planning and co-teaching process, participants also identified barriers similar to past studies: the need for time to plan and develop co-teaching skills as well as the struggle to define each teacher's role. Throughout the teacher interviews, teachers spoke of the difficulty of trying to find the time to co-plan together throughout the day. Time was seen as a barrier on the IRP in which teachers slightly disagreed that the intervention was practical in the amount of out-of school time required for implementation. The need for a sufficient amount of time to co-plan and co-teach was also identified by past research. Friend (2007) claimed that the primary concern of teachers when entering a co-teaching

relationship was the provision of sufficient plan time. Studies such as the survey conducted by Karge and McClure (1995) indicated that teachers were allotted time to collaborate but that they had to balance the time with the need plan, complete paperwork, and meet with parents. Luckner (1999) also concluded that while teachers acknowledged that joint plan time was essential to a co-teaching relationship, there was often not the ability nor commitment to ensure that teachers were given the time necessary to make co-teaching effective. Teachers in this study spoke of the amount of time necessary to develop the co-teaching relationship. The classroom teacher for Student One commented how the co-planning time became more efficient as the relationship developed. Student One's teachers were in the intervention phase for the longest period and they expressed that their planning time increased in efficiency throughout the co-teaching process. This observation suggests that the initial need for time decreased as the teachers developed a collaborative relationship. Teachers in this study were concerned that they would not have the time necessary to successfully co-plan and co-teach in the future due to the lack of time. Such findings are key to making collaborative relationships effective by ensuring that teachers are allotted an appropriate amount of time to effectively co-plan lessons.

In addition to time to develop a co-teaching relationship, teachers need time to engage in professional development regarding the co-teaching process. While teachers are often told to collaborate and co-teach, they often do not have the appropriate professional development and structures in place to do so effectively. This creates a lot of avoidance as well as unsuccessful co-teaching experiences, despite teachers' best intentions. In order for co-planning and co-teaching to occur, teachers need time to learn

effective practices and to receive guidance throughout the process to avoid succumbing to the pressures of limited time and increasing curricular demands. Cook and Friend (1995) recommended that collaboration and co-teaching experiences should be structured prior to teachers engaging in a co-teaching model. Teachers in this study were provided with a collaborative planning template and a lesson plan adapted for co-teaching in order to provide the teachers with the structure necessary to guide them through the process (see Appendixes A and B). Teachers were supported through the initial co-planning and co-teaching process through coaching, observation, and feedback from the researcher. However, they still commented they needed more time to learn the process.

Another difficulty expressed by the teachers in this study was the difficulty of determining the role of each teacher and ensuring each teacher was given an equal opportunity to teach. This was especially evident with veteran teachers who spoke of the difficulty of letting go of the control of their classrooms. Many teachers are accustomed to the autonomy of making all instructional decisions and have difficulty allowing someone else to teach in their classroom. In order for co-planning and co-teaching to be effective, both teachers must be given the opportunity to teach the lesson. King and Youngs (2003) noted the difficulty in determining the roles of teachers in a collaborative relationship. Harbort et al. (2007) and Scruggs et al. (2007) noted that special education teachers tend to assume much less of the instructional responsibilities and tend to focus on classroom management. Difficulty in determining the roles of the teachers might be due to differing perceptions regarding ownership of the students. For example, in the interview process, Student Three's special education teacher felt that she was more responsible for Student Three's progress than the classroom teacher. Additional research

has supported the differing views of responsibilities among co-teachers. For example, Fennick and Liddy (2001) conducted a survey of special education and classroom teachers co-teaching in collaborative classrooms. The survey results indicated that the special education and classroom teachers' perceptions of their collaborative and instructional responsibilities were significantly different. Both teachers felt they were more responsible for student learning than their co-teaching partner. For this reason, the adapted lesson plan used in this study (see Appendix B) includes a section where teachers are able to identify who will teach each section of the lesson during the co-planning process. This ensured that both teachers involved in the co-teaching process had an equal opportunity to teach the lesson. By pre-planning who would teach each section of the lesson, teachers did not fall into the trap of one teacher taking on a dominant role while the second teacher was forced to take a passive role in teaching the lesson.

