Multisensory Phonics Instruction in Struggling Readers

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MULTISENSORY PHONICS INSTRUCTION IN STRUGGLING READERS

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DEDICATION

I dedicate this dissertation to six beloved people who have meant and continue to mean the world to me. While one is no longer with us, I have felt her presence through every process of this dissertation. First, I want to thank my beautiful mother, Judy. I have missed you every single day since you left for your heavenly home. If I am at least half of the wife, mother, and woman you were, then I will be no less than amazing.

Next, I want to thank my daddy, Stan. Thank you for instilling in me a love of reading and for giving me the gift of patience and perseverance.

To my dear aunt, Susan. Thank you for supporting me through every struggle. Your constant optimism has pushed me to see the good in everything.

Thank you to my wonderful husband, Herbie. You have tolerated my long hours of writing and research, knowing that when I tell you I am almost finished, it will probably be another three hours before I am done. You have been my cheerleader, my rock, and my best friend through thick and thin. Your reassurance even on the darkest days always gives me comfort. Thank you for being my ride or die.

Finally, to my two beautiful children for planting a little seed years ago and believing in me long before I ever believed in myself.
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ABSTRACT

This paper describes a problem of practice that arose from a lack of consistent, systematic phonics instruction within a small rural school with a large percentage of students not mastering skills in a way that builds the needed foundation for reading. To address this problem, action research was conducted through a mixed methods approach to determine the impact of multisensory Orton-Gillingham based reading instruction on a small population of students’ phonetic development and how this specific type of instruction affected their attitudes about reading. In an attempt to collect quantitative data, this study was guided by two research questions: How and to what extent does Orton-Gillingham based instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI? It was also guided by one qualitative research question that sought to ascertain how Orton-Gillingham based instruction impacted those students’ attitudes about reading. The results of the study indicated an increase in students’ reading achievement and attitudes about reading when Orton-Gillingham based instruction is implemented consistently. An action plan, which is to continue to implement Phonics First through the next school year with my sample group, a new group of third graders, and in kindergarten through third grade classrooms was developed. Implications for further research are also discussed.

Keywords: action research, multisensory instruction, reading difficulties, phonetic development, response to intervention (RTI)
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LIST OF ABBREVIATIONS

ADHD .......................................................... attention deficit hyperactivity disorder
BRSS .......................................................... Barton Reading and Spelling System
CLS .............................................................. Correct Letter Sounds
CVC ............................................................. consonant vowel consonant
DIBELS ......................................................... Dynamic Indicators of Early Literacy Skills
DORF ............................................................ DIBELS Oral Reading Fluency
EAHCA .......................................................... Education for All Handicapped Children Act
ELA ............................................................... English Language-Arts
IDA ............................................................... International Dyslexia Association
IDEA ............................................................ Individuals with Disabilities Education Act
IEP ............................................................... Individualized Education Plan
ILA ............................................................... International Literacy Association
IMSLC ........................................................ International Multisensory Structured Language Council
LD ............................................................... Learning Disability
MAP ............................................................ Measures of Academic Progress
NCES ........................................................ National Center for Education Statistics
NCRTI ........................................................ National Center on Response To Intervention
NHES ........................................................ National Household and Education Survey
NICHD ........................................................ National Institute of Child Health and Human Development
NRP ............................................................. National Reading Panel
NWEA ................................................................. Northwest Evaluation Association

NWF ................................................................. Nonsense Word Fluency

OG ................................................................. Orton-Gillingham

PSF ............................................................... Phonemic Segmentation Fluency

RIT ................................................................. Rasch Unit

RTI ................................................................. Response To Intervention

WRC ............................................................... Words Read Correctly

WRF ............................................................... Word Reading Fluency

ZPD ............................................................... Zone of Proximal Development
CHAPTER 1

INTRODUCTION

Being an avid reader as a child, it never occurred to me one could have difficulty with reading. It seemed as natural to me as breathing. However, as soon as I began working with children in the educational setting, I realized many students were not responding to traditional methods of teaching reading. Teachers were conducting read-alouds, teaching guided reading groups, holding shared reading lessons, and allowing time for independent reading and word study: all things that make up a balanced literacy classroom. However, readers, and other students identified as having learning disabilities and developmental disabilities, continued to struggle through this balanced literacy program.

Students in my school are assessed using Dynamic Indicators of Early Literacy Skills (DIBELS) which are quick reading assessments that measure phonological awareness, alphabetic principle, and fluency. They are also assessed using Measures of Academic Progress (MAP) Growth Reading Assessments which is used to measure what academic reading skills a child has acquired and what skills the child is ready to learn. Upon further observation and analysis of these DIBELS and MAP test scores, it was becoming evident that many of our kindergarteners, first graders and second graders were not developing phonological awareness skills needed to help decode words while they were reading, thus interfering in the reading process.
I teach special education at a small, rural primary school in upstate South Carolina with an enrollment of 410 students. My school has been identified by the South Carolina State Department of Education as a low performing school due to our lack of improvement on reported test scores. During the 2019-2020 school year, my school was assigned a Transformation Coach through the State Department of Education for three years. This transformation coach provides support to our faculty as we strive for improvement, as well as a c. Our lowest performing students, identified by the State Department of Education as a focus group, make up 22% of our population. This 22% is also our school’s special education population. There are currently three full-time reading interventionists assigned to our school. These reading interventionists serve 95 students daily in Leveled Literacy Intervention, which is 25% of my school’s population. Based upon 2021 ELA SCREADY state test scores 52.6% of my school’s third graders did not met expectations, and 30.5% of my school’s fourth graders did not meet expectations. With such a large percentage of students needing intervention and supplemental instruction, it is obvious there is a disconnect within our reading instruction.

**Statement of the Problem**

The problem of practice for this study arises from a lack of consistent, systematic phonics instruction within my school and a large percentage of students not mastering skills in a way that builds the needed foundation for reading. As evidenced by DIBELS and MAP reading scores, a disproportionately large number of students in grades one through four of my primary school experience significant reading deficits due to a lack of phonemic awareness and phonics skills. A student’s level of phonological awareness at the end of kindergarten is one of the strongest predictors of their future reading success.
(Adams, 1998). More recent research has demonstrated that phonemic awareness skills influence children’s broader academic success throughout most of their schooling (Berrill, 2018).

Data from the National Household and Education Survey (NHES) demonstrates that children from households with limited resources enter school at a disadvantage (Family and Community Engagement Research Compendium, n.d.). Impoverished households have a lack of books in their homes and communities limiting the interactions young children enjoy at home with their caregivers conversing and hearing stories read aloud, thus playing a significant role in academic success (Family and Community Engagement Research Compendium, n.d.). Regardless of socio-economic status children whose parents read aloud to them come to school with far more early literacy skills, background knowledge, and language acquisition skills (Family and Community Engagement Research Compendium, n.d.). This gap between children of higher socioeconomic backgrounds and lower socioeconomic backgrounds is created even before children start school (American Psychological Association, 2017). With young children in the community entering school lacking exposure to early literacy skills and activities that affect cognitive development, they are already at risk of having reading difficulties before setting foot in a school building. Students who begin developing early literacy skills in the home develop a stronger vocabulary, more background knowledge, better expressive and receptive language skills, and stronger phonological awareness than students who do not receive early literacy support in the home (Family and Community Engagement Research Compendium, n.d.). Once in school, academic inequities increase without appropriate reading instruction and intervention (Vadasy & Sanders, 2010). This
information is significant in this study since I teach in a critical needs area. According to the South Carolina State Department of Education, to qualify as a school in a critical needs area the school must meet one or more of the following criteria: an overall rating of below average or unsatisfactory on the state school report card, a poverty index of at least 70%, or a three-year teacher turnover rate of at least 20%. Based on data from 2019-2020, my school has an 82.55% poverty rating, a three-year average teacher turnover rate of 19.1 and an unsatisfactory rating on our 2018 school report card, which classified my school as critical needs. To meet the significant reading deficits in phonological awareness and phonics skills at my school, this study researched multisensory teaching methods based upon Brainspring’s Phonics First program.

**Multisensory Instruction**

According to the National Center for Education Statistics (NCES), average reading scores on the National Assessment of Educational Progress reading exam decreased for students in grade 4 for approximately one-third of the states from 2017 to 2019 (National Center for Education Statistics, 2020). There are many underlying issues that present for struggling readers. Emotional trauma, poverty, a lack of opportunity to learn, or ineffective learning instruction can all be causes for a child not to attend to literacy learning (Johnson, 2006). While little can be done to decrease the impact of poverty and emotional trauma experienced at home, teachers can have a great impact in other areas.

For teachers to be effective, they must acknowledge that all students learn differently and have a preferred learning modality (Shams & Seitz, 2008). A one size fits all approach to reading instruction is ineffective. To provide all students with equal
opportunities to learn, students need chances to learn through their preferred learning modalities where the teacher provides instructional support. Learning modalities include visual; auditory; tactile, which refers to touching; and kinesthetic, which is whole-body movement (Shams & Seitz, 2008). Educators and clinicians have long claimed that multisensory input enhances learning (Shams & Seitz, 2008). Furthermore, Magpuri-Lavell et al. (2014), state that, “a remedial approach with deep historical roots as an intervention for readers with language difficulties (i.e., dyslexia) is multisensory instruction for language related skills such as sounds, syllables, words, sentences, and written language” (p. 364). For instruction to be enhanced and learning connections made, teaching with a multisensory approach provides additional pathways for the learner to receive information (Morgan, 2019). Multisensory means drawing on multiple modalities. When a teacher presents information through a multisensory approach, students are given the opportunity to learn through various means of sensory input. Manipulatives are used and learning is highly interactive building upon what the student already knows.

Research conducted by Samuel Torrey Orton and Anna Gillingham has concluded that children who have trouble with reading and spelling are often best served through a synthetic phonics approach that is multisensory, structured, sequential, systematic, and cumulative (Brainspring, 2018). One such Orton-Gillingham (OG) based program is Brainspring’s Phonics First Reading and Spelling system. For this action research study,

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1 Brainspring’s Phonics First Reading and Spelling system is a multisensory structured language program accredited by the International Multisensory Structured Language Council (IMSLC) offering multisensory, systematic, structured, sequential, phonics-based, direct-instruction approaches to teaching beginning, at-risk, struggling, learning disabled, dyslexic, and English language learner readers (Brainspring, 2018).
Brainspring’s multisensory OG based reading methods was used on a select group of first- and second-grade students who have reading difficulties, to determine the impact of multisensory instruction on a small population of students’ phonetic development. I also researched how this specific type of instruction affected these students’ attitudes about reading.

**Brainspring’s Phonics First**

The multisensory OG teaching methods used during this study are based upon Brainspring’s *Phonics First* program. *Phonics First* is one of the few accredited programs in the United States designed specifically for struggling and dyslexic readers (Brainspring, 2018). *Phonics First* reading lessons place an emphasis on alphabet and phonemic awareness strategies, phonetic concepts for decoding and encoding, tactile/kinesthetic spelling techniques for phonetic and non-phonetic words, syllabication for multisyllabic words, higher-level spelling skills, and oral reading/connect text fluency (Brainspring, 2018). During the study, *Phonics First* lessons provided scaffolded instruction to small groups of students grouped by specific literacy needs. Students activated multiple modalities of learning using manipulatives as they participated in reading lessons.

**Response to Intervention (RTI)**

RTI has a goal of finding “which children need what services, delivered with how much intensity” (Barnes & Harlacher, 2008, p. 417). The RTI Action Network (2020) describes RTI as a multi-tiered approach to the early identification and support of students with behavior and learning needs. While there are many ways to implement RTI,
programs providing three levels of support are the most common (Response to Intervention Action Network, 2020).

Tier 1 consists of all students within the general education classroom receiving high-quality, scientifically based instruction by a skilled teacher. Progress monitoring is an important aspect in every tier of RTI, and students who do not show adequate progress in Tier 1 are recommended for Tier 2 RTI.

Students in Tier 2 have been identified by their classroom teacher and the school’s instructional coach as needing more intensive interventions. Tier 2 RTI provides students with more intensive instruction based on students’ specific needs. Interventions are provided within a small group setting with instruction being evidence-based (Barnes & Harlacher, 2008). If students continue to show a lack of progress, more intensive, individualized instruction is provided through Tier 3, as well as referrals for a comprehensive evaluation, if necessary.

Students within Tier 3 make up a very small percentage of the school’s population and include students with Individualized Educational Plans (IEP). The design of Response to Intervention is to identify students who need specific educational intervention, as well as assist with the identification of students with disabilities. While RTI can make a huge difference in a child’s academic success, it relies on educators who are highly qualified in evidence-based interventions for specific skills.

For the purpose of this study, I worked with a small group of Tier 2 and Tier 3 students from my school who had been identified as needing reading intervention. These students received multisensory reading instruction through Brainspring’s Phonics First teaching methods.
Theoretical Framework

Constructivism

As a framework for this research, constructivism is used to better understand the impact of multisensory reading instruction on students with reading difficulties. Constructivism is based on the idea that learners actively construct and reconstruct knowledge (Au, 1998). While traditional classrooms have been designed where the teacher is the authority and the classroom is teacher-centered, within a constructivist classroom the teacher is the facilitator, and the classroom is learning-centered (Oglan, 1999). The constructivist position assumes that learning is enabled by involvement in authentic tasks anchored in meaningful contexts (Ertmer & Newby, 2013). Constructivism within a literacy classroom places emphasis on the needs of the learners as they engage in authentic reading and writing experiences (Oglan, 1999). During small groups, particular attention is paid to strategy instruction, and as students learn strategies to use when reading and writing, they become actively engaged, creating learning experiences as guided by their teacher. For this study, multisensory reading instruction will be related through the constructivist lenses of Maria Montessori and Lev Vygotsky.

Constructivists, such as Maria Montessori, believe learning is an active process. Montessori found children learned best, not from stereo-typed material given to every child, but from an abundance of materials whose results are based on scientific experiment and modern psychology regarding the development of intelligence and the senses (Smith, 1912). She believed education was “acquired not by listening to words, but by experiences upon the environment” (Montessori, 1967, p.7). The Montessori method emphasizes multiple learning approaches where learning is hands-on, and
students learn by doing. For the student whom traditional teaching methods are not successful, multisensory instruction, where multiple learning modalities are utilized, are most effective. Montessori’s learning theory is made of the principle of establishing associations between visual, muscular, tactile, and auditory sensations. (Smith, 1912). Montessori assumed that the base of all intellectual activities were our senses (Tsubaki & Takeshi, 2008). The more senses involved in the learning process, the better the retention of information.

Montessori’s philosophy was also to observe and follow the child as a guide for making practices at varying levels of difficulty (Pickering & MacIntyre, 2013). Students with normal cognitive development can navigate the learning environment easily with some guidance from the teacher. The child who has difficulty academically will need more assistance with learning, and the multi-sensory techniques based on the Montessori method enhances their learning.

Within the constructivist theory, Montessori believed that with appropriate instructional support, mentally deficit and instructionally deprived children may function at a similar level than their peers (Montessori, 1912). In this way Montessori parallels Vygotsky’s zone of proximal development (ZPD) (Bodrova, 2003). The concept of ZPD implies that individuals learn best when working together with others, and it is through such collaboration with more skilled individuals that learners internalize and learn new concepts, psychological tools, and skills (Shabani et al., 2010). The ZPD is the skills set a student cannot do independently but can do with the guidance of someone. As educators become more familiar with Vygotsky’s ZPD, new ways of instruction are being seen to best support learners. Opportunities for quality instruction come from providing students
with materials within their Zone of Proximal Development (ZPD), which is where they are pushed just slightly beyond their comfort zones to challenge themselves to become better learners (Martinez & Plevyak, 2020). Direct, whole group instruction becomes less the norm and small group, guided instruction becomes more commonplace. Guided instruction is differentiated and thus allows teachers to teach students using strategies that best fit each student’s learning styles (Martinez & Plevyak, 2020). Within guided, differentiated instruction, multi-sensory reading lessons take place that provide learning in a social context and within a child’s ZPD, with the teacher providing support for the learning and the student being actively engaged (Antonacci, 2000).

**Research Questions and Purpose Statement**

The purpose of this study was to determine the impact of multisensory Orton-Gillingham based reading instruction on a small population of students’ phonetic development and how this specific type of instruction affected their attitudes about reading. The following questions guided my study.

- How does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?
- To what extent does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?
- How does multisensory Orton-Gillingham based reading instruction impact attitudes about reading in students in first and second grade who are also in Tier 2 and Tier 3 RTI?
As students become more proficient readers, reading strategies become easier to use, making reading a more fluid, pleasurable activity. For struggling readers, this process, without proper reading instruction, may never become fluid or satisfying. The research questions asked in this study seek to understand the implications of multisensory instruction on phonetic development and attitudes of reading in first and second grade students with reading difficulties.

**Positionality**

A central dilemma unique to action researchers is determining their relationship to their setting and participants (Herr & Anderson, 2015). While action researchers are often seen as outside agents of change, many researchers today are organizational and community insiders who seek to solve a problem and strengthen their practice (Herr & Anderson, 2015). Having been recently trained in Brainspring’s *Phonics First* teaching methods, I was interested in putting into practice the multisensory techniques learned during my training. Several years ago, I received my second Masters of Education degree from the University of South Carolina in Language and Literacy, so I have a vast amount of knowledge in the development of literacy skills in children and the teaching of reading which I use within my classroom daily. The additional training of *Phonics First* has added to my already immense repertoire of teaching literacy. I have twenty-seven years of experience teaching reading with twenty-four of those years having been in special education. I have also been the director of our summer reading camp, helping other summer reading camp instructors create a curriculum to meet the needs of struggling students. These roles have given me personal experiences with common reading curriculums and instructional practices. My teaching experience includes using the
balanced literacy approach, as well as multisensory instruction which has allowed me a better understanding into which methods work best for which children. While I am constantly adjusting the way I teach reading to my students based on the instructional methods that best meet their individual educational needs, there is a significant need at my school for the use of an intervention with the systematic, intensive structure of *Phonics First* for students identified as having reading difficulties. The use of this multisensory reading intervention is rooted in my belief that education should be student-centered with the student actively engaged in learning. I wanted to use my skills to provide an intervention that will improve phonetic development and reading attitudes in children. It is through this study that I took on the positionality of insider studying my own practice. I served as the instructor for the sample student population of a group of 1st and 2nd graders as well as the research practitioner seeking to understand the implications of multisensory instruction on phonetic development and attitudes of reading in students with reading difficulties.

The key stakeholders involved in this study were the first and second grade students chosen to participate in this research. They represented a small portion of our student body that had unique attributes crucial for the design and research of this study. As mentioned previously, my school has been identified by the State Department of Education as a low performing school due to our lack of improvement on reported test scores. Because of our previous unsatisfactory ratings on our state report cards, the administrators at my school and in our district, as well as our teachers were also stakeholders.
Overview of Methodology

The guided methodology for this study was mixed methods action research. Herr and Anderson (2015) note that action research is the generalization of new knowledge for the purpose of improvement or change of practice based on results relevant to a local, personal setting. Action research is emergent, meaning it unfolds while the study is taking place (Merriam & Tisdell, 2016). An action research study typically unfolds while the study is in process through a spiral cycle of planning, acting, observing, and reflecting, with the reflecting phase becoming the next planning phase. As the research study unfolds, a cycle emerges as initial questions are answered, knowledge is gained, and new questions come into play. Through action research, the educator can bring about meaningful change in education.