Implications

With the field of education suffering from large-scale budget cuts, special education teachers face larger caseloads and less time to meet the needs of more students, making service delivery a challenge. Meeting the needs of larger caseloads often means more pull-out services from the general education setting. While the nature of single-subject design does not allow for large-scale generalization, this study offers a model that was effective at bridging the gap between special education services and general education settings for three students with learning disabilities. The results of the study provided evidence that the power of two teachers working together had the ability to create a seamless day for students with disabilities receiving special education services outside of the classroom. The potential of co-planning and co-teaching to increase

student achievement for students with disabilities was noted through the positive responses teachers had throughout the interview and survey. Despite the limited growth made by students, the teachers in this study were given the opportunity to develop collaboration and co-teaching skills over the 12-week period. While it was difficult to detect large-scale changes in the achievement of each student within a 12-week period, teachers were able to observe positive changes in their students as well as their own teaching practices. Such anecdotal evidence provides support for providing teachers with the structure, time, and support necessary to make collaboration and co-teaching manageable for teachers. Without the structure and support provided in the co-planning and co-teaching model, the teachers would not have had the opportunity to bridge the gap between the general education and special education settings for their students with disabilities.

While the results of this study suggested that the co-planning and co-teaching intervention has the potential to increase student achievement, specific conditions need to occur in order for such a model to be effective. First, districts must address the need for a comprehensive plan to include professional development and time set-aside for co-planning and co-teaching. Past research has demonstrated that despite best intentions, teachers need to be trained to use co-planning and co-teaching skills in order to succeed in a co-teaching relationship. Professional development should include time to develop and practice newly learned skills through peer or district provided coaching to allow teachers the time necessary to reflect and modify their practice. Too often, the lack of professional development and feedback makes co-planning and co-teaching seem like a great idea in the fall and impossible to achieve by spring. Time must be built into the

master schedule to allow teachers time to co-plan and co-teach. While more time may be needed initially to develop co-teaching relationships, as time goes on teachers can become more efficient at co-planning, especially in systems that provide structures allowing time for reflection and troubleshooting through an outside coach or experienced teacher. Co-planning time also provides teachers with time to reflect on what went well in previous lessons and where they would like to make changes.

Structure is essential to guiding co-planning and co-teaching. Often times, teachers struggle to determine what should be taught and struggle to target the needs of each student. This often creates the feeling that students with special needs must learn two different curricula: the general education curriculum and the goals outlined in the Individualized Education Program (IEP). A structured planning template or procedure allows teachers to combine the general education content as well as address the needs outlined in the IEP. The collaborative planning template in this study guided teachers into discussing the IEP goal that the lesson targeted along with the content goal. The structure in this study focused the teachers in developing common language to use when introducing a new concept or strategy. This allowed teachers time to discuss what the lesson would look and sound like. Developing common language is essential to creating a seamless environment for students--teachers are using the same language in the general education setting as well as the special education setting. In addition to the collaborative planning template, the teachers were provided an adapted lesson plan that followed the school district's guided reading model. The collaborative planning template and adapted lesson plan gave teachers the structure necessary to successfully co-plan guided reading lessons that aligned with the district's curriculum.

Students are motivated by success. The co-teaching and co-planning model allowed teachers to design individual students for success. While this may not be true at other levels, it was evident that the elementary students in this study experienced great joy in having their special education teacher come into the classroom. Students often feel left out when they need to leave the general education classroom and may be motivated to stay in the general education classroom to receive special education services. Meeting the needs of individual students is at the heart of the IEP process. Co-planning and co-teaching allows teachers to provide success in each student's day while meeting curriculum and IEP goals.

Future Research

While collaboration and co-teaching requires a great deal of time and training, the results of this study suggested that the co-planning and co-teaching practice offers many possibilities for students with disabilities (Friend, 2000, 2007; Kohler-Evans, 2006). Collaboration has the potential to ensure that students receiving interventions outside the classroom are able to seamlessly generalize learning from the intervention setting to the classroom and the classroom to the intervention setting while focusing on the same skills and strategies, thereby increasing opportunities for improvement. Effective collaboration and planning is essential to ensure that students are able to maximize time spent in classrooms as well as time spent in interventions. Without the link, many students will continue to experience difficulty responding to isolated interventions and fall even further behind their peers. Based on the teachers' responses on the Intervention Rating Profile and the interview, the co-planning and co-teaching model utilized in this study might be a viable option in the future for bridging the intervention setting to the classroom setting.

However, additional research is necessary to replicate the findings. Future research might focus on additional participants over a longer period of time to allow students the time necessary to respond to the intervention while allowing the teachers to develop an efficient co-teaching relationship. Research should expand to include students in additional grade levels, disability categories, and content areas. Future research should focus on the generalization of students receiving interventions in a co-taught setting as opposed to a pull out model. While this co-planning and co-teaching model used an observation and feedback model, future studies might focus on the effect of different types of professional development, e.g., demonstration classrooms, mentoring and side-by-side coaching, on the success of the co-planning and co-teaching process.

A dearth of research exists regarding the impact of co-planning and co-teaching on elementary students with learning disabilities. This study contributes to the much needed research and indicates a promising practice in the field of learning disabilities.

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APPENDIX A

COLLABORATIVE PLANNING TEMPLATE

Date:

IEP Goal:

Curriculum Goal:

What specific skill or strategy will you target in your lesson?

How will you teach the skill? Be specific and include the common language you will use in the lesson.

How will each person give the student opportunities for practicing skill/strategy throughout the school day?

APPENDIX B

ADAPTED GUIDED READING LESSON PLAN

Date:_____

Book:_____

	Who will teach this?	How will it be taught?
Word Work:		
New Text: • Give title • Introduce book • Give purpose for reading		
New Vocabulary and/or Concepts:		
Strategy Introduction/ Reminder:		
Comprehension Discussion:		

APPENDIX C

INTERVIEW QUESTIONS

Interview Questions

1. What was beneficial about the process?

2. How did engaging in collaboration change your teaching?

3. What changes did you see in the student?

4. What were some of the barriers of engaging in collaboration?

5. How do you plan to use collaboration in your teaching in the future?

APPENDIX D

OBSERVATION CHECKLIST

Indicator	Yes	No
Planning template includes targeted skill/strategy.		
Planning template includes the common language that will be used during the lesson.		
Planning template includes times/places for additional practice.		
Lesson plan includes word work.		
Lesson plan includes introduction of text.		
New vocabulary and concepts are introduced.		
The targeted skills/strategy is introduced.		
Comprehension of the text is included in the lesson.		
Parts of the lesson are assigned to teachers.		
Information on how each section of the lesson will be taught is included.		
Lesson plan is equally taught by both teachers.		
Total		

Notes:

APPENDIX E

INTERVENTION RATING PROFILE

Intervention Rating Profile

The purpose of this questionnaire is to obtain information that will aid in the selection of classroom interventions. Please circle the number which best describes your agreement or disagreement with each statement.

Intervention Rating Profile (IRP)
Adapted from Martens, B.K., & Witt, J.C. (1982)