A mixed methods design was used for this study to gather data through quantitative and qualitative methods. Mixed methods research provided a way to join strengths of quantitative and qualitative research and helped answer questions that could not be answered by one approach alone (Creswell & Clark, 2018). It also offered new insights that went beyond one singular approach and provided more evidence for studying research problems (Creswell & Clark, 2018). For this research study, quantitative data were gathered through multiple sources which included Measures of Academic Progress (MAP) Growth Reading scores and Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessments. Data from MAP Growth reading assessments and DIBELS assessments was collected and analyzed at the beginning and at the end of the study to determine the impact of multisensory instruction on phonetic development for students in first and second grade who were also in Tier 2 and Tier 3
RTI. Qualitative data were gathered through the Burke Reading Inventory at the beginning and the end of the study as well as through field notes gathered throughout the study. The qualitative data gave insight into student perspectives during this study as well as determined if the intervention was impactful on student attitudes. The justification for using both quantitative and qualitative methods was to best determine the impact of multisensory, Orton-Gillingham based reading instruction on students’ phonetic development and how this type of instruction affected their attitudes about reading.

**Significance of the Study**

The significance of this study was to support a marginalized group of students (Ma et al., 2018). The special education population at our school is historically the lowest scoring population on state and district reading assessments. A large percentage of our total student population is served in RTI. A disproportionately large number of students in grades one through four of my primary school experience significant reading deficits due to a lack of foundational reading skills. By conducting this study, I hoped to close the opportunity gap between students with reading difficulties, as well as other students at our school and increase phonetic awareness in these students. Dana (2015) states, “one engages in the process of inquiry…to maximize impact, making life and learning conditions better for all children we teach” (p.164-165). With these students reading from one to three grade levels below their peers they initially have negative attitudes about reading. Through this study I also hoped to change those attitudes.

**Summary of Findings**

Learning to read is a complex endeavor, that unfortunately many young children do not master. Early intervention is important to preventing reading difficulties and
avoiding profound deficits that can have lifelong implications, as well as implementing interventions that are consistent and systematic. The quantitative and qualitative data in this study support the positive impact multisensory reading instruction can have on phonemic development and attitudes about reading. Throughout this study, students were actively engaged as knowledge was constructed through social interaction with language, which resulted in an increase in phonemic development and an improvement in their reading attitudes. The consistency with which the intervention was implemented in this study led the way for an increase in students’ phonemic development. With an increase in phonemic development came a greater sense of confidence in students’ newfound abilities which led to an increase in positive attitudes about reading.

**Limitations**

As an action researcher, a necessary role is ensuring the validity of a study. Validity refers to the extent to which the study and all its parts accurately represent what is being investigated (Efron & Ravid, 2013). By identifying the external and internal validity of this action research, I can discuss the limitations of my study.

One limitation was the small sample size of the participants from one rural school that may not have been representative of other schools’ populations. Because of this small sample size, I used purposeful sampling strategies to select the six participants of the study. By using a homogeneous sampling strategy, I selected my participants based on the distinctive characteristic of having reading difficulties and lacking phonemic awareness and phonics skills. Although the sample size was small, by choosing my participants based on exhibiting characteristics related to my action research, I hoped to provide in-depth information about the effects of multisensory phonics reading.
instruction on reading achievement and attitudes of reading (Creswell & Clark, 2018). If this intervention was to be considered within a classroom, instruction should take place in small homogenous groups ranging from three to four students (Gersten et al., 2008).

Another limitation was maintaining objectivity because I was investigating my own practice (Efron & Ravid, 2013). Having already developed relationships with the participants outside of my study, it was more difficult to recognize new and different viewpoints and understandings (Efron & Ravid, 2013). My personal convictions of students with reading difficulties needing intensive, systematic, and individualized instruction, as well as my passion for literacy also may have impacted my research. By recognizing these biases, I was able to monitor the potential effects these might have had on my data collection and data interpretation (Efron & Ravid, 2013).

The time frame of the study was also a limitation. At least one of the participants missed almost one fourth of the intervention sessions which could have skewed data. Also, due to being diagnosed with a major health concern, the length of the study was reduced from twenty consecutive sessions in a four-week period to sixteen sessions in a four-week period, resulting in less intervention sessions than initially planned.

Finally, dual agency was a limitation to this study. The power differential between teacher and student could have affected student participation. By taking advantage of the relationships I had already established with these students I tried to minimize any discomfort or risk associated with the study and ensure the students their participation was completely voluntary and all information would be kept confidential.
Definition of Terms

**Dynamic Indicators of Basic Early Literacy Skills (DIBELS) 8th Edition:** The DIBELS 8th Edition consists of short fluency measurements used for assessing the acquisition of a set of kindergarten through 6th grade literacy skills that include phonemic awareness, alphabetic principle, accuracy, fluency, and comprehension (Good & Kaminsky, 1998).

**Measures of Academic Progress (MAP) Growth:** An online testing system created by the Northwest Evaluation Association (NWEA), Measures of Academic Progress (MAP) Growth is used for measuring growth, informing instruction, and assessing strategy (NWEA, 2022). It provides educators with accurate evidence to help target instruction for students (NWEA, 2022).

**Orton-Gillingham (OG):** Multisensory techniques created by Samuel Torrey Orton and Anna Gillingham used for remedial reading instruction, which is a direct, explicit, multisensory, structured, sequential, diagnostic, and prescriptive way to teach literacy (Brainspring, 2018).

**Phonemic Awareness:** Phonemic Awareness is the ability to hear, sequence, segment, and blend together the smallest units of sounds in a spoken word (Routman, 2000).

Dissertation Overview

Chapter One of this dissertation introduced information on the implementation of multisensory phonics instruction to support students’ phonemic awareness development and reading motivation. Also included in this chapter were the statement of the problem, purpose and significance of the study, methodology, and definitions of relevant terms. Chapter Two will provide a review of relevant literature related to phonemic awareness.
and multisensory instruction, as well as the application of theoretical theories to support this study. Chapter Three details the mixed methods action research design used to examine the impact of multisensory instruction on students’ phonemic awareness development and attitudes about reading in my school. An overview of MAP, DIBELS, the Burke Reading Inventory, and field notes will be discussed. Chapter Four presents the results of the study. Chapter 5 provides discussion of the findings, conclusions, and implications of the study.
CHAPTER 2

REVIEW OF LITERATURE

Reading skills are like building blocks, and to read well children need the blocks of knowing sounds of letters and meanings of words, word parts, and groups of words (Coordinated Campaign for Learning Disabilities, 1999). The problem of practice for this study arises from a lack of consistent, systematic phonics instruction within my school and a large percentage of students not mastering skills in a way that builds the needed foundation for reading. Phonics knowledge is necessary for learning to read successfully (Routman, 2000). While many children begin school with fairly well-developed phonological awareness, Adams, (1990) indicated that without direct instructional support, roughly 25% of middle-class first graders and substantially more of those who come from less literacy rich backgrounds will have phonological awareness difficulties.

One of the strongest single determinants of reading success is a child’s level of phonemic awareness upon entering school (Adams, 1990; Stanovich, 1986). Major causes of a lack of phonological awareness and other reading deficiencies in children can include physical abnormalities, the child’s socio-economic background, lack of exposure to early literacy activities, and developmental delays (Akubuilo et al., 2015). The intention of this action research was to determine the impact of multisensory Orton-Gillingham based reading instruction on a small population of first and second grade students’ phonetic development and the impact this type of instruction has on their attitudes about reading. The study asked three questions.
• How does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?

• To what extent does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?

• How does multisensory Orton-Gillingham based reading instruction impact attitudes about reading in students in first and second grade who are also in Tier 2 and Tier 3 RTI?

Chapter 2 begins with a review of the literature and research related to the problem of study. To begin, a brief methodology is provided about the literature review. Next, a theoretical framework is presented which includes a discussion on constructivism and its relationship with Maria Montessori and Lev Vygotsky’s Zone of Proximal Development (ZPD). The literature review then covers the historical context of the study by reviewing the history of reading instruction in the United States and the history of learning disabilities in our country. Finally, is a discussion of the following themes: effective reading instruction, phonemic awareness, phonics, response to intervention, multisensory instruction, and Brainspring’s Phonics First.

**Literature Review**

This literature review serves as a framework of knowledge for this action research study. Research on constructivism and theories of learning in young children serve as a basis in the learning development of children. Supporting literature provides a historical perspective of reading instruction in the United States and the history of learning.
disabilities within our country. Research on effective reading instruction and multi-sensory instruction have endorsed the problem of practice and planned intervention for this research study.

For this research study, searches were conducted through the University of South Carolina library, Google Scholar, ERIC, and Mendeley databases. Journal topics, dissertations, peer reviewed journals, textbooks, websites, and other books were utilized to find literature relevant to the topic.

**Theoretical Framework**

This action research study is grounded in constructivism. Themes in constructivism include active engagement in meaning-making processes, text comprehension as a view of these processes, and the diverse nature of knowledge developed because of membership in a social group (Lillard, 2017). Both Maria Montessori’s approach to learning and Lev Vygotsky’s learning theory embody constructivism in the sense that they both believed that children construct their own knowledge and do not simply mirror what is being taught to them (Bodrova, 2003).

**Constructivism**

Constructivists believe that active engagement in processes of meaning-making and the development of knowledge is a consequence of membership in each social group (Au, 1998). The central idea of constructivism is that knowledge is constructed with new knowledge being built upon previous knowledge already gained. Constructivism teaching practices help learners to internalize and reshape, or transform, new information (Brooks & Brooks, 1993). The roots of constructivist perspectives on learning, which can be traced to John Dewey and progressive educators, have become increasingly influential in
the past twenty years representing a paradigm shift in the epistemology of knowledge and theory of learning (Applefield et al., 2016). Dewey believed that the measure of the worth of any social institution is its effect in enlarging and improving experience (Dewey, 1916).

Traditional teaching practices of rote memorization and regurgitating facts do not fit into the constructivism philosophy. While traditional classrooms, often called factory-models, have been designed where the teacher is the authority and the classroom is teacher-centered, within a constructivist classroom the teacher is the facilitator and the classroom is learning-centered (Lillard, 2017; Oglan, 1999). In a constructivist classroom, students are working in groups interacting with manipulatives and other teaching modalities. The teacher acts as a guide to the student’s learning, modeling, and adapting materials, as necessary. Knowledge and authority are shared between the teacher and the student. The constructivist’s view of cognition is that it is a collaborative process and provides a theoretical basis for the social nature of learning through cooperative learning, project based learning, and other instructional approaches that are discovery oriented (Applefield et al., 2016).

Constructivism is divided into three broad views: Cognitive constructivism, which was developed through the work of Jean Piaget’s research on cognitive development in children, social constructivism, based on the work of Lev Vygotsky, and radical constructivism (McLeod, 2019). The theoretical framework for this action research study is based on research supporting cognitive constructivism using the Montessori Method and social constructivism using Vygotsky’s Zone of Proximal Development.
Montessori Method

Like other constructivists, Montessori believed learning was an active process. While initially starting out as a physician, she quickly became interested in the development of disadvantaged children while working in psychiatric clinics. Under her care, these developmentally delayed children began passing educational tests that many normal children were not passing (Lillard, 2017).

It was in 1907 that Maria Montessori started her Casa de Bambini, or Children’s House, a daycare center that served children ages three through seven in one of the poorest slums of Italy (Pickering & McIntyre, 2013). Paying close observation to the students under her care, Montessori developed a new curriculum with new learning materials based upon observations of her students, which emphasized multiple learning approaches where learning was hands-on, and students learned by doing (Lillard, 2017).

She believed that without close observations, teachers cannot give a children appropriate instruction therefore, within the Montessori method, the teacher’s role is an observer (Lillard, 2017). Through carefully observing students the teacher understands the cognitive development of each child. Then a well-prepared environment can be created so appropriate developmental instruction can take place for each child.

Montessori saw a close relationship between thinking and doing, therefore she developed a method of education in which a great deal of object manipulation occurred (Lillard, 2017). Montessori believed that senses were the base of all intellectual activities and when senses were stimulated, the brain was activated (Tsubaki & Takeshi, 2008). Montessori principles utilize all the senses to create multiple pathways for information to enter the brain. For students in traditional classroom settings who are not successful,
Montessori’s methods, which utilize multiple learning modalities, can be effective (Lillard, 2017). As a child uses more of his senses to learn, retention of information was strengthened, and learning became more efficient (Tsubaki & Takeshi, 2008). Because Montessori methods of learning are student-centered, incorporate multiple learning modalities, and students learn in a well-prepared environment, it creates an increase in phonemic awareness and phonics skills contributing to enhanced learning of reading skills and strategies, therefore resulting in a growth of student reading achievement.

**Zone of Proximal Development**

Within the constructivist view, Montessori and Vygotsky both agreed in helping a child gain autonomy and initiative, nurturing a child’s curiosity, and encouraging dialogue with others as the child is developing autonomy of his/her learning (Brooks & Brooks, 1993). Like Montessori, Vygotsky spent a large amount of his time working with children with special needs, giving him important insights into childhood development and deviations from the norm (Bodrova, 2003). Through his work the zone of proximal development, or ZPD, was defined. Vygotsky (1978) defined the zone of proximal development as, “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p.86). For the educator, this means knowing a child’s developmental level and creating instruction slightly beyond that level (Antonacci, 2000). As the child is working through the instructional material, the teacher’s role is to provide scaffolding, or guidance, for work too difficult to be completed independently (Antonacci, 2000). Through scaffolding, the teacher is providing support through a gradual release of
responsibility to the students (Antonacci, 2000). As the student becomes more proficient with the task, he takes autonomy of his learning (Antonacci, 2000).

Gallimore and Tharp (1990) developed a model of the ZPD to use as a guideline for forming instruction. The Gallimore and Tharp model of the ZPD has four stages and each stage requires various levels of support. In Stage I, the teacher assists with performing the task. During this stage, the child may have very limited knowledge or understanding of the concept at hand. The teacher may model the concept, providing explicit instructions on strategies to problem solve. As the child progresses through this stage, knowledge and understanding is increased and assistance can be tapered. Through observations, the teacher determines when the student is in stage II. It is during Stage II that the child can carry out a task without assistance. Gallimore and Tharp (1990) discuss a phenomenon of self-directed speech during this stage, stating it constitutes the passing of control from adult to child. A student in Stage II would be actively using the strategies he has learned to work through problems he encounters in his learning. A child is in Stage III when evidence of self-regulation has vanished. For the student in Stage III, automaticity of the strategies and learning will be evident, and any type of continued assistance can be irritating and disruptive (Gallimore & Tharp, 1990). Finally, Stage IV occurs when there is a regression back to earlier stages due to encountering something unfamiliar or new. The strategy “I do.” “We do.” “You do.” is a form of the ZPD that many teachers use in classrooms today. Because teaching a child in their ZPD requires the child to have social interaction and the teacher to provide phonemic awareness and phonics instruction in the area slightly above their instructional level, the child develops
the ability to problem solve and utilize decoding strategies independently strengthening overall reading skills (Antonacci, 2000).

**Historical Context**

Reading is a necessary survival skill that children must develop to become productive members of society. With reading being the door that opens learning and children having various learning preferences, it stands to reason that our country has had numerous debates, controversies, and policies regarding reading instruction. Reading instruction has evolved through the years due to societal needs and research findings. Also having evolved is our country’s understanding of learning disabilities and how it effects a child’s ability to read and reading instruction. To better understand this study’s problem of practice and the intervention being used in this study, the historical context of reading instruction and learning disabilities in our country were examined.

**History of Reading Instruction**

**1800s and Earlier**

For decades, researchers and educators have argued about the best method to teach reading. Phonics has been at the center of the reading war for years. The history of phonics in American schools’ dates to well before the 18th century when children used horn books to learn letters and then syllabary (Brown, 2019). Teachers used word lists and drilled spelling practices to help children learn to read and spell. Memorization and recitation were a large part of learning to read. Around the time of the Civil War, American readers began to emphasize the sounds letters made as readers used an invented alphabet, diacritical markings on the traditional alphabet, and synthetic phonics (Barry, 2008). By the mid to late 1800’s synthetic phonetics instruction followed a
predictable sequence: (a) teach the letter names and sounds with pictures; (b) sound out and blend words; and (c) orally read sentences and short stories that correspond to the letter sounds learned (Barry 2008).

**Early to Mid-1900s**

By the early 1900s, a shift had taken place in reading instruction with researchers beginning to discover scientific components of reading. Reading research and pedagogy came into favor and the teaching of reading began to develop as a separate field (Barry, 2008). Researchers came to believe in a whole-word approach to reading with phonics playing a small role. With the whole-word approach to reading, children were taught groups of words at one time using flashcards and corresponding pictures. After they learned a group of words, they were given readers that incorporated the words, for example “Dick and Jane” books. Rudolf Flesch challenged this reading method of words being learned through endless repetition by having children read what he called tasteless, pointless books (Barry, 2008). Yet these readers continued to be used and eventually gave way to basal readers and skill and drill workbooks during the 1960’s and 1970’s.

**Late 1900s**

By the late 1960s, Jeanne Chall, a respected researcher, conducted a systematic analysis of reading research and programs concluding that code-emphasis method, which involves teaching children to master the alphabetic code by teaching recognition and sound of the letters of the alphabet, produced better readers (Barry, 2008). However, she also added that language, sound teaching, and appropriately leveled books also were extremely important in producing confident readers (Barry, 2008). With her research came the whole language movement. Ken Goodman believed that phonics and word
advocates missed how readers construct reading from language and felt the explicit teaching of phonics should be rejected (Parker, 2020). Several states across the country abandoned skills-based reading methods and began to teach reading using whole language. In 1988, California’s state superintendent of education issued a statewide adoption of teaching whole language as the method for teaching beginning reading (Parker, 2020). By 1995, California schools returned to intensive, systematic phonics instruction after ranking near the very bottom among the fifty states in reading proficiency (Barry, 2008; Parker, 2020).

2000s

By 2000, the National Institute of Child Health and Human Development developed the National Reading Panel (NPR) that examined all scientific evidence available on teaching children how to read. The NPR reported that systematic phonics instruction creates a greater impact on children’s growth in reading than alternative programs providing unsystematic or no phonics (National Institute of Child Health and Human Development, 2000). In 2006, Joel Dahms found that dyslexics that were taught spelling in a phonetic manner could improve their spelling because the systematic teaching of phonics could change their brain activity patterns to better resemble the brains of normal spellers (Parker, 2020). Current reading research shows beginning readers who focus on phonics, instead of trying to learn whole words, increase activity to the area of their brains wired for reading indicating that teaching specific strategies has direct neural impact on learning to read (Yoncheva et al., 2015). With the dramatic shifts of teaching reading throughout our country’s educational journey, what began as teaching reading for societal purposes has morphed into a science of teaching reading, giving
educators more information to help guide them in creating curriculums and reading strategies to support reading development.