	Strongly Disagree	*Disagree*	*Slightly Disagree*	*Slightly Agree*	*Agree*	*Strongly Agree*
1. Teachers are likely to use this intervention because it requires little technical skills.	**1**	**2**	**3**	**4**	**5**	**6**
2. Teachers are likely to use this intervention because it requires little training to implement effectively.	**1**	**2**	**3**	**4**	**5**	**6**
3. Most teachers would find the intervention suitable for the academic problem described.	**1**	**2**	**3**	**4**	**5**	**6**
4. Most teachers would find this intervention appropriate for academic problems in addition to the one described.	**1**	**2**	**3**	**4**	**5**	**6**
5. The child's academic problems severe enough to warrant use of this intervention.	**1**	**2**	**3**	**4**	**5**	**6**
6. This intervention would be appropriate for use *before* making a referral.	**1**	**2**	**3**	**4**	**5**	**6**
7. This intervention would not be difficult to implement in a classroom with 30 other students.	**1**	**2**	**3**	**4**	**5**	**6**
8. This intervention is practical in the amount of time required for parent contact	**1**	**2**	**3**	**4**	**5**	**6**
9. This intervention is practical in the amount of time required for contact with school staff.	**1**	**2**	**3**	**4**	**5**	**6**
10. This intervention is practical in the amount of time required for record keeping.	**1**	**2**	**3**	**4**	**5**	**6**
11. This intervention is practical in the amount of out-of-school time required for implementation.	**1**	**2**	**3**	**4**	**5**	**6**
12. This intervention would not be disruptive to other students.	**1**	**2**	**3**	**4**	**5**	**6**
13. It would not be difficult to use this intervention and still meet the needs of other children in the classroom.	**1**	**2**	**3**	**4**	**5**	**6**
14. This intervention should prove effective in changing the child's academic problems.	**1**	**2**	**3**	**4**	**5**	**6**
15. This would be an acceptable intervention for the child's academic problems.	**1**	**2**	**3**	**4**	**5**	**6**
16. This intervention would not result in negative side effects for the child.	**1**	**2**	**3**	**4**	**5**	**6**
17. This intervention would not result in risk to the child.	**1**	**2**	**3**	**4**	**5**	**6**
18. This intervention would not be considered a "last resort."	**1**	**2**	**3**	**4**	**5**	**6**

19. Overall, the intervention would be beneficial for the child.	**1**	**2**	**3**	**4**	**5**	**6**
20. I would be willing to use this intervention in the classroom setting.	**1**	**2**	**3**	**4**	**5**	**6**

Reprinted from: Witt, J.C., & Elliott, S.N. (1985). Acceptability of classroom management strategies. In T.R. Kratochwill (Ed.), *Advances in school psychology.* (Vol. 4, pp. 251-288). Hillsdale, NJ: Erlbaum.

APPENDIX F

INSTITUTIONAL REVIEW BOARD APPLICATION AND APPROVAL

University of Northern Colorado
INSTITUTIONAL REVIEW BOARD

Application for Expedited or Full Review

Section I – Statement of Problem / Research Question

A plethora of research has been completed regarding effective reading interventions; however, there continues to be a group of students, often students labeled with Specific Learning Disabilities, who are considered low responders to research-based reading interventions (Vaughn, Wanzek, Murray, Linan-Thompson, & Woodruff, 2009). The majority of reading interventions, especially in special education, take place in isolated settings without a clear link to the general education curriculum. Additionally, many critics of intensive reading interventions suggest that the interventions allow too much time on isolated skill practice and too little time on actually reading text (Yatvin, Weaver, & Garan, 2003). As a result, students often struggle to generalize newly learned skills into the general education classroom and struggle to close the gap with their peers. Marilyn Friend (2000) suggests that despite special and general education teachers' belief that they are effectively collaborating for student success, teachers tend to use ineffective and time-consuming methods when attempting to collaborate,

The purpose of this study is to determine the effects of teacher collaboration and co-teaching on the response to reading intervention of elementary-aged students with learning disabilities. The study will use a multiple baseline approach including three second grade students and their classroom and special education teachers. During the baseline phase, students will receive

traditional pull-out literacy interventions and classroom instruction. During the second phase, the general education teacher and special education teacher will begin collaboration which will include collaborative planning as well as co-teaching. Students will be evaluated on their reading skills weekly using a variety of progress monitoring assessments. Students' oral reading fluency rate will be monitored using the DIBELS test of Oral Reading Fluency. Sight word fluency will be monitored using Easy CBM's word reading assessment. In addition, decoding fluency will be measured using the DIBELS Test of Nonsense Word Fluency.

Research Questions

Q1 What effect does teacher collaboration and co-teaching have on the response to intervention on students identified with learning disabilities?

a. What changes occurred in the students' Oral Reading Fluency?

b. What changes occurred in the students' sight word fluency?

c What changes occurred in the students' decoding fluency?

d What changes occurred in the in the students' overall reading level?

Section II – Method

1. Participants:

a) The participants in this study will be 3 second grade students identified with Specific Learning Disabilities, their classroom teachers and their special education teachers. None of the participants in this study are considered to be vulnerable or cognitively impaired.

b) I will select my student and teacher participants from a participating school within the north metro school district.

c) After obtaining the district and principal's permission, I will ask the classroom and special education teachers if they are willing to participate in the study. I will then contact the parents of recommended students to see if they are willing to participate. All parents will be invited to meet with the researcher in person or discuss the study over the phone. Students of parents who have given consent will then be asked to participate in the study in person at their school to explain the study.

d) Through the process of informed consent, I will ensure that the family, student and teacher are aware of their right to volunteer or decline to participate.

e) The students and teachers will be given an alias and no identifying information will be revealed. The pseudonym will be used in place of all identifying information. Data and progress monitoring tasks will be recorded and locked in the student's confidential special education file. Consent forms will be locked in my advisor's, Diane Bassett's, locked file cabinet located on the University of Northern Colorado campus. All other paper documents will be shredded upon the completion of the project. Audio cassettes will be manually destroyed.

f) Documentation of the parent's and teacher's consent is attached. The student's assent is also attached.

g) The student's information will be kept confidential and will only be identified using a pseudonym. The location and specific information will not be revealed (ex: instead of the school name, an elementary school in north metro Colorado).

h) At the time of consent/ assent, I will explain to the parents and teacher the purpose of the study and how it will increase our understanding in designing effective interventions for students with learning disabilities. I will also explain to the student how their participation will help his/her teachers. The researcher will also meet with the classroom teacher to discuss strategies that could be used to continue the collaboration throughout the rest of the school year.

2. Procedure:

a) Students will be recommended for inclusion of the study by their special education teacher based on their history of receiving literacy intervention services (one year or more) and their lack of progress in the area of literacy. Students must also have a history of good attendance to ensure enough time to pursue the study.

b) There will be no deceptive practices in this study

c) The Phonological Awareness Literacy Screenings (PALS) will be used to assess the reading level of each student prior to the beginning of the study as well as after the study is complete (Invernizzi, Meier, & Juel, 2003). PALS includes a spelling component, reading words in isolation and reading grade level text. The PALS is part of the school

districts current assessment procedures and will not be an additional burden to the student. In addition, three one-minute timed assessments will be given to the student. The one-minute assessments will be given daily during the baseline procedures and weekly during the intervention phases. The assessments include the DIBELS Tests of Oral Reading Fluency, the DIBELS Tests on Nonsense Word Fluency and easyCBM's test of Word Reading Fluency.

DIBELS test of Oral Reading Fluency has multiple forms for progress monitoring and consists of a one-minute timed reading of a grade level text (Good & Kaminski, 2002). The student is presented with the text and told to read out loud. If the student pauses for three seconds, the tester gives the student the word and tells the student to keep reading. At the end of the minute, the tester tells the student to stop. Students are given credit for each word they read correctly within the one minute time limit.

The DIBELS Test of Nonsense Word Fluency (NWF) measures a student's ability to apply the alphabetic principle to decode words (Good & Kaminski, 2002). Such skills include applying sound-letter correspondences to words as well as blending sounds into words. The student is presented with a page of Consonant-Vowel-Consonant (CVC) and Vowel-Consonant words (VC) and is given one minute to produce as many letter sounds as he/she can. The test is scored

based on the number of correct letter sounds the students is able to produce in one minute.

The easyCBM Word Reading Fluency assessment measures a student's ability to fluently read both sight words and words following predictable patterns (Alonzo & Tindal, 2007). Students are given a chart containing leveled words and asked to read as many words as they can in one minute. If a student pauses for 3 seconds, the administrator gives the student the word and the student continues on to the next word. The assessment is measured based on the number of correctly read words in one minute.