Learning Disabilities

Underachievement in children has been documented in literature since the middle of the nineteenth century. By the turn of the century, individualized treatment for poor readers was established through a summer program based on two standardized assessments of reading: Kansas Silent Reading Test and Gray Oral Reading Test (Scammacca et al., 2016). With the invention of standardized tests, educators were more easily identifying struggling readers and giving them remediation.

In 1920, the first clinic focused on reading disabilities was opened by Grace Fernald at the University of California where she developed the kinesthetic approach to reading intervention (Scammacca et al., 2016). Also, around this time, William Gray advocated an approach to reading interventions containing many elements of what is now called a response to instruction (RTI) framework (Scammacca et al., 2016). Like the RTI screenings in schools today, Gray wanted universal screening of fluency and comprehension at the beginning of each school year to determine which students needed reading interventions.

It was in the 1920s that Samuel Orton also conducted his scientific research on strephosymbolia, a learning disorder that causes symbols, phrases, words, or letters to appear reversed or transposed in reading. Orton’s recommendation was to use extensive drill and practice in phonics to help build memory, later revising his treatment recommendations to promote a kinesthetic approach (Scammacca et al., 2016). Orton would later team up with psychologist Anna Gillingham to create what is known as the
Orton-Gillingham method, a method used widely today in teaching multisensory reading instruction to struggling students and students with dyslexia.

It was in the 1940s and 1950s when new perspectives on reading disabilities and the rigor of research on reading interventions increased. Researchers, such as Burt and Lewis, began using experimental research designs that implemented quantitative methods to compare the kinesthetic, visual/whole-word, phonics, and mixed-methods approaches encouraging the phonetic method to take a backseat to the visual method for struggling readers (Scammacca et al., 2016).

By 1962, Samuel Kirk first applied the term learning disability (LD) to unexpected difficulties in the areas of language, learning, and communication (Mathes, 2020). More phonics-based interventions were developed, tested, and found to produce meaningful growth in struggling readers (Scammacca et al., 2016). Phonics instruction was being integrated with other instruction with some success.

By 1969, the Children with Specific Learning Disabilities Act was enacted to create support services for students with LD, followed by the 1975 passage of the Education for All Handicapped Children Act in 1975 (EAHCA). With its passage meant a free and appropriate education for all students regardless of their disability, although many students with disabilities were still being taught in special classrooms and not through inclusion in the general education classroom. By the 1990s EAHCA gave way to the Individuals with Disabilities Education Act or IDEA as it is commonly known.

The National Commission on Excellence in Education provided evidence over three decades ago that many of our country’s children experienced academic difficulties resulting in poor reading (Hurford et al., 2016). Since that time Improving America’s
Schools Act, Goals 2000, Educate America Act, and No Child Left Behind Act were legislated to repair these academic issues to no avail.

In 2004 IDEA, was reauthorized allowing schools to identify students for special education through a multitiered instructional approach known as Response to Intervention. With the reauthorization all students not responding to general education instruction, rather than just those identified with LD, could receive interventions characterized by evidence-based curriculums in smaller group sizes with increased dosage and greater individualization (Scammacca et al., 2016).

Historically, the treatment and attitude toward people with disabilities has been marked by societal fears, intolerance, ambivalence, prejudice, and ignorance (Marini et al., 2017). Before the enactment of federal protections in IDEA, schools across America educated only one in five students with disabilities, while more than one million students were excluded from public schools and another 3.5 million did not receive appropriate services (West, 2000). While our traditional educational system has focused mainly on dominant social groups and marginalized and excluded others based on gender, race, and ability, educators are beginning to realize that our educational system has historically been set up for socially dominant groups (Adams, 2016). Interventions are now being utilized that are evidence-based for students that are not responding to instruction within the general education curriculum benefitting both students with disabilities and struggling students. Educators are now understanding through the science of reading, there is considerable scientific knowledge concerning reading acquisition and teaching strategies most effective for teaching children how to read (Hurford et al., 2016). With an increase in educational policies and educational research, students with learning disabilities now
receive more intensive, individualized, evidence-based instruction to enable them to remain in the general education classroom with their peers.

**Effective Reading Instruction**

For reading instruction to be effective, it must draw on current research and practice, depending on the teacher as professional to support learners with a balance of skills, strategies, materials, and social and emotional support they require (Routman, 2000). There is no “one size fits all” reading program; however, The National Reading Panel Report encapsulated years of research to show the five essential components that define effective reading instruction (National Institute of Child Health and Human Development [NICHD], 2000). These five components include phonemic awareness, phonics, vocabulary, fluency, and comprehension. Within these components, a teacher may use a variety of strategies and methods, but for reading instruction to be successful the most effective approach is through teaching that is systematic and explicit (Learning Point Associates, 2004). The research questions for this action research study involve the impact of multisensory phonics instruction on reading achievement; therefore, for this literature review, phonemic awareness and phonics, which are the first two of the five essential components of effective reading instruction, will be discussed.

**Phonemic Awareness**

Sounds that correspond to the letters of the alphabet, the small units of speech, are called phonemes (Sedita, 2011). Phonemic awareness, which is an auditory skill that is typically developed while children are in preschool and kindergarten, is an individual’s ability to hear the sounds that make up words, to understand the sounds in the context of the word, and to manipulate the sounds to create new words (Sedita, 2011). Phonemic
awareness is not instinctive (Brainspring, 2018). While there are 26 letters in the English alphabet, there are approximately 40 phonemes, and sounds are represented in 250 different spellings (Berrill, 2018). The development of phonological awareness is a sequential process starting with the awareness of spoken language as a whole, then the awareness of words, rhymes, syllables, and finally individual phonemes (Brainspring, 2018). Berrill (2018) states there are five types of phonemic skills of importance which are as follows.

- **Phoneme matching:** The ability to identify words that begin with the same sound which typically occurs when a child is in kindergarten. For example, “Which words sound alike?” ‘cat’, ‘pop’, ‘car’

- **Phoneme isolation:** The ability to isolate a single sound from within a word which normally occurs in a child’s literacy development from the middle of kindergarten through the middle of first grade. For example, “What is the final sound in the word ‘jug’?”

- **Phoneme blending:** The ability to blend individual sounds into a word, which usually occurs when a child is in late kindergarten through early first grade. For example, “What word do these sounds make? /d/ - /o/ - /t/”

- **Phoneme segmentation:** The ability to break a word into individual sounds, which typically occurs when a child is in first grade. For example, “What sounds do you hear in the word ‘dot’?”

- **Phoneme manipulation:** The ability to modify, change, or move the individual sounds in a word, which normally occurs when a child is in first grade through the middle of second grade. For example, “Say the word ‘bad’ without the /b/ sound.”
While phonemic awareness is an important early literacy skill because it primes children for word recognition and spelling, many school-aged children are lacking phonological awareness skills.

Adams et al. (1998) indicated that without direct instructional support, phonemic awareness confounds close to 25% of first graders from literacy-rich backgrounds and significantly more first graders who come from backgrounds where early literacy is not a priority. A student’s knowledge and use of grapho-phonics and morphemic rules has a long-term effect on the progress they make in school and an impact on their reading ability, which in turn affects their success in other school subjects (Bryant et al., 2014).

The significance of grapho-phonics rules, which are letter-sound or sound-symbol relationships of language, and morphemic rules, which concern the way structural units are incorporated into words, have been studied intensively with results showing that printed words can be analyzed in different ways during the reading process (Nunes et al., 2012). Carson et al. (2013) investigated the influence of a short intensive period of phonological awareness instruction on the literacy achievement of one-hundred twenty-nine five-year olds with and without spoken language impairment, finding that the children who received phonemic awareness instruction demonstrated greater literacy outcomes compared to children who followed the usual literacy curriculum. The implications of this study were that a short, intensive period of phonemic awareness instruction can raise literacy profiles of children with and without spoken language difficulties (Carson et al., 2013).

Other studies show children demonstrating early literacy delays in preschool and kindergarten benefit from supplemental phonemic awareness activities which can
potentially prevent reading difficulties later in their educational career (Goldstein et al., 2017; Kruse et al., 2015; Koutsoftas et al., 2009). In addition to these studies, The National Reading Panel examined 96 studies, each comparing a treatment group that received phonological awareness training, to a control group that received an alternative form of instruction and found that phonological awareness training was very effective in teaching phonemic awareness to students (National Institute of Child Health and Human Development [NICHD], 2000). The NICHD (2000), found that phonological awareness instruction improved children’s ability to read and spell in both the short and the long term.

**Phonics**

Where phonemic awareness is an auditory process involving the hearing of phonemes, phonics is the relationship between phonemes and graphemes, the written symbol representing a sound. Phonics can be defined as a set of rules that specify the relationship between letters in the spelling of words and the sounds of spoken language (Learning Point Associates, 2004). Phonics instruction involves teaching children the alphabetic principle and how to apply this knowledge in their reading (NICHD, 2000). In knowing the alphabetic principle, the systematic and predictable relationships between letters and their sounds, children apply their knowledge of sounds to letters in a text to make sense of reading. Dr. Jeanne Chall, a renowned expert in reading research, emphasized the importance of direct, systematic instruction in reading that followed a child’s stages of reading development (Brainspring, 2018). Chall’s extensive evaluation of the theory and practical application of beginning reading instruction determined that systematic phonics instruction, when introduced early in a child’s school experiences,
produced stronger reading achievement than instruction that was less systematic and began later in their educational career (Chall, 1967, as cited in Learning Point Associates, 2004). Other research also supports the claim that early, systematic, and explicit phonics instruction leads to better achievement in reading than later and less explicit, non-systematic phonics instruction (Adams et al., 1998; Dykstra, 1968). When the NICHD (2000) and the National Reading Panel conducted their meta-analysis of 38 studies on phonics instruction, they determined the following key findings about systematic phonics instruction:

- The biggest impact on growth in reading is evident when instruction begins in kindergarten or 1st grade, is appropriately designed for learners, and begins with foundational knowledge involving letters and phonemic awareness.
- It is significantly more effective than non-phonics instruction in helping to prevent reading difficulties among at-risk students and in helping to remediate reading difficulties in disabled readers.
- Growth in word-reading skills, reading comprehension, and spelling is enhanced by systematic phonics instruction when compared to non-phonics instruction for kindergartners and first graders as well as for older struggling readers.
- Growth in reading comprehension is improved by systematic phonics instruction for younger students and reading disabled students.
- It is beneficial to students regardless of their socioeconomic status.
- Students taught systematic phonics outperformed students who were taught a variety of nonsystematic or non-phonics programs.
One reason for the success of systematic phonics is the teaching of letter-sound relationships in a clearly defined sequence. Learning is presented in a linguistically logical sequence, typically starting with two letters, and working up to longer sequences, building from simple to complex (Brainspring, 2018; Ehri, 2003). Another reason systematic phonics programs are successful is because they give children significant practice in applying knowledge of letter-sound relationships as they read and write (Sedita, 2001). Many systematic phonic programs provide special texts for students to be able to apply their alphabetic and word reading skills to the reading of stories (Ehri, 2003). These stories increase in difficulty as the student’s phonetic knowledge grows. It is important to mention that several studies found phonics instruction to produce greater results when it is introduced in the early grades (kindergarten and first grade) rather than in the later grades (second through sixth grades) (Ehri, 2003; NICHD, 2000; Sedita, 2001).

Despite the multitude of research over the years that support the teaching of phonemic awareness and systematic phonics, the amount of research on systematic phonics instruction with low-achieving readers and children with learning and developmental disabilities remains significantly less.

The Role of Response to Intervention

Learning to read is a complex endeavor which begins long before a child enters the door of a classroom. Children with rich literacy experiences in their preschool years have an advantage in reading development (Lyons, 1998). Contrarily, children who are most at risk for reading failure come into kindergarten and the elementary grades without early literacy experiences (Lyons, 1998). However, many children who have experienced
early literacy environments that are stimulating still present with reading difficulties once they enter school. Beginning in 2004 with the reauthorization of IDEA, response to intervention was introduced as a way for schools to intervene and provide interventions for struggling students. This section of the literature review will discuss the process of RTI and its role in helping struggling readers and readers with learning and developmental disabilities.

Gorski (n.d.) defines RTI as a multi-tiered approach to the early identification and support of students with behavior and learning needs. RTI does not follow a particular program, but it is an approach that provides appropriate interventions to students who have been identified as needing extra support in both general education and special education. The educational decisions about the intensity and duration of interventions provided are based on a student’s individual response to instruction, with most schools implementing a three-tiered model of support (Gorski, n.d.).

**Tier 1**

Tier 1 consists of all students within the general education classroom receiving high-quality, scientifically based instruction by a skilled teacher. It is the least intensive level of RTI. During Tier 1 the teacher provides small group instruction based on needs assessments. The National Center on Response to Intervention (NCRTI) (2010) state, for instruction in Tier 1 to be effective it includes the following:

- A core curriculum that is research-based
- Instructional practices that are culturally and linguistically responsive
- Universal screening to determine students’ current level of performance
- Differentiated learning activities to address individual needs
• Accommodations to ensure all students have access to the instructional program

• Problem solving to identify interventions

Tier 1 interventions, as it relates to phonological awareness and phonics instruction, will include small group, differentiated instruction on essential skills and strategies, opportunities to apply reading and writing skills and strategies meaningfully, explicit and systematic instruction with teacher support, and the regular monitoring of students’ progress (Denton, 2008). It is through progress monitoring that teachers will make appropriate educational decisions for students. For students who are not making adequate progress in Tier 1, support in Tier 2 RTI will be established.

Tier 2

In Tier 2, students are given more intensive instruction matched to their needs on the basis of rates of progress and levels of performance (Gorski, n.d.). These intensive interventions normally take place outside of the general education classroom with a small group of students who have the same needs. According to the NCRTI (2010), Tier 2 has three characteristics that differentiate it from core instruction in the general education curriculum: 1) it is evidence-based, 2) it consists of small-group instruction, and 3) it involves a clearly articulated intervention implemented with fidelity. For students who are struggling with phonemic awareness and phonics, strong evidence supports systematic instruction in small homogenous groups of three to four meeting three to five days per week for 20 to 40 minutes outside of the general education classroom (Gersten et al., 2009). A panel from What Works Clearinghouse, who judged eleven studies, also found that a curriculum addressing the five components of reading instruction (phonemic awareness, phonics, vocabulary, comprehension, and fluency) relating to students’ needs
and developmental levels, which builds skills gradually and provides a high level of
teacher-student interaction with opportunities for practice and feedback, provides strong
evidence to support improvement in reading skills (Gersten et al., 2009).

**Tier 3**

Tier 3, which is the most intensive level of RTI, is individualized to target each
student’s area of need. At this level, the teacher engages in a more intensive version of
the intervention program used in Tier 2. Interventions may be longer, more frequent, or
more intense, and the teacher conducts more frequent progress monitoring (National
Center for Response to Intervention, 2010). According to Gersten et al. (2009), there
continues to be major gaps that persist in the knowledge of how to teach reading to the 3
to 5 percent of students with the most severe reading difficulties, despite over 50 years of
research in special education and remedial instruction; however, it is suggested that
reading instruction focus on fewer high priority reading skills at a time during one-on-one
or small group instruction as students have more opportunities to practice and respond.

**Multisensory Instruction**

Struggling readers, especially children with learning and developmental
disabilities who have reading problems, often exhibit weaknesses in auditory and/or
visual processing (Henry, 2000). While traditional teaching methods employ mainly
visual and auditory methods of learning, multisensory instruction utilizes visual, auditory,
kinesthetic-tactile methods simultaneously to enhance memory and learning. This section
will review the science and research supporting multisensory instruction, as well as
examine the Orton-Gillingham approach and Brainspring Phonics First instruction.
Multisensory instruction emphasizes creating a close association between what a student sees in print and in the demonstration (visual), what a student hears in the directions (auditory), and what a student feels when producing the skill and when producing the sounds of the words (kinesthetic) (Gillingham & Stillman, 1997). Recent research in cognitive science shows the benefits of multisensory learning. Smith et al. (2018), who measured brain activity using functional magnetic resonance imaging technology found that children with the strongest literacy skills had more interactivity between different regions of the brain. Shams and Seitz (2008) suggest that the human brain has evolved to develop, learn, and operate optimally in multisensory environments, therefore multisensory learning mechanisms might be more effective for learning. In students with dyslexia and reading difficulties, visual and auditory process problems can be common so phonemic awareness may be weak (Henry, 2000). In teaching through a multisensory approach, children have the advantage of learning through multiple pathways thereby activating multiple areas of the brain to help reinforce learning.

**The Orton-Gillingham Approach**

The Orton-Gillingham Approach (OG) is a systematic, sequential, multisensory, synthetic and phonics-based approach to teaching reading with explicit instruction in phonology and phonological awareness, sound-symbol correspondence, syllables, morphology, syntax, and semantics (Richey & Goeke, 2006). The important characteristic of OG is that it is multisensory, involving visual, auditory, and kinesthetic/tactile learning pathways. The OG instructional approach to teaching reading developed when Samuel Orton, a noted neuropsychiatrist and pathologist collaborated with Anna Gillingham, a psychologist and educator with a deep knowledge of the
structure of language (Brainspring, 2018). Dr. Orton, through his research of children with dyslexia, determined that teachers should capitalize on their students’ auditory competences by teaching them the phonetic equivalents of letters and the process of blending them together to produce words (Richey & Goeke, 2006). It was Orton’s instructional approach that was organized into a curriculum by Anna Gillingham and with the help of her associate, Bessie Stillman, they consulted with, trained, and supervised teachers in these remedial and preventative methods (Richey & Goeke, 2006; Brainspring, 2018).

Litcher and Roberge (1979, as cited in Richey & Goeke, 2006) investigated OG instruction as an intervention program for first graders identified as being at risk for reading problems at the end of first grade. For each of the three years of the study, the twenty students were taught OG reading and language instruction three hours a day while the comparison group was taught from a basal curriculum. The students who received the OG instruction performed significantly higher that the comparison group subtests and total scores of reading tests, indicating that the OG program produced greater performance than did traditional basal instruction for readers at risk for reading problem (Litcher & Roberge, 1979, as cited in Richey & Goeke, 2006).

Hook et al. (2001), found that first grade children at risk for reading problems enrolled in a summer reading program made significant gains in phonemic awareness when taught using an OG approach to teaching reading and a computer-based approach to teaching reading. When compared with other first grade children enrolled in the same summer reading program who received computer-based instruction, only the OG group
made significant gains in word attack skills providing persuasive evidence that the OG approach is beneficial for improving phonemic awareness and word attack (Hook 2001).

Using a quasi-experimental design to compare the effectiveness of Project Read, an OG reading program, to the previous year’s cohort of students who were taught with the traditional basal reading instruction for students in grades one through three, Stoner (1991) provided persuasive evidence that the OG approach to teaching reading shows benefits for grade one students at risk for reading problems.

Richey and Goeke (2006), conducted a review of 12 research studies on the OG approach to determine its effectiveness. Several of these studies have already been discussed (see citations). Overall, positive outcomes for OG and OG-based instruction were reported for beginning readers, first-grade children in general education classrooms, elementary children at risk for or identified with reading disabilities and served in public schools, and elementary-age children in clinical settings (Richey & Goeke, 2006). Positive results were also found for word reading, word attack/decoding, spelling, and comprehension; however, the researchers concluded that the current research was inadequate, both in number of studies and in the quality of the research methodology, to support that OG interventions were an appropriate scientifically based intervention for struggling readers (Richey & Goeke, 2006).

Since 2006, very little empirical evidence exists on supporting the use of OG, and the main body of evidence there is to support it is anecdotal (Kraus, 2017). According to the What Works Clearinghouse (July, 2010), researchers were unable to draw any research-based conclusions about the effectiveness or ineffectiveness of unbranded OG based interventions on students with specific learning disabilities. While the OG
approach is highly regarded in the field of dyslexia, there is no specific research supporting OG as the best way to teach children with reading difficulties and dyslexia due to the fact that OG is an approach and not a program (Gillis, 2020). OG is individualized to each child based on a problem-solving process that starts with identifying the child’s learning difficulty and consequently developing a plan to address that difficulty (Gillis, 2020). Because it is not a scripted, uniform program it cannot be studied carefully in the same way a program can be studied (Gillis, 2020). However, several structured literacy programs influenced by OG have been researched.

Geiss (2003), explored the effectiveness of an OG based reading program, the Barton Reading and Spelling System (BRSS), finding that each student participating showed an increase in all reading skills measured, supporting the view that the BRSS is an appropriate supplemental reading program for struggling adolescent readers. What Works Clearinghouse (2007, 2010) reviewed existing research on the Wilson Reading System, probably the most well-known of the OG based structured literacy programs, finding potentially positive effects on alphabetics, but not on comprehension.

With so little scientific research existing on the total effects of the OG approach, research supporting the recognized Principles of Instruction required on Multisensory Structured Language (MSL) programs must be reviewed.

Brainspring’s Phonics First

Brainspring’s Phonics First Program is a Multisensory Structured Language (MSL) program with standards rigorously set and closely monitored by the International Multisensory Structured Language Education Council (IMSLEC) (Brainspring, 2018). Accredited through the International Dyslexia Association (IDA) and the IMSLEC, it is
designed to remediate the reading and spelling deficits of dyslexic learners and meet the needs of those with other reading disabilities as well as “non-classified” students who struggle to read (Brainspring 2018). Teachers using *Phonics First* lessons and instructional strategies have been specifically trained in the Orton-Gillingham approach. *Phonics First* instruction adheres to the recognized Principles of Instruction required of accredited MSL programs which are: 1) phonics-based, 2) structured and systematic, 3) direct instruction, 4) multisensory, 5) sequential, 6) cumulative. While *Phonics First* uses scientifically research-based learning strategies to teach children processes for reading and spelling, additional research is warranted on the implications of the *Phonics First* reading program and struggling readers.

With the popularity of the OG approach, yet such little research existing on the total effects of MSL programs, accompanied by a lack of existing research on Brainspring’s *Phonics First* program, the current action research study serves to determine the impact a multisensory approach to phonics instruction has on reading achievement in students with reading difficulties and learning and developmental disabilities.

**Conclusion**

Chapter 2 explored a body of literature related to the problem of study and provided a brief methodology about the literature review. The theoretical framework was presented with discussions on constructivism, Maria Montessori, and Lev Vygotsky’s Zone of Proximal Development (ZPD). The review of literature framed the study by reviewing the historical context of reading instruction in the United States and the history of learning disabilities in our country. Finally, several themes related to the research
question were discussed: effective reading instruction, phonemic awareness, phonics, response to intervention, multisensory instruction, and Brainspring’s Phonics First. The final analysis of the literature review concludes that while evidence exists supporting the teaching of systematic phonics and the value of specific OG based structured literacy programs, more research is needed to investigate the effectiveness of Brainspring’s Phonics First program on struggling students and students with learning and developmental disabilities.
CHAPTER 3

METHODOLOGY

Chapter 2 provided an overview of the theoretical framework and literature that supports this action research project. This chapter provides a detailed description of the research methodology used to answer this study’s research questions. It also provides the research design, data collection measures, and data analysis strategies used in this research study.

Overview of Study

Reading is an active endeavor, yet it is not innate to our brains. Learning to read is a complex and multi-dimensional cognitive process involving the ability to recognize words in print, in order to create meaning from text, and then coordinating these two skills for reading to be accurate and automatic (Lavell et al., 2014). Lavell et al. (2014) go on to state, “It is the conceptual understanding of the alphabetic principle, the systematic and predictable relationship between written letters and spoken sounds which allows a reader to decipher novel words” (p. 363). Proficient readers act when they become stuck and are having difficulty with a text (Johnson, 2006). While proficient readers actively use reading strategies flexibly, passive readers have not yet built a network of strategies to employ (Beers, 2003). These reading strategies include asking questions about what is read, visualizing what the text says, making connections to the text, inferring and drawing conclusions, and synthesizing. Reading fluently is a characteristic of proficient readers; however, when students are unable to accurately
decode, according to Ehri (2005), their journey to becoming a successful reader is severely impacted. When so much effort is spent decoding, the meaning of the text is lost.

One approach with deep historical roots as an intervention for readers with language difficulties is multisensory instruction for language skills such as written language, sentences, words, syllables, and sounds (Lavell et al., 2014). A well-known method designed to be used for struggling readers and students with dyslexia is Orton-Gillingham (OG). OG employs multisensory techniques to teach language structures sequentially, systematically, cumulatively, and explicitly (Lavell et al., 2014). The purpose of this action research was to determine the impact of multisensory Orton-Gillingham based reading instruction on a small population of students’ phonetic development and how this specific type of instruction affected their opinions about reading.

In this study I defined multisensory instruction as instruction that uses visual, auditory, and kinesthetic-tactile pathways simultaneously to enhance memory and learning. Therefore, the focus of this research was on the relationship between Phonics First, a multisensory Orton Gillingham-based reading instruction, and phonetic development, as well as students’ attitudes about reading.

Research Design

According to Efron and Ravid (2013), “Action research is purposeful inquiry conducted by practitioners in their own educational settings where the researcher seeks to answer a question or solve a problem” (pp. 2-3). Action research allows teachers to study their own classrooms and schools, to become researchers and ask research questions and study problems with the goal of improving their teaching practices.
In this action research study, I served as the instructor for the sample student population as well as the research practitioner implementing the research design. As the special education teacher who conducted this study with students within my own classroom and school, I was not an outsider looking in and conducting my research on participants. Action research is not conducted on participants, but with them, and the researcher engages participants as co-investigators and meaning unfolds while the study is taking place (Merriam & Tisdell, 2016).

The overarching questions for this research study were:

- How does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?
- To what extent does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?
- How does multisensory Orton-Gillingham based reading instruction impact attitudes about reading in students in first and second grade who are also in Tier 2 and Tier 3 RTI?

The research method for this study was guided by the research questions. A mixed methods design was used to gather data through qualitative and quantitative methods. The use of mixed methods research allowed the researcher to use all the tools of data collection available rather than being restricted to just those types typically associated to one type of research design (Creswell & Clark, 2018). Quantitative data were gathered through multiple sources which included Measures of Academic Progress (MAP) Growth
Reading scores and Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessments. Data from MAP Growth reading assessments and DIBELS assessments were collected and analyzed at the beginning and at the end of the study to determine the impact of multisensory instruction on students with reading difficulties. Qualitative data were gathered through the Burke Reading Inventory at the beginning and the end of the study and through field notes taken throughout the study. The data determined opportunities and challenges during the implementation of the multisensory lessons. The justification for using both quantitative and qualitative methods was to best determine the impact of multisensory, OG based reading instruction on students’ phonetic development and how this type of instruction affected their attitudes about reading.

**Intervention**

To tackle the problem identified, I implemented multisensory OG based reading methods on a select group of first and second grade students in first and second grade who were also in Tier 2 and Tier 3 RTI to determine if there were instructional gaps leading to an overpopulation of students being identified for RTI and special education services. These multisensory OG teaching methods included methods such as teaching and tapping sounds, blending sounds, teaching and pounding syllables, spelling sight words using tactile and kinesthetic methods, and writing dictation sentences using kinesthetic techniques. I scaffolded instruction to a small group of students grouped by their specific literacy needs according to their zone of proximal development. Students used multiple modalities of learning using manipulatives as they participated in reading lessons.
Lesson Components

*Phonics First* divides their lessons into five components. For the purpose of this study, I divided each lesson into six lesson components:

- Phonological Awareness
- Vowel Intensives
- Three-Part Drills
- Multisensory Sound Instruction
- Red Words
- Oral Reading

**Phonemic Awareness.** Each lesson began with a short phonemic awareness activity. This activity required the students to use their auditory skills as they attended to sounds to manipulated phonemes.

**Vowel Intensives.** After the Three-Part Drill, I conducted vowel intensives. The goal of vowel intensives was for learners to discern correct short or long vowel sounds for reading and spelling. Vowel intensive drills were short and intense drills conducted orally with me saying a word and the students choosing which vowel pattern the word followed.

**Three-Part Drill.** Next, students participated in the Three-Part Drill. During the Three-Part Drill, students used visual and auditory modalities to say sounds for letters shown, wrote letters for sounds they heard using a tactile/kinesthetic medium, and blended sounds orally as they read 10 to 20 words and pseudoword combinations.

**Multisensory Sound Instruction.** Multisensory Sound Instruction of new skills was the next portion of the lesson. This portion was not always conducted during each
intervention session and varied based on student progress. Its goal was to solidify the new skill introduced for long-term recall. During this lesson component, I showed a new sound card, told the sound, and left the card visible during the lesson. Students interacted with the new skill using multisensory modalities which emphasized the key word. This interaction included students writing the new sound/skill in sand or on white boards three times and brainstorming with the me words containing the new sound/skill.

After I had introduced the new skill, students moved to the application of skill portion of the lesson. The goal of this portion was for students to apply new and previously learned skills to spelling and reading. As I dictated words from previous lessons, students fingertapped and wrote words on paper. Next, students practiced reading words presented to them. Finally, sentences which contained the new sound/skill were dictated to students. During the dictation sentences, we all pounded the words together and then the students wrote the sentences on paper.

**Red Words.** The next section of the lesson involved students learning non-phonetic sight words which were presented two to four times per week based on student progress. The *Phonics First* program calls non-phonetic sight words “red words”, and I presented new red words one at a time. Students arm-tapped each letter of the word as they looked at the word and spelled it aloud. When students arm-tapped, they stretched out their arm and starting from the shoulder, moved down the arm as they tapped each letter in the word with the last letter of the word ending at the fingertip. Students arm-tapped the new word while looking at it three times. Next, using a red crayon they traced the word on paper which was placed over a plastic embroidery mat. The result created bumpy letters for the students to trace with their fingers three times. Students then would
sky-write the word in the air three times above them with their finger. While the student practiced each step in learning the new red word, the student spelled the word aloud as it was being traced with the finger. Finally, students were asked to write the word on paper from memory with a pencil, after which they wrote a sentence containing the red word that was dictated to them. As students wrote their sentence, I scaffolded instruction for each learner as needed.

**Oral Reading.** The final component of the lesson was oral reading. During oral reading, students were applying phonetic and non-phonetic reading strategies to connect to texts. Phonetically controlled reading material was selected based on a student’s instructional reading level.

Within each part of the *Phonics First* lesson, students were assessed through a variety of methods to determine the impact of multisensory instruction on their reading achievement. Through multisensory OG reading instruction, I hoped to close the opportunity gap between students with reading difficulties and the other students at our school. In addition to closing the opportunity gap, I hoped to increase students’ phonemic awareness and phonics skills, building those skills necessary for a solid foundation in reading.

**Setting**

The school district where this study takes place is a small rural school district in upstate South Carolina in a community of approximately 7,000 people. It is comprised of one primary school, one elementary/middle school, and one high school and serves a total of 946 students. The district’s student population is comprised of 75% Caucasian, 20% African American, 1% Hispanic, and 4% two or more races (NCES, 2020).
This study takes place at the only primary school in the school district which serves students in Pre-Kindergarten (4K) through 4th grade with an enrollment of 408 students. The student population is 74% Caucasian, 15% African American, 6% Hispanic, and 5% two or more races (NCES, 2020). There are 221 males and 187 females enrolled at the school. The school has been identified as a Title I school. It has also been identified by the State Department of Education as a low performing school due to our lack of improvement on reported test scores. During the 2019-2020 school year, the school was assigned a Transformation Coach through the State Department of Education for three years. This transformation coach provides support to our faculty as we strive for improvement. Identified by the State Department of Education as a focus group are our lowest performing students, who make up 22% of our population. This 22% happens to be our school’s special education population. There are currently three full-time reading interventionists assigned to our school. These reading interventionists serve 95 students daily in Leveled Literacy Intervention, which is 25% of the school’s population. Based upon 2021 ELA SCREADY state test scores 52.6% of my school’s third graders did not met expectations, and 30.5% of my school’s fourth graders did not met expectations.

My special education resource room is a bright classroom that is welcoming to all who enter. I pride myself on creating a safe environment for my students and a culture of respect is evident in behaviors of both students and teachers. As one enters the classroom soft music can be heard amidst the low hum of students working diligently on assignments. In one area, two students are working on math warm-ups projected on the Promethean board. On the large colorful carpet are two students partner reading a story and hunting for weekly word work words. While these students are engaged in these
learning activities, I am working diligently at my kidney shaped table helping students
tap out the sounds in the word ‘cot’. Upon further inspection of the classroom, one will
find tucked away in a quiet corner, a reading nook filled with a variety of picture books
and chapter books where students can spend independent reading time lost in their
favorite texts. In another corner is a conglomeration of hands-on math manipulatives
available for students to use during math lessons. Instruction begins at 8:00 and continues
until dismissal which occurs at 2:40. Throughout the day, small groups of Tier 2 and Tier
3 students ascend to my resource room in 50-minute intervals, some stay a little longer
depending upon their needs, to receive additional instruction tailored to meet each
students’ instructional goals. Instruction almost always involves multi-modalities, with
games and movement being prime ways to enhance lessons.

Participants

Participants were a select group of first and second grade students with reading
difficulties. This sample group of students was chosen from a larger group of twelve first
and second graders who had been assigned to me for daily reading, writing, and/or math
intervention. I specifically chose these six students because they represented a small
portion of our student body that had unique attributes crucial for the design and research
of this study. Four of the students who qualified for special education services (RTI Tier
3), were identified through a battery of psych-educational evaluations completed by our
school psychologist as having developmental disabilities or a specific learning disability
in reading. Upon further assessment, these Tier 3 students were students who presented
with a lack of phonological processing skills based upon their scores on DIBELS. The
group of RTI Tier 2 students was a sampling of students who were identified by their
classroom teacher and the school’s instructional coach as lacking phonological process skills. These students had also shown a deficit in this area on their DIBELS assessments. All six students were placed in a small group for the purpose of this study because they had similar phonological processing skills and reading deficits.

**Participant Profiles**

Creswell and Clark (2018), define purposeful sampling as participants who are intentionally selected who have experienced the central phenomenon being explored in a study. A group of six first and second graders who had been identified as having reading difficulties were purposely selected for this study. The research was conducted in my special education classroom at the only primary school in my small, rural school district. The students chosen to participate were from both genders, four race groups, and had roughly the same reading abilities and phonological processing deficits. Specifically, three students were female, and three students were male. Three participants were Caucasian, one was African American, one was Hispanic, and one was Biracial. Four of these students qualify for special education services (Tier 3). Of these four students, two were identified as having a developmental disability and two students were identified as having a learning disability. The other two students chosen for this study were Tier 2 students who had been identified by their classroom teacher as needing reading intervention.

Each student entered the study having a variety of home environments, background experiences, attitudes towards reading, and pre-literacy exposures all of which help the development of literacy skills and cognitive development. Because of the profound relationship between early literacy skills, background experiences, pre-literacy
exposures and attitudes towards reading, I felt it important to include a profile of each student participating in the study. Pseudonyms are being used for each student participate.

First Graders

Shay, a first-grade African American female identified as having a developmental disability. Shay transferred to my school in December 2021 from a neighboring district. She was a very shy child who is repeating first grade. Shay was receiving speech services for articulation and language delays, as well as stuttering. Her delays in speech affected her phonemic awareness. Shay received Tier 3 special education services totaling 90 minutes a day for English Language Arts (ELA) instruction.

Van, a first-grade Hispanic male identified as having learning disabilities. His school experience began as a 4K student where shortly after enrolling he qualified for speech services for articulation and language delays. Van delays in speech, particularly articulation, affected his phonemic awareness. It was during 5K that Van began receiving special education services as a student with learning disabilities. Initially he received Tier 3 support for ELA and math for 50 minutes daily to supplement the general education curriculum; however, when Van began first grade, his services were increased to 90 minutes of specialized ELA instruction and 60 of math instruction within the special education classroom. He was a very outgoing child who made friends easily, loved to participate, and was very spirited. Van’s mother stated in parent conferences that Van’s pediatrician diagnosed him with attention deficit hyperactivity disorder (ADHD), but she was against putting him on medication. Van’s hyperactivity and distractibility affected his ability to attend to tasks in the classroom and complete assignments.
**Second Graders**

**Ellie.** a second-grade Biracial female. Due to her developmental delays, she began receiving early intervention services at age two through BabyNet, South Carolina’s early intervention system for infant and toddlers with developmental delays. At the age of three, Ellie was enrolled in my district’s special education preschool program for three years. In first grade, Ellie’s Tier 3 special education services consisted of 50 minutes daily in the special education classroom to supplement ELA and Math general education instruction. This placement continued through second grade; however, three months into her second-grade year she was not making significant progress with her instruction and her special education placement was changed to receiving a total of 90 minutes of ELA instruction daily in the special education classroom, as well as 60 minutes daily of math instruction in the special education classroom. Ellie was very social and loved to read to younger students in the classroom. Due to health issues, Ellie had frequent absences and tardiness which interfered with her learning and retaining new skills.

**Kennedy.** a second-grade Caucasian female student who received Tier 2 reading intervention. She was identified for Tier 2 reading support by her second-grade teacher for significant weaknesses in letter-word identification, phonemic awareness, and word attack skills. Kennedy recently transferred to our school from another state where she was previously enrolled in an online charter school during first grade and half of second grade. My school was the first brick and mortar school she has ever attended. Kennedy was a hard-worker and often stated that she cannot read.

**Miles.** a second-grade Caucasian male student who received Tier 2 reading intervention. He was identified by his second-grade teacher at the beginning of the 2021-
2022 school year as needing Tier 2 reading support for phonemic awareness and word attack skills. He also was identified for Tier 2 behavior support due to a severe inability to pay attention during instruction. Miles was enrolled at my school at the age of four. Miles was a very talkative and friendly who actively participated in class but had difficulty completing assignments independently due to off-task behavior.

**Oliver.** a second-grade Caucasian male student identified as having a learning disability. At the age of four, Oliver was enrolled in my district’s special education preschool program. He was retained in kindergarten. As a first grader and this year as a second grader, Oliver has received Tier 3 special education services totaling 90 minutes of ELA instruction daily in the special education classroom and 60 minutes daily of math instruction in the special education classroom. He was a very quiet boy who loved to draw and enjoyed math.