3. Proposed data analysis:

a) A visual analysis of the data will be conducted based on the data collected from the DIBELS Tests of Oral Reading Fluency, the DIBELS Tests of Nonsense Word Fluency and the easyCBM Test of Word Reading Fluency. The visual analysis will include evaluating both the within-phase data as well as the between-phase data. For the within-phase, the level, trend, magnitude and variability will be noted for each participant's baseline and intervention phases following Kennedy's (2004) recommendations. First, the level, or mean, of each phase will be calculated and graphed (Kennedy, 2005). Next, the trend will be noted by plotting a best fit line using the split-middle technique. The split-middle technique involves splitting the data within a phase in half and calculating a median for each half of the phase (Kennedy, 2004). A best fit line will

be created by drawing a line that intersects both of the median points within each phase (Kennedy, 2004). The trend line will then be analyzed for the slope, or direction or the data, as well as the magnitude, or the rate of change which will illustrate the type of and strength of relationship that exists between the variables (Kennedy, 2005). The best-fit line will also be used to visually inspect the variability of the data, or how close the data is to the line, in order to evaluate the relationship between the independent variable and dependent variable.

The next step in the visual analysis will include an investigation of between-phase patterns. The immediacy effect, or how quickly the data change when a phase is changed, will be evaluated to see if the independent variable has an immediate effect on the dependent variable or if the dependent variable responds slowly to the introduction of the independent variable (Kennedy, 2005). The data will also be evaluated for changes in the level and trend between the phases. The phases will be evaluated to determine the strength of the change, or if the data shows a slow-immediacy effect of a rapid immediacy effect (Kennedy, 2005). The between phase step will also include looking for overlap or the degree in which similar data in other phases exist (Kennedy, 2005).

b) A single- subject, multiple-baseline across subjects design will be used. The collected data will not be analyzed using inferential statistics due to the nature of the data and the risk of serial dependency (Gall, Gall, & Borg, 2007). Serial dependency occurs in single-subject design due to the

observations being continuous, where each behavior is dependent on the previous session (Gall et al., 2007). The overall research question addresses whether or not the increasing levels of collaboration will increase the students' responsiveness to intervention. The visual analysis will allow me to evaluate whether or not the student's rate of progress increased. In addition, each assessment used in this study corresponds to a more specific research question. For example, the changes in students' Oral Reading Fluency will be measured using the DIBELS Test of Oral Reading Fluency.

Section III – Risks/Benefits and Costs/Compensation to Participants

The risks inherent in this study are no greater than those normally encountered during participation of regular classroom reading instruction and/or typical reading interventions. The PALS assessment is already part of the students' general curriculum and will place no additional burden on the student. All other assessments are given in three minutes time and will provide teachers with immediate feedback. In exchange, the students have much to gain in the quality of their literacy instruction and hopefully the opportunity to increase the students' reading level. The classroom teacher will need to spend about 30-40 minutes a week collaborating and planning with the researcher. However, the teacher also has much to learn from the collaboration sessions including learning new strategies as well as increasing student achievement in the classroom. Additionally, the school as well as district will have a model for teacher

collaboration that could increase the achievement of all students with learning disabilities.

Section IV – Grant Information

No grants will be involved in this study.

Section V – Documentation

Informed consent, dissent , teacher collaboration form and permission of the school district is attached.

UNIVERSITY of NORTHERN COLORADO

School of Special Education

Informed Consent for Participation in Research

Project Title: Effect of Teacher Collaboration on the Generalization of Literacy Skills of Elementary Students with Learning Disabilities

Hello! My name is Jennifer McCammon. I am a teacher in Adams 12 School District. I am also working on my doctoral degree at the University of Northern Colorado. I am currently working on a project researching the effect of teacher collaboration on students with learning disabilities ability to generalize literacy skills to new contexts and environments. I am looking for ways to increase student achievement in the area of literacy. By working more closely with your child's teacher, I hope to see an increase in the amount of progress your child is able to make. I will work with your child's teacher to ensure your child's teacher knows exactly what reading skills are worked on during special education groups as well as go into your child's classroom to co-teach small reading groups with your child's teacher.

The data I will collect will include your student's beginning of the year reading assessments including the district mandated Phonological Awareness Literacy Screening (PALS), the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) test of Oral Reading Fluency, the DIBELS test of Nonsense Word Fluency and easyCBM's Test of Word Reading Fluency. Besides the district testing, any additional testing takes one minute per test for a total of three minutes. Testing will take place daily at first and move to weekly throughout the course of the study.