Each student has had differing home environments, pre-literacy exposure, background experiences, and reading attitudes. Table 3.1 summarizes these experiences for each child. Their experiences, attitudes, and literacy background are important to understand.

Table 3. 1 Student Descriptions

<table>
<thead>
<tr>
<th>Student Pseudonym</th>
<th>Profile</th>
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<tbody>
<tr>
<td>Shay</td>
<td>Receiving Tier 3 special education intervention Developmental delay Transferred from a neighboring district Enrolled in speech for articulation and language delays,</td>
</tr>
<tr>
<td>Van</td>
<td>Receiving Tier 3 special education intervention Learning disabilities in reading, math, and written expression</td>
</tr>
<tr>
<td>Second Graders</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Ellie                | Receiving Tier 3 special education intervention  
|                      | Developmental delay requiring BabyNet services as a toddler  
|                      | Enrolled in a preschool special education program at three-years old  
|                      | Health issues resulting in chronic absences and tardiness                                 |
| Kennedy              | Receiving Tier 2 reading intervention  
|                      | Transferred from out of state  
|                      | Previously enrolled in virtual school  
|                      | No preschool experience                                                                  |
| Miles                | Receiving Tier 2 reading and behavior intervention  
|                      | Enrolled in preschool at four years old  
|                      | Frequently involved in off-task during lessons and independent work                      |
| Oliver               | Receiving Tier 3 special education intervention  
|                      | Learning disabilities in reading, math, and written expression  
|                      | Enrolled in a preschool special education program at four years old  
|                      | Repeated five-year old kindergarten                                                       |

**Data Collection Instruments**

Mixed methods research integrates qualitative and quantitative data and their results into specific research designs that provide the logic and procedures for conducting a study within theory and philosophy (Creswell & Clark, 2018). To determine the impact of the research, data was collected through both qualitative and quantitative data collection instruments.
Quantitative Instruments

Quantitative data was collected both before and after the study through Measures of Academic Progress (MAP) Growth Reading scores and Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessments. These quantitative instruments answered the first two research questions, how and to what extent does multisensory Orton-Gillingham based reading instruction impact phonetic development.

**MAP**

MAP Growth Reading is an online assessment used for measuring growth, informing instruction, and assessing strategy in reading achievement. Students were assessed at the beginning and end of the research study. The MAP assessment students in 5K and 1st grade took was titled MAP Growth: Reading K-2 SC 2-15. It was divided into four subtests: *Principles of Reading*, *Writing*, *Vocabulary*, and *Reading: Literary and Informational Text*. The MAP assessment students in 2nd, 3rd, and 4th grade took was titled MAP Growth: Reading 2-5 SC 2015. The MAP Growth: Reading 2-5 SC 2015 was divided into four subtests: *Informational Text: Language, Craft, Structure*, *Informational Text: Meaning and Context*, *Literary Text: Language, Craft, Structure*, *Literary Text: Meaning and Context*, and *Vocabulary: Determine, Clarify Word Meaning*. Each student’s MAP Growth Reading data was analyzed for growth in each subtest. Each student’s MAP score also helped determine what instructional path was necessary for the student. All participants in the study took MAP with their homeroom teacher according to the school district’s testing guidelines. Some students required IEP testing accommodations, such as small group testing or frequent breaks, when taking MAP.
**DIBELS**

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) 8th Edition is used by my school district to screen students throughout the school year for reading deficiencies. DIBELS consists of short one-minute fluency measurements used for assessing the acquisition of a set of kindergarten through 6th grade literacy skills that include phonemic awareness, alphabetic principle, accuracy, fluency, and comprehension. The assessments used for the purpose of this study were the *Phoneme Segmentation Fluency Assessment (PSF)*, the *Nonsense Word Fluency Assessment (NWF)*, the *Word Reading Fluency Assessment (WRF)* and the *DIBELS Oral Reading Fluency Assessment (DORF)*. The *Phoneme Segmentation Fluency Assessment (PSF)*, only used with first graders, assessed a student’s ability to segment three- and four-phoneme words into their individual phonemes fluently and has been found to be a good indicator of future reading achievement (Good & Kaminski, 1998). The *Nonsense Word Fluency Assessment (NWF)*, an individually administered test, included letter-sound correspondence and the ability to blend letters into words in which letters represented their most common sounds (Good & Kaminski, 1998). The *Word Reading Fluency (WRF)* provided a measure of alphabetic principle and reading fluency skills as it assessed a student’s ability to read individual words (Good & Kaminski, 1998). *DIBELS Oral Reading Fluency Assessment (DORF)* measured accuracy and fluency when connected with text (Good & Kaminski, 1998). Each of these assessments took no longer than 2-3 minutes to administer and were given before the research study began and at the end of the study. They were given individually to each participant of the study within the resource room. The data collected from these assessments were used to help determine
the effectiveness of the interventions utilized and also helped determine the course of instruction for each student.

**Qualitative Instruments**

Qualitative data was collected by using the Burke Reading Inventory which was conducted both before and after the study to survey students’ reading perceptions and attitudes about reading. I also gathered qualitative data by utilizing field notes where I recorded my reflections and observations about each lesson conducted.

**Burke Reading Inventory**

Developed by Carolyn Burke and designed to be given individually and orally, the Burke Reading Inventory provided information about students’ attitudes and perceptions about reading and reading instruction. Part of planning reading instruction is knowing students’ beliefs about reading and considering how their reading proficiency is influenced by past and current reading instruction (Goodman et al., 2005). The Burke Inventory approaches reading from multiple aspects, so no single interview question provides a definitive profile of a student’s view of reading (Goodman et al., 2005). In Appendix A is an example of the Burke Reading Inventory. The first half of the inventory consisted of questions created to uncover reading strategies the student can articulate. These are the reading strategies the student is most likely to rely on when encountering difficulty while reading. The second half of the inventory was designed to give the interviewer insights into the student’s perceptions of reading instruction and how the student sees himself as a reader. Finally, questions were grouped according to their purpose.
Field Notes

Mertler (2020) states observations can be extremely useful in situations where other forms of data collection simply will not work, allowing the teacher to gather data about actual student behaviors. A field diary was kept where I recorded what happened during each lesson taught with the targeted group of students. The field diary consisted of six sections representing the six parts of each lesson. Table 3.2 contains the research questions and the corresponding data collection type.

Table 3.2 Data Collection

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Collection Instrument</th>
<th>Type of Data</th>
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<tbody>
<tr>
<td>How does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?</td>
<td>DIBELS, MAP</td>
<td>Quantitative</td>
</tr>
<tr>
<td>To what extent does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?</td>
<td>DIBELS, MAP</td>
<td>Quantitative</td>
</tr>
<tr>
<td>How does multisensory Orton-Gillingham based reading instruction impact attitudes about reading in students in first and second grade who are also in Tier 2 and Tier 3 RTI?</td>
<td>Field Notes, Burke Reading Inventory</td>
<td>Qualitative</td>
</tr>
</tbody>
</table>

Data Collection Timeline

The data collection procedures began in January of 2022 and continued through the spring of the 2021-2022 school year, according to the timeline in Table 3.3.
Table 3. Data Collection Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 2022</td>
<td>Classroom teachers administer Winter Reading MAP assessment</td>
</tr>
<tr>
<td>January 2022</td>
<td>Researcher obtains permission from IRB to conduct study</td>
</tr>
<tr>
<td>January 2022</td>
<td>Researcher conducts first Burke Reading Inventory</td>
</tr>
<tr>
<td>February 2022</td>
<td>Researcher administers DIBELS Pre-Assessment</td>
</tr>
<tr>
<td>February-April 2022</td>
<td>Researcher implements Phonics First lessons</td>
</tr>
<tr>
<td>February-April 2022</td>
<td>Researcher takes field notes during and after each Phonics First lesson</td>
</tr>
<tr>
<td>April 2022</td>
<td>Classroom teachers administer Spring Reading MAP assessment</td>
</tr>
<tr>
<td>May 2022</td>
<td>Researcher conducts second Burke Reading Inventory</td>
</tr>
<tr>
<td></td>
<td>Researcher administers DIBELS Post-Assessment</td>
</tr>
<tr>
<td></td>
<td>Researcher completes data analysis.</td>
</tr>
</tbody>
</table>

Data Collection Challenges

Challenges I related to collecting data included the possibility of our school district requiring all schools to move from face-to-face learning to eLearning or a hybrid model (combination of eLearning and face to face learning) due to COVID-19. While I will still be able to meet with students virtually, this could impact my grouping of students as well as their participation. Some of my students may not have reliable internet access if eLearning small group lessons are required. Also, the time students are available to participate in eLearning lessons may vary based on parents’ work schedules. This will also hinder the way I collect data since MAP is a computerized test that is given with a proctor computer. There will be no way to give MAP if our school is conducting distance learning.
Data Collection Analysis

As previously mentioned, this research was conducted using a mixed methods research design. To answer the three research questions qualitative and quantitative data was used to analyze the following data: MAP Growth Reading Assessments, DIBELS Assessments, the Burke Reading Inventory, and field notes.

Quantitative Data

Data analysis for quantitative data began by converting the raw data into a form useful for data analysis (Creswell & Clark, 2018). The quantitative data analysis for research questions 1 and 2 was a change in MAP Growth Reading scores from Winter to Spring. Pre-Intervention and Post-Intervention data was analyzed from the following DIBELS assessments: *Phoneme Segmentation Fluency Assessment, Nonsense Word Fluency Assessment, Word Reading Fluency*, and *DIBELS Oral Reading Fluency,* to determine student growth from the intervention. Data was visually inspected, and a descriptive analysis conducted to determine the general trends in the data (Creswell & Clark, 2018).

Qualitative Data

Data analysis is characterized by constant change and repetition (Merriam & Tisdell, 2018). Flick (2014) describes qualitative data analysis as the understanding of linguistic material to make assertions about elements and structure of meaning-making in material and what is represented in it (as cited in Merriam & Tisdell, 2018). The qualitative data analysis for research question 3 was based on the Burke Reading Inventory and field notes. Because I examined students’ experiences with reading, this was a narrative inquiry, and it was analyzed from the perspective of the students’
opinions of reading as it related to constructivism, multi-sensory instruction, and Vygotsky’s zone of proximal development. The initial Burke Reading Inventory was analyzed to better understand where the student was in the reading process and what the student’s attitudes were towards reading before beginning the research study. These were compared to the final Burke Reading Inventory. The information from the inventory was transcribe into word processing files for analysis and coding. Similar to the Burke Reading Inventory, field notes were analyzed with initial thoughts written in the margins of the notes. These notes formed broader categories used for coding and forming themes (Creswell & Clark, 2018).

Rigor and Trustworthiness

In mixed methods data analysis, sound procedures of data analysis for both qualitative and quantitative strands in a study involve preparing and exploring the data, analyzing the data to answer the research questions, representing and interpreting the results of the data, and validating the data, results, and interpretation (Creswell & Clark, 2018). The next section provides an overview of the steps taken to ensure rigor and trustworthiness of this research study.

Quantitative

For DIBELS, three forms of test reliability were examined: alternate form reliability, delayed alternate form reliability, and test-retest reliability (Biancarosa et al., 2018). When determining alternate form reliability, an individual is given two different versions of the same test at different times after which the scores are compared. The overall median alternate form reliability of Phoneme Segmentation Fluency was .80, Word Reading Fluency was .95, and Nonsense Word Fluency was .90 (Biancarosa et al.,
MAP Reading Growth content validity is developed by mapping into the test the content standards being used by the educational entity commissioning the test, in this case, the South Carolina State Department of Education. The questions used on the MAP Reading Growth tests are extensive, having been developed over many years by the Northwest Education Association (NWEA) giving test analysts sufficient opportunities to collect evidence that establishes their reliability (NWEA, 2020). Also, test and re-test studies conducted by NWEA have produced reliability indices that have consistently been above what is considered statically significant (NWEA, 2020).

**Ethical Considerations.** Prior to beginning the reading intervention, I sought approval for my study from the University of South Carolina’s institutional review board, and then the principal of my school and the director of special services for my district. Once the study was approved and because participation in the study is completely voluntary, I provided each student participant with an assent form (Appendix B) and a consent form which was signed by a parent/guardian since participants were under the age of 18 (Appendix C). Additionally, I provided confidentiality and anonymity to participants by using fictitious names as a way of protecting my participants (Mertler, 2020). Finally, I abided by the principles of beneficence, honesty, and importance (Mertler, 2020). I acquired knowledge about my students and the educational process only to benefit future reading instruction (Mertler, 2020). I was honest with my data collection, ensuring that it was not altered or suppressed in any way (Mertler, 2020). The
findings of my research will contribute to further research on multisensory learning and its use in teaching reading (Mertler, 2020).

**Qualitative**

To provide rigor and trustworthiness of qualitative data the following strategies were used (Mertler, 2020).

**Prolonged engagement.** The students that made up the sample of first and second graders were students I have taught for at least two months if not longer. These were students in which I have developed relationships and established rapport long before conducting this study.

**Peer Debriefing.** Several colleagues, which include my school’s transformation coach, instructional coach, and a reading interventionist reviewed the data collection process and shared constructive feedback.

**Triangulation.** Data was obtained from different sources such as semi-structured interviews and observations which established the trustworthiness and credibility to my interpretations.

**Summary**

This mixed methods study was designed to determine the impact multisensory Orton Gillingham based reading instruction has on phonetic development and opinions of reading in students with reading difficulties. The use of quantitative data was beneficial in comparing students’ achievement in pre and post assessment data on phonetic development. The use of qualitative data was beneficial in analyzing students’ attitudes about reading before and after multisensory reading interventions. Chapter Three has presented an introduction to the methodology approach and design of the study, as well
as descriptive information about the participants, research setting, data collection methods, and data collection analysis.
CHAPTER 4

FINDINGS

Chapter Four begins with an overview of the problem of practice, the research questions, and the methodology. Then qualitative and quantitative results for this mixed methods, action research study are examined.

Problem of Practice

During the past few years there has been a lack of consistent, systematic phonics instruction within my school with a large proportion of students not mastering skills in a way that develops a crucial foundation for reading. Despite a reading curriculum being developed and teachers implementing balanced literacy within their classrooms, a disproportionately large number of students in my school continue to exhibit poor phonemic awareness and phonics skills. The goal of this mixed methods, action research study was to determine whether multisensory Orton-Gillingham based reading instruction would have a positive impact on phonetic development in struggling readers and how this specific type of reading instruction affected their attitudes about reading. For the purpose of this study and for the purpose of using the Burke Reading Inventory, the word ‘attitudes’ means reading strategies students utilize, characteristics of good readers, and student’s perceptions of themselves as readers.
Research Questions

According to Creswell and Clark (2018), “In mixed methods the researcher collects and analyzes both qualitative and quantitative data rigorously in reaction to the research questions and hypotheses” (p. 5). Consequently, this study was guided by the following research questions:

- How does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?
- To what extent does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?
- How does multisensory Orton-Gillingham based reading instruction impact attitudes about reading in students in first and second grade who are also in Tier 2 and Tier 3 RTI?

Methodology

To answer the research questions, a mixed methods approach was utilized, as discussed in Chapter Three. Multiple types of data collection instruments were used. To quantitatively measure how and to what extent multisensory Orton-Gillingham based reading instruction impacts phonetic development, students’ data were gathered through Measures of Academic Progress (MAP) Growth Reading scores and Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessments. Participants were assessed using the MAP Growth Reading assessment at the beginning and the end of the study and two rounds of data from the following DIBELS assessments were collected during the study:
the Phoneme Segmentation Fluency Assessment (PSF), the Nonsense Word Fluency Assessment (NWF), the Word Reading Fluency Assessment (WRF), and the Oral Reading Fluency Assessment (ORF). The first round of DIBELS assessments was administered at the beginning of the study and the final round administered at the end of the study. The qualitative measures of the study consisted of two interview sessions with each student using the Burke Reading Inventory, which were analyzed from the perspective of the students’ attitudes of reading. Another qualitative measure included field notes which were used to form clearer and broader categories for coding and themes.

Changes in Procedure

The data collection period was originally planned to be conducted consistently five days a week for a total of twenty sessions over the course of four weeks. However, having been absent sporadically because of health issues during the data collection period, I was not able to collect data on a consistent, daily basis as I would have liked. Data were still collected for a total of sixteen sessions over the course of four weeks, though not consecutively.

Intervention

To determine if there were instructional gaps leading to an overpopulation of students being identified for Response to Intervention (RTI) and special education, multisensory Orton Gillingham (OG) based reading methods were implemented with a select group of first and second grade students with reading difficulties. Students participated in a total of sixteen lessons during a time span of four weeks. Each lesson lasted approximately forty to fifty minutes and consisted of six components: Phonological Awareness, Vowel Skill Intensive, Three Part Drill, Multisensory Sound
Introduction, Red Words, and Oral Reading. Every lesson began with a phonological awareness activity followed by the vowel skill intensive component used to review vowel sounds. The next component of the lesson was the three-part drill followed by a multisensory sound instruction and the red words component. The lesson ended with a reading selection. The purpose of each lesson component is explained in Chapter Three, and a summary of each component is found in Table 4.1.

Table 4. 1 Lesson Components

<table>
<thead>
<tr>
<th>Lesson Component</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological Awareness</td>
<td>Students participate orally. Conducted during each lesson.</td>
</tr>
<tr>
<td>Vowel Skill Intensive</td>
<td>Students discern correct short and/or long vowel sounds. Conducted during each lesson.</td>
</tr>
<tr>
<td>Three Part Drill</td>
<td>Students use multiple modalities to give letter sounds and blend sounds in words. Conducted during each lesson.</td>
</tr>
</tbody>
</table>
| Multisensory Sound Instruction | New skill introduction  
Solidifies new skill for long-term recall.  
Allows students to practice new and previously learned skills.  
Conducted two or three times weekly based on student progress.                                      |
| Red Words                 | Students learn non-phonetic sight words. Conducted during each lesson.                                                                   |
| Oral Reading              | Students apply phonetic and non-phonetic reading strategies to connect to texts. Conducted as part of each lesson.                      |

Data Analysis Results

The following results are both quantitative and qualitative. It provides the quantitative data obtained from the MAP Growth reading assessments and DIBELS assessments, along with the interpretation and themes found in the qualitative data. After an independent analysis of both quantitative and qualitative data, I analyzed all data.
together to capture a full understanding of the results. Triangulation was to “seek convergence and corroboration by comparing findings from quantitative and qualitative data” (Creswell & Clark, 2018, p. 290.)

Quantitative Data Analysis

To answer the questions how and to what extent multisensory Orton-Gillingham based reading instruction impacts phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI, MAP Growth reading assessments and DIBELS assessments were used.

MAP Growth Reading Assessments

Students participate in MAP Growth reading assessments three times during the school year. These tests are computer-adaptive and are taken in the fall, winter, and spring to provide a personalized learning path that teachers can utilize to guide their daily instruction. After completion of the assessment, each student was given an overall score for reading based on the Rasch unit (RIT) scale that indicates how the student performed in reading. RIT scores are compared over time to measure academic growth. Each student was also given a RIT score for each subtest. These RIT scores determine students’ strengths and weaknesses and are used to develop learning plans.

For the purpose of this study, students’ pretest and posttest MAP Growth reading data were collected. Each student’s overall pretest and posttest RIT scores were compared to the district grade level mean and the norm grade level mean. Then, each student’s pretest and posttest RIT score and percentile for each subtest was analyzed. Students were placed in the following performance ranges based on their subset RIT score percentile: Low (percentile < 21), Low Average (percentile between 21 and 40),
Average (percentile between 41 and 60), High Average (percentile between 61 and 80), and High (percentile > 80). These performance ranges represent each student’s achievement on the subset. After taking the pretest and posttest, each student’s subtest RIT score was used to determine the concepts and skills they needed to develop. NWEA provides a Learning Continuum which organizes learning statements into three categories, Reinforce, Develop, and Introduce. Each student’s learning path was determined according to the learning statements in the Develop category of each subset. Because the first grade MAP Growth reading assessment is different than the second grade MAP Growth reading assessment, these assessments were analyzed separately.

**First grade MAP Data Analysis.** The first graders in this study were assessed using the MAP Growth Reading K-2 assessment which contains forty-three questions and takes approximately thirty to forty minutes to complete. This test is untimed, and students are provided audio support throughout the test. The MAP Growth Reading K-2 assessment contains four subtests: *Writing, Reading: Literary and Informational Text, Principles of Reading,* and *Vocabulary.* First grade students showed impressive gains in their overall RIT score.

**Shay.** Having moved from a neighboring district during the middle of the school year, Shay had only enrolled at our school one week prior to taking her MAP pretest. Adjusting to a new school may have influenced Shay’s pretest RIT score. When analyzing Shay’s scores, Shay increased her overall RIT score by four points, and she continued to score significantly below the district grade level RIT mean and the norm grade level RIT mean. Figure 4.1 compares Shay’s overall RIT scores for her pre and post MAP assessment with the district and national mean.
When evaluating Shay’s posttest subtest RIT scores, she shows relative strength in *Vocabulary* with a fourteen-point increase in her this subtest RIT score. Despite this increase, Shay continues to score in the Low range in all subtests. She displayed an eight-point decrease in her *Writing* subtest RIT score, but her RIT scores for the other two subtests did not show much growth from pretest to posttest. Shay improved to the 38th percentile for growth based on her MAP posttest which indicated she made more progress than thirty-eight percent of her peers. Figure 4.2 compares Shay’s pretest and posttest subtest RIT Scores. Based on NWEA’s learning continuum, Shay’s learning plan did not differ from pretest to posttest, and she continues to develop the following concepts and skills.

- Matching the initial sound and final sound in spoken words
- Substituting initial consonants in similarly spelled words
- Decoding and spelling consonant-vowel-consonant (CVC) words
- Distinguishing spoken words with short vowel sounds
- Making inferences
- Locating and recalling details
- Understanding main idea
- Predicting events
- Sequencing story events
- Identifying the setting
- Using correct subject-verb agreement
- Capitalizing first word rules, proper nouns and personal titles
- Using ending punctuation
- Writing simple sentences with correct subject-verb agreement, capitalization of first words in a sentence, proper nouns and personal titles, and using ending punctuation
- Understanding multiple-meaning words, synonyms, antonyms, and compound words

Figure 4. 2 Shay’s Subtest RIT Scores
Van. Van increased his overall RIT score by seventeen points. One factor that may have affected Van’s performance was the time it took him to complete the assessment, because Van often rushes through assignments that are difficult for him and require extra mental effort. On his pretest, Van completed the assessment in twelve minutes when on average it should take at least thirty minutes to complete. Van completed his posttest in twenty-two minutes which could be one reason for the increase in his RIT score. Even with the seventeen-point increase, Van RIT score fell below the district and national means. Figure 4.3 compares Van’s overall RIT scores for his pre and post MAP assessment with the district and national mean.

![Van's MAP Growth Reading RIT Data](image)

Figure 4. 3 Van’s MAP Growth RIT Data

When evaluating Van’s posttest subtest RIT scores, he shows relative strength in **Vocabulary**; however, he also scored in the Low range in all subtests. Van improved to the 97th percentile for growth based on his MAP posttest which indicated he made more progress than ninety-seven percent of his peers. While there was not a considerable
increase in his *Principles of Reading* or *Reading: Literary and Informational Text* RIT scores, he did make significant increases in his *Writing* subtest (twenty-five points) and his *Vocabulary* subtest (twenty-eight points), both which contributed to a substantial gain in his overall RIT score. Figure 4.4 compares Van’s pretest and posttest subtest RIT Scores. Based on NWEA’s learning continuum, Van’s learning plan did not differ from pretest to posttest, and he continues to develop the same concepts and skills as Shay.

- Matching the initial sound and final sound in spoken words
- Substituting initial consonants in similarly spelled words
- Decoding and spelling consonant-vowel-consonant (CVC) words
- Distinguishing spoken words with short vowel sounds
- Making inferences
- Locating and recalling details
- Understanding main idea
- Predicting events
- Sequencing story events
- Identifying the setting
- Using correct subject-verb agreement
- Capitalizing first word rules, proper nouns and personal titles
- Using ending punctuation
- Writing simple sentences with correct subject-verb agreement, capitalization of first words in a sentence, proper nouns and personal titles, and using ending punctuation
• Understanding multiple-meaning words, synonyms, antonyms, and compound words

**Figure 4. Van’s Subtest RIT Scores**

**Second Grade MAP Growth Data Analysis.** Second grade students participating in this study were assessed using the MAP Growth 2-5 reading assessment. NWEA (2022) states this assessment is for independent readers; however, all students in our district in second through fifth grade take this test regardless of reading ability. This assessment is untimed, contains forty to forty-three questions, and is designed to be completed in approximately forty-five minutes. Unlike the MAP Growth K-2 reading assessment, the MAP Growth 2-5 reading assessment does not provide audio support. Students are required to read all reading passages, questions, and answer choices independently. Each subtest was analyzed for student’s strengths and weaknesses. Overall, there was a decrease of 2.7 points in the mean RIT score of the sample students from pretest to posttest, and each student received extremely low overall RIT scores and subtest RIT scores.
Ellie. Ellie had a decrease in her overall RIT score by four points. For both her pretest and posttest, Ellie’s overall RIT scores fell in the low range of achievement and below the district and national mean. Her achievement on the posttest was at the third percentile meaning she scored better than three percent of her peers. Figure 4.5 compares Ellie’s overall RIT scores for her pre and post MAP assessment with the district and national mean.

Figure 4. 5 Ellie’s MAP Growth RIT Data

When evaluating her posttest subtest RIT scores, Ellie shows relative strengths in *Literary Text: Meaning and Context* and *Informational Text: Language, Craft, Structure*. Her suggested area of focus is *Literary Text: Language, Craft, Structure*, and *Vocabulary: Determine, Clarify Meaning*. As mentioned earlier in the chapter, Ellie has frequent absences and tardiness due to health issues. She attended eleven out of sixteen intervention sessions, so she only participated in 31% of the lessons. Based on NWEA’s
learning continuum, Ellie’s learning plan consists of the following concepts and skills she should continue to develop.

- identifying words that best fit given contexts
- drawing conclusions
- making inferences
- locating details about characters, events, and setting
- making predictions
- identifying, comparing and contrasting, and drawing conclusions about the setting
- understanding characters
- determining cause and effect
- identifying conflict and/or resolution
- determining the central idea
- identifying evidence in information texts
- identifying the purpose of difference types of informational texts
- locating information in informational text features

Figure 4.6 compares Ellie’s pretest and posttest subtest RIT Scores.
Kennedy. When comparing overall RIT scores of both pretest and posttest, Kennedy had the largest drop out of all four second grade students, which was a significant seventeen points. For both her pretest and posttest, Kennedy’s scores fell in the low range of achievement and well below the district and national mean. Her achievement on the posttest was at the first percentile meaning she scored better than only one percent of her peers. Figure 4.7 compares Kennedy’s overall RIT scores for her pre and post MAP assessment with the district and national mean.
Based on the RIT scores from her posttest subtests, Kennedy has strengths in *Literacy Text: Meaning and Context* and *Literary Text: Language Craft, Structure* where she had the greatest RIT growths. Kennedy’s suggested area of focus is *Vocabulary: Determine, Clarify Word Meaning*. Based on NWEA’s learning continuum, Kennedy’s learning plan consists of the following concepts and skills she should continue to develop:

- Locating information in charts and graphs
- Interpreting idioms and metaphors in context
- Understanding descriptions that appeal to different senses
- Drawing conclusions
- Making inferences
- Locating details
- Making predictions
• identifying, comparing and contrasting, and drawing conclusions about the setting
• determining cause and effect
• comparing and contrasting characters
• identifying conflict/resolution
• determining the central idea

Figure 4.8 compares Kennedy’s pretest and posttest subtest RIT scores.

<table>
<thead>
<tr>
<th>Subtest Type</th>
<th>Pretest Score</th>
<th>Posttest Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literary Text: Meaning and Context</td>
<td>133</td>
<td>150</td>
</tr>
<tr>
<td>Vocabulary: Determine, Clarify Meaning</td>
<td>141</td>
<td>162</td>
</tr>
<tr>
<td>Informational Text: Meaning and Context</td>
<td>148</td>
<td>150</td>
</tr>
<tr>
<td>Informational Text: Language, Craft, Structure</td>
<td>167</td>
<td>162</td>
</tr>
<tr>
<td>Literary Text: Language, Craft, Structure</td>
<td>171</td>
<td>167</td>
</tr>
</tbody>
</table>

Figure 4.8 Kennedy’s Subtest RIT Data

*Miles.* Miles had the greatest increase in overall RIT scores of both pretest and posttest, with an increase of three points. For both his pretest and posttest, Miles’ scores fell in the low range for achievement as well as growth. His achievement on the posttest was at the seventh percentile meaning he scored better than only seven percent of his peers. Figure 4.9 compares Miles’ overall RIT scores for his pre and post MAP assessment with the district and national mean.
Based on the RIT scores from his posttest subtests, Miles’ suggested area of focus is *Literary Text: Meaning and Context*. He showed a decrease of fourteen points in *Informational Text: Meaning and Context* and a decrease of twenty points in *Literary Text: Language Craft and Structure*. With a growth of 23 points, Miles showed the biggest RIT growth in *Vocabulary: Determine and Clarify Meaning*. This is not surprising due to Miles’ strength in verbal comprehension. Based on NWEA’s learning continuum, Miles’ learning plan consists of the following concepts and skills she should continue to develop.

- Locating information in charts, graphs, and title pages
- Interpreting idioms and metaphors in context
- Understanding descriptions that appeal to different senses
- Determining the effect of a situation or event
- Locating information and understands sequence in a set of directions
• Locating details in advertisements and informational texts
• Determining central idea
• Using context to determine multiple-meaning words
• Using context to determine the meaning of phrases
• Using a dictionary, thesaurus, and glossary to determine the meaning of unknown words
• Analyzing nuances in meaning among related words

Figure 4.10 summarizes Miles’ pretest and posttest subtest RIT Scores.

Figure 4.10 Miles’ Subtest RIT Data

**Oliver.** Oliver had the greatest second lowest overall RIT score out of the second-grade student sample and had a decrease of three points from pretest to posttest. For both his pretest and posttest, Oliver’s scores fell in the low range for achievement as well as growth. His achievement on the posttest was at the first percentile meaning he scored better than only one percent of his peers. Figure 4.11 compares Oliver’s overall RIT scores for his pre and post MAP assessment with the district and national mean.
While Oliver showed relative strength in *Literary Text: Language, Craft, Structure* on his posttest, his area of suggested focus is *Informational Text: Language, Craft, Structure* where his RIT decreased thirty-three points. Based on NWEA’s learning continuum, Oliver’s learning plan consists of the following concepts and skills he should continue to develop.

- Identifying word in given contexts
- Inferring the answer to a riddle
- Locating details about events and setting
- Interpreting idioms, metaphors, and similes in context
- Understanding that descriptions appeal to the different senses
- Determining mood in context
- Classifying texts as fairy tale, make-believe, and poetry
- Determining the logical order of events
Figure 4.12 indicates Oliver’s RIT scores on each subtest in the pretest and posttest.

<table>
<thead>
<tr>
<th>Oliver's Pretest and Posttest Subtest RIT Scores</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literary Text: Meaning and Context</td>
<td>135</td>
<td>157</td>
</tr>
<tr>
<td>Vocabulary: Determine, Clarify Meaning</td>
<td>148</td>
<td>151</td>
</tr>
<tr>
<td>Informational Text: Meaning and Context</td>
<td>168</td>
<td>168</td>
</tr>
<tr>
<td>Informational Text: Language, Craft, Structure</td>
<td>140</td>
<td>146</td>
</tr>
<tr>
<td>Literary Text: Language, Craft, Structure</td>
<td>163</td>
<td>174</td>
</tr>
</tbody>
</table>

Figure 4.12 Oliver’s Subtest RIT Data

**Summary of MAP Growth Assessment Data.** The greatest increase in overall RIT scores occurred with first graders. This contrasts with the overall RIT scores for second graders, with only one of the four second grade students having an increase in their overall RIT score. The reason for the large increase in RIT scores for first graders is due to the MAP Growth K-2 Reading Assessment measuring content appropriate for students who are pre, emergent, or beginning readers. It measures foundational reading skills that include phonics, phonological awareness, as well as comprehension, vocabulary, and elements of writing (NWEA, 2020). MAP Growth 2-5 Reading Assessment assesses content appropriate for students who are independent readers in grades two through five measuring independent comprehension and vocabulary (NWEA, 2020). Because the second-grade students included in the sample are all emergent readers and require a substantial amount of reading support that is not given within their MAP assessment, there was not a large growth of their RIT scores from between pretest and
posttest. While the MAP Growth K-2 Reading Assessment would have been a more appropriate assessment to use with the second graders in the sample, our district policy is that all students in the same grade should take the same MAP assessment. NWEA (2020) states that administering the 2-5 Reading assessment to struggling readers who are not reading independently will likely result in frustration by the test-taker and narrow results since these students have not mastered basic foundations of reading.

**DIBELS Data Analysis**

Students in grades K-2 participate in DIBELS reading assessments three times, given at the beginning, middle, and end of the school year. These tests are used to screen for reading deficits. DIBELS measures encompass eight subtests that were developed and researched as indicators of risk and progress in overall reading, as well as indicators for dyslexia and other reading difficulties (Good & Kaminski, 2002). The DIBELS Administration and Scoring Guide (2021) describes the intention of DIBELS assessments:

DIBELS has three principle uses: to identify students who may be at risk of reading difficulties by screening up to three times a year, to document students’ progress of reading skills through special intervention programs, and to provide minimal levels of performance for all students to reach to be on track for becoming a reader through benchmark goals and timelines. (p. 12).

The assessments used for the purpose of this study were the *Phoneme Segmentation Fluency Assessment (PSF)*, the *Nonsense Word Fluency Assessment (NWF)*, the *Word Reading Fluency (WRF)* and the *DIBELS Oral Reading Fluency Assessment (DORF)*. First grade students were given all four assessments listed previously, with second grade
students given all the assessments except the *PSF* Assessment. Each assessment was given individually as a pretest before the intervention began and as a posttest after the conclusion of the intervention.

When given the *PSF*, the teacher gives the student words orally and the student must break each word into phonemes. Students have sixty seconds to complete the assessment. The *PSF* score is based on the number of sounds produced correctly within the sixty seconds. One point is given for each different, correct part of the word.

When given the *NWF*, the student must read or sound out each nonsense word aloud that is presented to them in a list. Two scores are provided for the *NWF* assessment, the sum of the correct letter sounds (*CLS*) and the sum of the words read correctly (*WRC*). To calculate the *NWF* *CLS* score, every correct letter sound receives one point. The score for *NWF* *WRC* is calculated by giving a point for each correctly read word.

For administration of the *WRF* assessment, the student is given a list of sight words for their grade level. Sight words are words that a reader should recognize instantly without having to decode. The student’s score is calculated based on the sum of the correct words read in one minute.

Finally, when given the *DORF* assessment, the student is asked to read aloud a passage for one minute. If the student encounters an unknown word, the teacher is allowed to tell the student the word so the student may continue reading. The *DORF* provides two scores, one for the sum of the words read correctly and one for accuracy percentage. The percentage of accuracy is determined by dividing the sum of the words read correctly by the sum of the total words attempted including errors and multiplying by 100.
For each pretest and posttest, students were given a raw score. After determining each raw score, students were given a percentile rank. Then, students were given a cut score based on their percentile rank. Finally, the students were given descriptors based on their cut score for each subtest. A student with a cut score below the 20th percentile on each assessment is described as needing intensive support and is at risk for reading difficulties, including dyslexia. A student with a cut score between the 20th and 40th percentile on each assessment is described as needing strategic support and is at some risk for not meeting grade level proficiency. A student falling at or above the 40th percentile on each assessment is described as only needing core support within the classroom and is at minimal risk to negligible risk in meeting grade level proficiency. These scores are illustrated in Table 4.2. Because first grade students took an additional subtest, the first grade and second grade DIBELS assessments will be analyzed separately.

Table 4.2 DIBELS Cut Score Indicators

<table>
<thead>
<tr>
<th>Cut Score</th>
<th>Descriptor</th>
</tr>
</thead>
</table>
| Students who score below the 20th percentile rank on criterion measure | • Intensive support  
  • At risk for reading difficulties, including dyslexia       |
| Students who score between the 20th percentile rank and the 40th percentile rank on criterion measure | • Strategic support  
  • Some risk for not meeting grade level proficiencies        |
| Students who score at or above the 40th percentile rank on criterion measure | • Minimal to negligible risk for meeting grade level proficiencies  
  • Core support within the classroom                           |

**First grade DIBELS Analysis.** The following is the DIBELS assessment analysis for each first-grade student.

**Shay.** When analyzing Shay’s scores, she showed the greatest increase in the PSF subtest, increasing from only 12 sounds given correctly during the pretest to 55 sounds.
given correctly during the posttest. Her scores on this assessment imply significant growth in Shay’s ability to hear and manipulate sounds in words. On her PSF pretest, Shay was able to give the initial sounds for eight words, the ending sound for five words, and no medial, or middle sounds. In her PSF posttest, Shay was able to give the initial sounds for ten words, the ending sounds for ten words, and the medial sound for nine words. She moved from achieving at the 4th percentile, being at risk for reading difficulties, and needing intensive support in phonemic segmentation before implementation of the intervention to achieving above the 40th percentile and being at minimal risk for reading difficulties and only needing core support within the classroom in phonemic segmentation after implementation of the intervention. This increase could be attributed to daily phonemic awareness activities conducted throughout the intervention.

On her NSW WRC, Shay maintained a score of zero and showed no growth, possibly because she needs additional instruction in blending sounds independently. While she was able to increase one point in her NSW CLS, this did not transfer to reading nonsense words correctly, meaning that although she may know her letter sounds, she continues to struggle with the blending of the sounds together.