Be assured that I will keep the student data confidential and no identifying information will be used. The names of participants will not appear in any report of this research. Interview transcripts will be kept in a locked file and all progress monitoring data will be kept in your student's confidential special education file. All identifying information will be destroyed upon the completion of this project.

I foresee no risks to participants in this study. Your child's participation will not be solicited during academic instruction, lunch, recess or specials time. Your student will be participating in his/her daily activities without interruption. The consent of the teacher and parents is necessary prior to beginning this case study. Please feel free to call me with any questions or concerns about this research and please keep a copy of this letter for your records.

Thank you,

Jennifer McCammon
Jennifer.McCammon@adams12.org
(720) 972-5983

Diane Basset (Research Advisor)
Diane.Bassett@unco.edu
(970) 351-1648

Participation is voluntary. You may decide that you no longer want to participate in the study at any time. You may decide not to allow your child to participate in this study and if (s)he begins participation, you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Sponsored Programs and Academic Research Center, Kepner Hall, University of Northern Colorado Greeley, CO 80639. 970-351-1907

Child's Full Name (please print) _____

Child's Birth Date (month/day/year) _____

Parent/Guardian's Signature _____

Date _____

Researcher's Signature _____

Date _____

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McKEE HALL, CAMPUS BOX 141, GREELEY, CO 80639-0139 • *Office* 970-351-2691 *Fax* 970-351-1061
www.unco.edu/cebs/sped

UNIVERSITY of
NORTHERN COLORADO

School of Special Education

Informed Consent for Participation in Research

Project Title: Effect of Teacher Collaboration on the Generalization of Literacy Skills of Elementary Students with Learning Disabilities

Hello! My name is Jennifer McCammon. Along with teaching, I am also working on my doctoral degree at the University of Northern Colorado. I am currently working on a project researching the effect of teacher collaboration on students with learning disabilities ability to generalize literacy skills to new contexts and environments. I am looking for ways to increase student achievement in the area of literacy. By working more closely with you, I hope to see an increase in the amount of progress your student is able to make.

As I work with the student, I will ask that you begin collaborating with me in several ways. First, I will send daily notes to tell you what specific skills we are working on in our small group and how they were taught. I will then ask you to reinforce the skills in class. In addition, we will meet two times a week for 20-30 minutes each week to discuss student progress, needs and strategies to use when teaching the student.

For the second phase of the study, I will ask you to allow me to co-teach the student's small group guided reading lesson inside your classroom. Before each lesson, we will meet to plan the lesson. I will plan to co-teach during your regularly scheduled reading time. My hope is that by increasing our collaborative practices, we will also increase student achievement. This experience should increase your knowledge regarding strategies and methods to use when teaching students with learning disabilities.

Be assured that I will keep the student data confidential and no identifying information will be used. The names of participants will not appear in any report of this research. All identifying information will be destroyed upon the completion of this project.

I foresee no risks to participants in this study. The consent of the teacher and parents is necessary to in order to use the collected data in the case study as well as conduct the interview.

Please feel free to call me with any questions or concerns about this research and please keep a copy of this letter for your records.

Thank you,

Jennifer McCammon

Jennifer.McCammon@adams12.org

(720) 972-5983

Diane Basset (Research Advisor)

Diane.Bassett@unco.edu

(970) 351-1648

Participation is voluntary. You may decide that you no longer want to participate in the study at any time. Even if you begin participating in this study, you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Sponsored Programs and Academic Research Center, Kepner Hall, University of Northern Colorado Greeley, CO 80639. 970-351-1907

Classroom Teacher's Signature _____ Date _____

Researcher's Signature _____ Date _____

UNIVERSITY of
NORTHERN COLORADO

School of Special Education
Assent to Participate in Research

Project Title: Effect of Teacher Collaboration on the Generalization of Literacy Skills of Elementary Students with Learning Disabilities

Hello! My name is Mrs. McCammon and I'm a teacher at Glacier Peak Elementary school. One thing you may not know about me is that even though I am already a teacher, I am still going to college. I am working on my doctoral degree at the University of Northern Colorado. I am going to ask for your help with one of my projects for school. I am planning on working with 3 students and their teachers to see if we can increase the student's reading level. I would like to ask you to be one of the students that I am going to work with.