On Shay’s DORF Words Correct assessment, she increased the number of words she read correctly from 16 to 20. All of the words she was able to read were sight words (I, a, in, my, and, are, of, in, it, the, up) except for the word ‘pond’. Shay’s posttest scores indicate she is below the 10th percentile in all other subtests and needs intensive support in basic phonics, blending skills, reading grade level words, and reading accurately and automatically. Figure 4.13 summarizes Shay’s DIBELS scores.
Figure 4. 13 Shay’s DIBELS Data

Van. When analyzing Van’s scores, he also showed the greatest increase in the PSF subtest, increasing from 16 sounds given correctly during the pretest to 36 sounds given correctly during the posttest. His scores on this assessment imply significant growth in Van’s ability to hear and manipulate sounds in words. On his PSF pretest, Van was able to give the initial sounds for nine words, the medial sounds for five words, and the ending sound for three words. In his PSF posttest, Van was able to give the initial sounds for thirteen words, the medial sound for nine words, and the ending sounds for thirteen words. On his NSW WRC, Van increased his score from zero to four, possibly because he is beginning to blend sounds independently. He was able to increase one point on his NSW CLS, meaning he knows his letter sounds, but he is not able to independently blend sounds together. He moved from being at risk for reading difficulties and needing intensive support in phonemic segmentation before implementation of the intervention to being at minimal risk for reading difficulties and only needing core support within the classroom in phonemic segmentation after implementation of the intervention. Van’s
increase could be attributed to daily phonemic awareness activities conducted throughout the intervention. On his DORF Words Correct assessment, Van increased his score from three words read correctly to four words read correctly. On the pretest, he read ‘I’, ‘a’, and ‘pond’. On his posttest he read ‘I’, ‘a’, ‘my’, and ‘of’ correctly. His posttest scores indicate he is below the 5th percentile in all other subtests and needs intensive support in basic phonics, blending skills, reading grade level words, and reading accurately and automatically. Figure 4.14 summarizes Van’s DIBELS scores.

![Van's DIBELS Test Results](image)

**Figure 4.14 Van’s DIBELS Data**

**Second Grade DIBELS Analysis.** The following is the DIBELS assessment analysis for each second-grade student.

**Ellie.** Ellie showed a slight increase in three subtests. On her NWF CLS pretest, Ellie gave a total of fifteen correct letter sounds which included four correct initial sounds, four correct medial sounds, and seven correct final sounds. On her NWF CLS posttest, Ellie gave a total of seventeen correct letter sounds which included seven correct initial sounds, six correct medial sounds, and four correct final sounds. This indicates
Ellie has difficulty isolating medial and final sounds in words. Ellie also increased her score on the WRF subtest, increasing from nine words read correctly on the pretest to eleven words correctly on the posttest. Ellie decreased her score on the DORF Words Correct assessment by two points. Her posttest scores indicate she made minimal gains and is below the 5th percentile in all DIBELS subtests. Ellie needs intensive support in basic phonics, blending skills, reading grade level words, and reading accurately and automatically. Figure 4.15 summarizes Ellie’s DIBELS scores.

![Ellie's DIBELS Test Results](image)

**Figure 4. 15 Ellie’s DIBELS Data**

**Kennedy.** When analyzing Kennedy’s scores, she showed the greatest increase in the NWF CLS subtest. On her NWF CLS pretest, Kennedy gave a total of twenty-six correct letter sounds which included nine correct initial sounds, eight correct medial sounds, and nine correct final sounds. On her NWF CLS posttest, Kennedy gave a total of forty-two correct letter sounds which included sixteen correct initial sounds, thirteen correct medial sounds, and thirteen correct final sounds. Kennedy’s improvement in
giving the correct letter sounds for nonsense words could be credited to her receiving consistent, in-person instruction in phonics, since her previous school experience was only through virtual instruction. Kennedy increased her score on the DORF Words Correct assessment by three points. On her pretest she read twelve words correctly which increased to fifteen on her posttest. All of the words she was able to read on both the pretest and posttest were sight words, which included the following words: ‘a’, ‘puppy’, ‘love’, ‘and’, ‘like’, ‘the’, ‘is’, ‘to’, ‘his’, and ‘from’. She showed a small amount of growth in the other three subtests; however, she continued to score below the 10th percentile in all DIBELS subtests indicating she needs intensive support in basic phonics, blending skills, reading grade level words, and reading accurately and automatically.

Figure 4.16 summarizes Kennedy’s DIBELS scores.

![Kennedy's DIBELS Test Results](image)

**Figure 4. 16 Kennedy’s DIBELS Data**

**Miles.** While Miles showed an increase in all subtest scores, he had a significant increase in his NWF CLS subtest score. On the NWF pretest, Miles gave a total of thirty-two correct letter sounds which included eight correct initial sounds, five correct medial
sounds, and eight correct final sounds. On the NWF posttest, Miles gave a total of forty-one correct letter sounds which included seventeen correct initial sounds, eight correct medial sounds, and sixteen correct final sounds. This indicates that Miles has difficulty isolating medial sounds. He showed the greatest increase in his ORF accuracy percentage, increasing from twenty percent on his pretest to sixty percent on his posttest.

On his ORF pretest he read five total words correctly out of a total of twenty-five words read in one minute with twenty errors. The five words Miles was able to read on his ORF pretest were ‘love’, ‘and’, ‘like’, ‘the’ and ‘puppy’. On his ORF posttest, Miles increased his total words read correctly to fifteen out of a total of twenty-five words read with ten total errors. Although Miles showed a growth in the four subtests, he continued to score below the 10th percentile in all DIBELS subtests indicating he needs intensive support in basic phonics, blending skills, reading grade level words, and reading accurately and automatically. Figure 4.17 summarizes Miles’ DIBELS scores.

![Miles' DIBELS Test Results](image)

Figure 4.17 Miles’ DIBELS Data
Oliver. Oliver showed his greatest increase in scores on his NWF CLS subtest. On the NWF pretest, Oliver gave a total of twenty-seven correct letter sounds which included ten correct initial sounds, eight correct medial sounds, and nine correct final sounds. On Oliver’s NWF posttest, he gave a total of thirty-four correct letter sounds which included thirteen correct initial sounds, twelve correct medial sounds, and nine correct final sounds. This denotes Oliver has difficulty isolating ending sounds. Oliver showed a slight increase in his ORF accuracy percentage, increasing from fifty percent on his pretest to sixty percent on his posttest. On his ORF pretest he read eight total words correctly out of a total of sixteen words read in one minute with eight errors. The words Oliver was able to read on his DORF pretest were ‘a’, ‘puppy’, ‘love’, ‘and’, ‘like’, and ‘the’. On his DORF posttest Oliver increased his total words read correctly to fifteen out of a total of twenty-five words read with ten total errors. On this posttest he was able to read ‘a’, ‘puppy’, ‘love’, ‘and’, ‘just’, ‘like’, ‘the’, ‘is’, ‘to’, ‘get’, and ‘his’, which were mostly sight words. Even with Oliver’s growth on all subtest scores, he continued to score below the 10th percentile in each subtests indicating he needs intensive support in basic phonics, blending skills, reading grade level words, and reading accurately and automatically. Figure 4.18 summarizes Oliver’s DIBELS scores.
Summary of DIBELS Assessment Data. The PSF assessment showed the greatest increase in DIBELS scores among first graders, with both first-grade students showing a twenty-point or more increase in phonemic segmentation skills. This indicates an increase in phonemic awareness with both first-grade students. All students showed an increase in the NWF CLS assessment. The increase in both the PSF assessment scores and the NWF CLS assessment scores can directly be attributed to intensive, explicit phonemic awareness and phonics instruction focused on segmenting and blending phonemes.

There was an increase in scores for five out of six students in the NWF WRC assessment; however, these increases were very small indicating that even though students increased their phonemic awareness, they need continual instruction to blend all phonemes together and read words fluently.

On the WRF assessment, four out of six students had minimal increases in scores from pretest to posttest with Ellie having the greatest increase indicating that these
students are deficit in skills that require reading for accuracy and fluency of sight words. All second graders, with the exception of Ellie, also showed an increase in their DORF Words Correct score and their DORF accuracy percentage. The increase in these scores can be credited to specific instruction in reading and spelling high frequency words.

As previously mentioned, the lack of increase in Ellie’s scores could be from Ellie having excessive absences and only receiving eleven intervention sessions compared to the other students’ sixteen intervention sessions.

**Qualitative Data Analysis**

To answer the question how does multisensory Orton-Gillingham based reading instruction impact attitudes about reading in students in first and second grade who are also in Tier 2 and Tier 3 RTI, the Burke Reading Inventory and field notes were used.

**Burke Reading Inventory**

Students were given the Burke Reading Inventory individually at the beginning and end of the study. This semi-structured inventory consisted of twelve open ended questions. Because the Burke Reading Inventory’s questions have multiple purposes, the questions were divided into groups according to their purpose.

- Questions 1 through 2: Provided insight into what type of reading strategies students have in their repertoire.
- Questions 3 through 5: Allowed the student to think about and discuss characteristics of good readers.
- Questions 6 through 8: Helped determine more about a student’s knowledge of reading strategies.
• Questions 9 through 12: Provided information about a student’s perceptions of themselves as a reader.

After the information was gathered from both the pre-inventory and post-inventory, a transcript was created of each session spent with the students completing the inventory. Once the transcript was completed, data were organized into tables to represent each student’s pre-inventory and post-inventory answers to every question. Then students’ pre-inventory and post-inventory answers were compared and interpreted. The next section discusses the interpretations related to the four groups of questions.

Questions 1 through 2. The first two questions offered understanding into what reading strategies students used when reading. In the pre-inventory, all six students stated they would ask for help if they were reading and came to something they did not know, with three out of the six students saying they would ask their teacher. These responses indicated who they mostly rely on for help when they are reading. In the post-inventory, three of the students continued to answer, “ask for help”, with the other three students answering with specific reading strategies such as “sound out words”, “tap out words”, or “use the sight word wall”. The word ‘something’ in Question 1 gives insight into what the students believe that word refers to, such as a letter, word, phrase, sentence, or section of text (Goodman & Burke, 2005). For example, if a teacher came to something she did not know she would research it, because she is an independent reader. Since the participants of the study are not independent readers, the students who replied “sound it out” indicated that they were emergent and beginning readers who have not developed a large repertoire of strategies for decoding unknown words.
Question 2 probed more about the strategies students would use. In the pre-inventory, the two first grade students could not give another strategy to use other than the one given for question 1. During the post-inventory, they both gave different strategies, sounding it out and asking for help. Also, during the post-inventory, all four second grade students had developed the strategy of sounding or tapping out the words.

**Questions 3 through 5.** This next set of questions allowed the students to think about and discuss characteristics of good readers. The majority of students chose people older than them who read to them regularly and help them learn. In both the pre-inventory and post-inventory, Ellie chose friends of hers whom she admires, which Miles also did in his pre-inventory. However, in his post-inventory Miles named Dr. Seuss as a good reader. Miles chose Dr. Seuss because he had previously been reading Dr. Seuss books in his classroom when our school celebrated Read Across America Day. In the pre-inventory, four of the six students stated that yes, a good reader can come to something they do not know while reading. Only Shay and Miles responded no, good readers do not come to something they do not know while reading, suggesting that they equate skilled reading with perfect performances by readers who know everything about reading (Goodman & Burke, 2005). These students can often become more frustrated because of their unrealistic expectations of reading. In the post-inventory, all six students indicated that good readers do come across things they do not know while reading.

**Questions 6 through 8.** This group of questions probed deeper into a student’s knowledge of reading strategies. Answers for the pre-inventory question 6 revealed that all but one student thought a good reader might ask for help; however, this changed on
the post-inventory to each student giving a reading strategy that they believed a good reader would use.

On question 7, several students’ answers indicated an increase in confidence with reading because they were offering reading strategies in the post-inventory to help readers. Ellie was the only student that stated in both the pre- and post-inventory that she would tell them to sound it out. These two answers of sounding it out showed she felt confident in this strategy, and it is one she used frequently during reading, even if it was not always appropriate to use.

For question 8 when the students were asked what their teacher would do to help a struggling reader, many of the students evolved from asking for help in the pre-inventory to offering strategies in the post-inventory. Miles mentioned in his pre-inventory that he had no idea what his teacher might do, then replied she might ask them to try again. His post-inventory response was that the teacher would tell them the word or give them tips to decode it. It is important to note that even though Miles suggested that the teacher would give tips to decode the words, he did not specify any tips indicating that he is not confident or aware of other decoding strategies to suggest.

Questions 9 through 12. The last four questions of the inventory offered insight about a student’s awareness of themselves as a reader. For question 9 all the students had a different response when asked how they learned to read during the pre-inventory. Often people who have pleasant memories about reading do not remember learning to read or think they learned to read before they started school, crediting family members with teaching them (Goodman & Burke, 2005). Only one student suggested that a family member taught her to read and that was Ellie, who stated in both her pre- and post-
inventory that her mama taught her. One student during the pre-inventory said that she did not remember how she learned to read, and two students responded that they could not read. In the post-inventory, no one mentioned that they could not read, with half of the sample responding that they practiced reading. One can infer from their post-inventory answers that they all believe they can read with some students learning at school and most learning through lots of practice.

Question 10 asked each student what they wanted to do better as a reader. While most students responded with read books, be an author, or enjoy reading, all but one student in the post-inventory stated they wanted to read bigger, harder books and words, be an author, and help others. This question gives us tremendous insight into each student’s perception of themselves as a reader. Not one child responded in the post-inventory stating that they could not read, showing that their reading confidence and attitudes had improved. Those that mentioned in the post-inventory that they wanted to help others with reading were aware of their reading struggles and were wanting to eventually be successful readers that can help other struggling readers in the future. The one student, Ellie, who answered in the pre-inventory that she did not know and responded with “sound it out” in her post-inventory used the answer, “sound it out”, for many of her answers during the post-inventory.

Finally, questions 11 and 12 asked the students if they were good readers and why. Only one student responded that they were a good reader in both the pre-inventory and the post-inventory, but the remaining five students all responded that they were not good readers during the pre-inventory. Their reasons all centered around having difficulty with reading. During the post-inventory, all five of these students’ perceptions of
themselves as readers had improved, some stating they were good readers and some stating they were better readers than they were. Table 4.3 summarizes the responses of the Burke Reading Inventories given before and after the study as well as interpretations of the responses for each individual.

Table 4.3 Burke Reading Inventory Responses and Themes

<table>
<thead>
<tr>
<th>When you are reading and come to something you don’t know, what do you do?</th>
<th>Student</th>
<th>Pre</th>
<th>Post</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shay</td>
<td>Ask my teacher.</td>
<td>I try to sound out words.</td>
<td>Developed strategy of sounding out words</td>
</tr>
<tr>
<td></td>
<td>Van</td>
<td>I don’t really read.</td>
<td>Tap out words; use sight word wall</td>
<td>Developed strategy of sounding out words and using a word wall</td>
</tr>
<tr>
<td></td>
<td>Ellie</td>
<td>Ask teacher</td>
<td>Sound out words</td>
<td>Developed strategy of sounding out words</td>
</tr>
<tr>
<td></td>
<td>Kennedy</td>
<td>Ask teacher</td>
<td>Ask teacher or another student</td>
<td>No change in strategy</td>
</tr>
<tr>
<td></td>
<td>Miles</td>
<td>Ask for help</td>
<td>Ask the teacher</td>
<td>No change in strategy</td>
</tr>
<tr>
<td></td>
<td>Oliver</td>
<td>Ask for help</td>
<td>Ask the teacher</td>
<td>No change in strategy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you ever do anything else?</th>
<th>Student</th>
<th>Pre</th>
<th>Post</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shay</td>
<td>No answer (shrugs shoulders)</td>
<td>Look at letters; try to tap</td>
<td>Developed strategy of sounding out/tapping out words</td>
</tr>
<tr>
<td></td>
<td>Van</td>
<td>Not really</td>
<td>Ask teacher for help</td>
<td>Developed strategy of asking teacher for help</td>
</tr>
<tr>
<td></td>
<td>Ellie</td>
<td>Sound it out</td>
<td>Use fingers for sounds</td>
<td>Developed strategy of tapping out words</td>
</tr>
</tbody>
</table>
Kennedy  
No, because they [teachers] would help you.  
Sound it out  
Developed strategy of sounding out words

Miles  
Skip it  
Sound it out  
Developed strategy of sounding out words

Oliver  
Skip it  
Work through sounds  
Developed strategy of sounding out words

Who is a good reader you know?

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre</th>
<th>Post</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shay</td>
<td>My teacher</td>
<td>Mrs. Dixon</td>
<td>Thinks teachers are good readers</td>
</tr>
<tr>
<td>Van</td>
<td>My sister</td>
<td>Mrs. Dixon; Mr. Webb(^2)</td>
<td>Chose people that read a lot to him.</td>
</tr>
<tr>
<td>Ellie</td>
<td>My best friend, Isabelle(^3)</td>
<td>Oliver</td>
<td>Thinks her friends are good readers</td>
</tr>
<tr>
<td>Kennedy</td>
<td>Mrs. Dixon</td>
<td>Mom</td>
<td>Thinks adults in her life are good readers</td>
</tr>
<tr>
<td>Miles</td>
<td>Walt(^4) He is in afterschool with me.</td>
<td>Dr. Seuss</td>
<td>During this study we had Read Across America Day where he read a lot of Dr. Seuss books in his classroom. I believe this influenced Miles’ post inventory answer</td>
</tr>
<tr>
<td>Oliver</td>
<td>My teacher</td>
<td>Mrs. Dixon</td>
<td>Thinks teachers are good readers</td>
</tr>
</tbody>
</table>

What makes this person a good reader?

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre</th>
<th>Post</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shay</td>
<td>She reads to us</td>
<td>You help us. We have to get out paper and our notebooks for our</td>
<td>Chose people who read to her and help her learn to read.</td>
</tr>
</tbody>
</table>
Van  
She is older than me and reads things to me.  
You read good books to us. Mr. Webb reads good books and y’all help us learn to read.  
Chose people who are older than him, who read to him, and help him learn.

Ellie  
She is in 2nd grade and helped me read a really long time ago.  
He tries to sound out the words he doesn’t know.  
Chose friends of hers who she admires.

Kennedy  
You read to us all the time and explain things.  
She reads stories to me at night.  
Chose people who read to her and explain things.

Miles  
He reads harder books, books on a higher level, than me.  
He wrote funny books.  
Chose people who read harder books and write books.

Oliver  
She teaches me how to read.  
You talk about books and read to us.  
Chose teachers who teach him how to read, talk about books and read to him.