We will work together each day on reading skills in a small group. I will send your teacher a note about what we worked on. I will also come into your classroom and help your teacher teach during reading time. I hope that this will help you to become a better reader. I will also be giving you a few tests to measure how you are doing with your reading. I will keep track of how you are doing on these tests. They will not affect any grades in any of your classes. They are just for my information.

At the end of the project, I will use your scores and our experiences to write a report for school. You don't have to worry about anyone knowing your name or how well you did. Only you, your teacher, parents and I will know your scores. When I write up the report, I won't tell anyone your name. I will use a pretend or fake name. You can even help me pick one out. All of your scores will be kept locked up in a file cabinet.

Your parents have said its okay for you to participate, but you don't have to. It's up to you. Also, if you say "yes" but then change your mind, you can stop any time you want. Do you have any questions for me about my research?

If you want to be in my research and let me use your reading scores, sign your name below and write today's date next to it. Thanks!

Student	Date
Researcher	Date

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www.unco.edu/cebs/sped

STUDENT'S COPY

UNIVERSITY of NORTHERN COLORADO
Institutional Review Board (IRB)

December 6, 2010

TO: Wendy Highby
University Libraries

FROM: Maria Lahman, Co-Chair
UNC Institutional Review Board

RE: Expedited Review of Proposal, *Effect of Teacher Collaboration & Co-Teaching on the Response to Reading Intervention of Elementary-Aged Students with I.D.*, submitted Jennifer McCammon (Research Advisor: Diane Bassett)

First Consultant: The above proposal is being submitted to you for an expedited review. Please review the proposal in light of the Committee's charge and direct requests for changes directly to the researcher or researcher's advisor. If you have any unresolved concerns, please contact Maria Lahman, Applied Statistics and Research Methods, Campus Box 124, (x1603). When you are ready to recommend approval, sign this form and return to me.

I recommend approval as is. W. Highby 12-22-10
Signature of First Consultant Date

The above referenced prospectus has been reviewed for compliance with HHS guidelines for ethical principles in human subjects research. The decision of the Institutional Review Board is that the project is approved as proposed for a period of one year: 1-5-11 to 1-5-12.

1-5-11
Maria Lahman, Co-Chair Date

APPENDIX G

ADAMS COUNTY APPROVAL TO CONDUCT RESEARCH

Adams 12 Five Star Schools Code: 6500
1500 East 128th Avenue
Thornton, CO 80241

APPLICATION TO CONDUCT RESEARCH

The District will base its decision whether to approve the study on information provided in this application. The researcher shall provide all requested information on this form. If more space is needed to answer any items, please attach additional sheets.

Name of Researcher: Jennifer McCammon

Date: November 30, 2010

Title: SSS Instructional Specialist

Office Phone: 7106

Mailing Address: 353 Tumbleweed Dr

FAX Number: 4799

Brighton, CO 80601

Home Phone: 970-405-6064

Title of Study:

The Effect of Teacher Collaboration and Co-Teaching on the Response to Reading Intervention of Elementary-Aged Students with Learning Disabilities

Purpose of Study:

The purpose of this study is to determine the effects of teacher collaboration and co-teaching on the response to reading intervention of elementary-aged students with learning disabilities. The purpose of this study is to determine the effects of teacher collaboration and co-teaching on the response to reading intervention of elementary-aged students with learning disabilities. The study will use a multiple baseline approach including three second grade students and their classroom and special education teachers. During the baseline phase, students will receive traditional pull-out literacy interventions and classroom instruction. During the second phase, the general education teacher and special education teacher will begin collaboration which will include collaborative planning as well as co-teaching. Students will be evaluated on their reading skills weekly using a variety of progress monitoring assessments. Students' oral reading fluency rate will be monitored using the DIBELS test of Oral Reading Fluency. Sight word fluency will be monitored using Easy CBM's word reading