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre</th>
<th>Post</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shay</td>
<td>I don’t know</td>
<td>Yes</td>
<td>Not sure if Shay really understood the question during the pre-inventory, but did believe her teacher comes to things she doesn’t know when she is reading in the post-inventory.</td>
</tr>
<tr>
<td>Van</td>
<td>Yeah, probably</td>
<td>Yes</td>
<td>Not quite sure in the pre-inventory but is sure that his teacher does in the post-inventory.</td>
</tr>
<tr>
<td>Ellie</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Kennedy</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Student</td>
<td>Change from no to yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miles</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oliver</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **What would she/he do if she came to something she/he didn’t know?** |
|----------------|-------------------------------------------------|
| **Student** | **Pre**                      | **Post**                               | **Interpretation** |
| Shay         | Maybe ask somebody.            | I think you might read it again.       | Using strategies other than asking for help; incorporating rereading strategy |
| Van          | Probably ask mom for help.     | Maybe ask questions about the book and ask someone. | Using strategies other than asking for help; asking questions |
| Ellie        | She helped me with reading. She sounded it out. | He taps words out. | Sound out/tap out sounds |
| Kennedy      | Probably ask Mr. Webb [my assistant] for help. | Sounds words out like kids do. | Using strategy other than asking for help; incorporating sounding out words |
| Miles        | He wouldn’t read it. He would put the book back and get something else he can read. | Says the words slowly. Says the sounds. | Incorporating sounding out words instead of just putting back a book that is too hard |
| Oliver       | Ask for help                  | You spell out the words.               | Using strategy other than asking for help; spelling out words means sounding out words |

| **If you know someone is having trouble reading, how would you help that person?** |
|----------------|-------------------------------------------------|
| **Student** | **Pre**                      | **Post**                               | **Interpretation** |
| Shay         | Tell them to ask a teacher               | I will try to tap it                   | Using a strategy other than asking for help; tapping out sounds |
| Van          | Tell them to get help                    | Help them hear the sounds              | Using a strategy other than asking |
### What would your teacher do to help that person?

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre</th>
<th>Post</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shay</td>
<td>Tell them the word</td>
<td>Help them tap it out</td>
<td>Goes from suggesting the teacher tell them the word to suggesting a strategy to use</td>
</tr>
<tr>
<td>Van</td>
<td>Read it to them</td>
<td>Tell them to start again. Tap the sounds in the word.</td>
<td>Goes from suggesting the teacher read it to them to suggesting a strategy to use</td>
</tr>
<tr>
<td>Ellie</td>
<td>Ask student to help</td>
<td>Tap words out</td>
<td>Goes from suggesting the teacher ask a student to help to</td>
</tr>
</tbody>
</table>
suggesting a strategy to use

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre</th>
<th>Post</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennedy</td>
<td>Read it</td>
<td>Tell them to stop and sound it out</td>
<td>Goes from suggesting the teacher just read the word to suggesting two strategies the teacher could use</td>
</tr>
<tr>
<td>Miles</td>
<td>I have no idea. Maybe ask them to try again</td>
<td>Help by giving them tips or tell them the word</td>
<td></td>
</tr>
<tr>
<td>Oliver</td>
<td>Teach them to read</td>
<td>Help them by getting them to spell it out</td>
<td></td>
</tr>
</tbody>
</table>

**How did you learn to read?**

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre</th>
<th>Post</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shay</td>
<td>I don’t remember</td>
<td>I practice and spelled out sounds.</td>
<td>Realizes she needs to practice and pay attention to sounds in words to be a good reader.</td>
</tr>
<tr>
<td>Van</td>
<td>I can’t read</td>
<td>I kept reading and trying until I could read.</td>
<td>His confidence has increased because first he states he can’t read and then he says he can. He realizes he has to practice.</td>
</tr>
<tr>
<td>Ellie</td>
<td>My mama helped me</td>
<td>At home; My mama helped me.</td>
<td>Her mama encourages her to read at home.</td>
</tr>
<tr>
<td>Kennedy</td>
<td>I can’t really read. I don’t know how. I learned more here than in homeschool. The teachers here actually teach.</td>
<td>Mrs. Dixon helped.</td>
<td>Her confidence has increased because first she states he can’t read and then she says her teacher has helped her.</td>
</tr>
<tr>
<td>Miles</td>
<td>I looked at a book and I kept trying and then I got it.</td>
<td>I use to believe I couldn’t read and then one day I could. First you have to get the right book.</td>
<td>His confidence has increased because he states he believed he couldn’t read but now he can because he kept</td>
</tr>
</tbody>
</table>
trying. He also believes in having the right books on his instructional level.

| Oliver | My teacher helped me, and I practiced a lot. | My teacher helped me. I practiced a lot. | Learned through a lot of help from his teacher and lots of practice. |

**What would you like to do better as a reader?**

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre</th>
<th>Post</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shay</td>
<td>Read books</td>
<td>Help my friends</td>
<td>Initially wants to be able to read, but now wants to help others read.</td>
</tr>
<tr>
<td>Van</td>
<td>Read books</td>
<td>Read harder words</td>
<td>Initially wants to be able to read, but now wants to read harder words.</td>
</tr>
<tr>
<td>Ellie</td>
<td>I don’t know</td>
<td>Sound out words</td>
<td>Initially does not know, but now wants to sound out words. This was Ellie’s go-to answer for a lot of her post-inventory questions.</td>
</tr>
<tr>
<td>Kennedy</td>
<td>Be an author</td>
<td>Be an author</td>
<td>Wants to be an author; Kennedy enjoys writing.</td>
</tr>
<tr>
<td>Miles</td>
<td>I don’t like reading; read bigger words</td>
<td>Write some books</td>
<td>Initially does not like reading, but wants to be able to read bigger words, but now wants to write books.</td>
</tr>
<tr>
<td>Oliver</td>
<td>I want to like reading; get better so I can help others</td>
<td>Read harder books</td>
<td>Initially wants to like reading so he can get better as a reader and help others, but now wants to read harder books.</td>
</tr>
</tbody>
</table>

**Do you think you are a good reader?**

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre</th>
<th>Post</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>Pre</td>
<td>Post</td>
<td>Interpretation</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------------------</td>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Shay</td>
<td>No</td>
<td>Yes</td>
<td>Is beginning to see herself as a good reader.</td>
</tr>
<tr>
<td></td>
<td>Yes, I can read more than I used to in homeschool.</td>
<td></td>
<td>Is beginning to see himself as improving as a reader.</td>
</tr>
<tr>
<td>Van</td>
<td>No</td>
<td>Yes, I can read more than I used to in homeschool.</td>
<td>Is beginning to see herself as a good reader.</td>
</tr>
<tr>
<td>Miles</td>
<td>No</td>
<td>Not the best but okay</td>
<td>Is beginning to see himself as improving as a reader.</td>
</tr>
<tr>
<td>Oliver</td>
<td>No</td>
<td>Yes</td>
<td>Is beginning to see himself as a good reader.</td>
</tr>
<tr>
<td>Why or why not?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>Pre</td>
<td>Post</td>
<td>Interpretation</td>
</tr>
<tr>
<td>Shay</td>
<td>Because I don’t know all the words.</td>
<td>I read books</td>
<td>Is becoming more confident as a reader; realizing she doesn’t need to know all of the words to be able to read</td>
</tr>
<tr>
<td>Van</td>
<td>I told you. I can’t read</td>
<td>I can read more words</td>
<td>Has become more confident because initially he could not read and then he states he can read more words.</td>
</tr>
<tr>
<td>Ellie</td>
<td>My mama taught me</td>
<td>My mama taught me</td>
<td>Nothing changed</td>
</tr>
<tr>
<td>Kennedy</td>
<td>Sometimes I mess up but I try again</td>
<td>I read more than I could in homeschool</td>
<td>Has become more confident; realizes she messed up when reading but kept trying and now she knows she can read more than when she was homeschooled last year.</td>
</tr>
<tr>
<td>Name</td>
<td>Statement 1</td>
<td>Statement 2</td>
<td>Statement 3</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Miles</td>
<td>I can’t really read well because I say some words and they sound wrong. That’s the reason why I don’t like reading.</td>
<td>I keep trying. You know you have to practice.</td>
<td>Initially doesn’t like to read because he doesn’t read well and the words sound wrong, but realizes he needs to continue to practice and keep trying.</td>
</tr>
<tr>
<td>Oliver</td>
<td>It is really hard.</td>
<td>Yes, I like reading and I like to help the other kids in our class, you know, the little ones who can’t read yet</td>
<td></td>
</tr>
</tbody>
</table>

**Summary of Burke Reading Inventory Data.** The intervention did impact students’ attitudes of reading. Before the intervention, most of the students were not familiar with specific strategies for decoding when reading. After the intervention the students spoke of tapping out sounds to help them sound out words which was a decoding strategy taught, modeled, and reinforced during the intervention sessions. Just having learned this one reading strategy gave the students more confidence which was evident in their post-intervention answers of wanting to read harder books and words and wanting to help others.

**Field Notes**

Beyond the Burke Reading Inventory, I was interested in identifying how multisensory phonics instruction affected my students’ reading attitudes. Notes were taken during each intervention session conducted. Since each lesson had six components, which were explained previously in this chapter, notes were jotted under each component based on observations and reflections during and after each session. After the sessions
were completed and information was gathered, data were organized into tables to
represent each component of the lessons. Then, lesson components were interpreted. The
next section discusses the interpretations related to the six components of the lesson
format.

**Phonological Awareness.** One-minute drills were conducted orally at the
beginning of each lesson. These drills were performed to strengthen students’
phonological awareness skills and included segmenting, isolating, and blending sounds in
words through manipulations of phonemes. Table 4.4 provides examples of the
phonological awareness activities for this component of the lesson.

The first week of sessions began with deletion of initial, final and medial
phonemes. During the first session, examples were given of how to delete initial
phonemes. Some difficulty was noted when words with blends were introduced, such as
in the words, ‘brush’, ‘dry’, and ‘shrug’. Students were wanting to keep blends together
and not divide them into separate sounds. After some practice rounds during the week, all
students were able to delete initial phonemes.

The next phonological awareness skill introduced was the deletion of final
sounds. Kennedy and Oliver both immediately began deleting final phonemes; however,
it took first graders observing quietly before they began answering correctly. Miles
deleted initial phonemes for a few examples before he understood he was supposed to
delete the final phoneme instead.

Then during the next session, deletion of medial phonemes was introduced. This
was difficult for all student to perform, but with more practice Kennedy and Oliver began
answering correctly. Shay and Van did not participate at all indicating they were not
confident in this phonemic awareness skill. Miles participated in every example, but his answers were incorrect.

The next few sessions began with the addition of initial phonemes. Ellie and Kennedy were both able to complete this activity after a couple of examples. Miles consistently added the phoneme to the end of the word. For example, when asked to add /s/ at the beginning of ‘low’, he responded ‘lows’. Oliver, Shay, and Van both were slow to respond indicating they were not feeling self-confident in this activity and were taking their cues from others in the group who were answering correctly. This task was reviewed during several sessions before moving to the addition of final phonemes and the substitution of initial phonemes. All students did an excellent job with both activities.

The final skill covered during phonological awareness activities was the substitution of final phonemes. Oliver and Ellie were the first to answer correctly when given examples, followed by Kennedy. After three examples, Miles stated, “I don’t hear it.”. He tried hard to observe the other students and listen to the sounds but failed to answer any examples correctly. Both Shay and Van repeated the answers the second graders gave indicating they did not understand the activity.

Overall, as students practiced the different phonological awareness activities their confidence and reading attitudes increased. All students were eager to participate, even if they were parroting another student’s answers.

Table 4. 4 Phonemic Awareness Activities

<table>
<thead>
<tr>
<th>Phonological Awareness Activity</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deletion of initial sound</td>
<td>Say ‘moon’. Now, say ‘moon’ without the /m/.</td>
</tr>
<tr>
<td>Deletion of final sound</td>
<td>Say ‘and’. Now, say ‘and’ without the /d/.</td>
</tr>
<tr>
<td>Deletion of medial sound</td>
<td>Say ‘slope’. Now, say ‘slope’ without the /l/.</td>
</tr>
<tr>
<td>Addition of initial phoneme</td>
<td>Say ‘round’. Now, say ‘round’ and add /g/ at the beginning.</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>Additional of final phoneme</td>
<td>Say ‘tree’. Now, say ‘tree’ and add /t/ at the end.</td>
</tr>
</tbody>
</table>

**Vowel Intensive.** The second component of the lesson was the Vowel Intensive, where students intensely practiced short vowel sounds, for the purpose of this study.

When vowels were introduced, each student was given a vowel stick that included the short vowel and its corresponding picture (ex. a, apple). The objective during the vowel intensive exercises was to discern between short vowel sounds, with the students holding up the correct vowel stick that corresponded to the word given to them orally. Figure 4.19 shows an example of students participating in vowel intensive activities (Brainspring, 2019).

![Image](image.png)

Figure 4. 19 Vowel Intensives

Following the scope and sequence for BrainSpring’s Phonics First, short “a” and short “o” were the first vowels introduced followed by short “i”, short “u”, and finally, short “e”. When introducing short vowel “a”, all students in the sample were very
confident in identifying this vowel; however, as we began adding more vowel sounds over the course of the intervention, Shay, Van, Ellie, and Miles would hesitate before answering, looking to the other students for assistance in choosing the appropriate short vowel. As the interventions continued, these students did increase in their confidence, as evident by a decrease in hesitations or looking to others before answering. This could be due to the repetitious nature of the activity. It should be noted that the greatest difficulties came from the short vowels i and e. Kennedy and Miles maintained their confidence in their vowel selections throughout all vowel intensive activities.

Three Part Drill. This lesson component involved reviewing sounds and skills through visual, auditory, and blending. The first part of the drill required the students to give sounds after a sound card was shown. Figure 4.20 shows the front and back of a Phonics First sound card (Brainspring, 2022).

Figure 4. 20 Sound Card Photo
All students performed well on visual drills. If students faltered on answers, each card had a visual to help them remember the sound.

The second part of the drill involved using auditory skills to write letters. When a letter sound was given, students wrote the letter on a whiteboard. The auditory drill was harder for the students than the visual drill because the visual prompts had been reduced, meaning sound cards were not used. Students were confident in writing consonant sounds, but vowels were often tricky for them, with the sounds for short “i” and short “e” being confused frequently. When students became confused on vowel sounds, a hand gesture was given that corresponded with each sound to prompt them to write the correct vowel.

The last part of the three-part drill was blending, where students were presented with sound cards to blend into words and pseudowords. Figure 4.21 shows an example of sound cards on a blending board (Brainspring, n.d.).

Figure 4.21 Blending Board
Initially, all six students had difficulty with ending sounds, but after the first few sessions the students became much better at reading all the way to the end of a word. Van and Oliver also initially struggled with the short vowels “a” and “o” but overcame this difficulty through practice. Short vowels “i” and “e” continued to be a problem for Ellie, Miles, and Oliver throughout the blending drills. I believe this was due to their spontaneous nature of reading the word aloud without thinking about the sounds before reading. Van and Shay were much slower at blending the sounds, therefore giving fewer incorrect answers.

**Multisensory Sound Instruction.** The Multisensory Sound Instruction was conducted several times per week when a new sound was introduced. The first part of this component included a multisensory activity with the new sound. The second part consisted of dictation that students wrote in their reading notebooks. Because the initial part of Multisensory Sound Instruction was a review, I chose to focus on the second part of this lesson component in my field notes.

During the first four sessions, minimal mistakes were made during the dictation since only a few sounds had been introduced. The most common mistakes were “b” and “d” reversals. As more sounds were introduced, all the students had more difficulty with dictation. Many times, Shay would tap the correct sounds, but write them in an incorrect order. Some examples of Shay’s dictation included her writing “nfi” for “fin”, “bdu” for “bud”, “uhm” for “hum”, and “dgou” for “dug”. Shay benefitted from tapping out each phoneme one by one and writing them as she tapped. Van made very little mistakes during this component of the lesson other than “b” and “d”, “p” and “q”, and “m” and “w” reversals. This was due to him being very deliberate about tapping out each phoneme
and writing it as he tapped. Ellie struggled with writing the correct medial short vowel phonemes, making frequent errors such as writing “mop” for “map”, “tap” for “top”, and “bep” for “dip”. Kennedy had the fewest errors in this component than any student, making only a couple of mistakes involving final phonemes. Miles’ performance on this lesson component suggests that he has great difficulty with phonological processing because he struggled writing the correct medial and final phonemes. For example, Miles wrote “fen” for “fin” “rem” for “ram”, “mun” for “mud”, and “cad” for “can”. Oliver had difficulty writing the correct final phonemes, writing “dob” for “dot”, “mit” for “mid”, and “hig” for “hit”.

Red Words. The next component included working with sight words, which Phonics First calls “red words”. One red word was introduced during each session with the students spelling the word in a variety of multisensory ways. Students were provided with scaffolding based on their individual needs. When dictation sentences were given, Ellie, Kennedy, and Oliver were able to write their sentences with minimal assistance. Extra time was provided for Shay, Van, and Miles who required more individualized assistance in tapping out sounds as they wrote. Just the same as with the Multisensory Sound Instruction component, more mistakes were made in this component as more red words and sounds were introduced.

Oral Reading. This was the final component of each intervention session. Students were given short phonetically controlled reading passages where they had to apply phonetic and non-phonetic reading strategies as they read. Passages were discussed as a group, and students often highlighted the phonics skill within the passage that we were working on for that session. While I read orally with each student, the other students
read quietly to themselves or read with a partner. Initially, during oral reading, all six students had very poor reading fluency, as well as reading stamina. They would look at the reading passage and immediately say it was too hard or they could not read it. Passages were shortened for students to feel successful, and more time was spent discussing passages before turning students loose to read on their own. As their fluency and stamina improved, the passages got longer, and less scaffolding of the texts were required. By the end of the intervention, Van and Ellie were asking what we were reading before our intervention session even began.

**Summary of Field Notes**

Using Brain Spring’s *Phonics First* as an intervention made a large impact on students’ attitudes about reading. Through my field notes I found this to be evident with the increase of students’ eagerness to participate in lesson components. The repetitious, highly structured nature of each intervention session provided predictable activities that led to a boost in confidence thus transferring over to students’ attitudes and perceptions about reading. As my study progressed, I observed a decrease in student’s hesitating before answering. Their dependence on other students for help also decreased. Students became enthusiastic about reading orally towards the end of the study, when before they had been hesitant and disinterested in reading. Finally, I must note that Van would beg to stay at my table and continue with reading activities even after our intervention sessions were over. For this hyperactive little guy to request for more reading instruction, proved this intervention made a considerable impact on their attitudes about reading.
Triangulation

In a mixed methods study, triangulation is the use of multiple methods and sources of data to increase the credibility and validity of the research (Merriam & Tisdell, 2016). By triangulating the data in my study, I was able to understand my findings more fully. I included four types of data to triangulate these findings, MAP Growth reading assessment scores, DIBELS scores, student reading inventories, and field notes. The findings indicate that the implementation of multisensory reading instruction had a significant impact on students’ reading achievement and attitudes about reading.

Learning to read is a complicated process. As a special education teacher, I witness many students struggle with the reading process which often affects their whole educational experience. The longer a student continues to struggle with reading deficits without the appropriate interventions, the more profound effect these deficits have not only on their education, but also their mindset. Shay, Van, and Miles not only exhibited improvement in both their MAP Growth RIT scores (Figures 4.1, 4.2, and 4.9) and their DIBELS scores (Figures 4.12, 4.13, and 4.16), but also indicated in the qualitative findings that they were finding enjoyment in reading through the enthusiasm they depicted during the intervention. This demonstrates that multisensory reading instruction does have a positive impact on reading achievement and attitudes about reading.

While Kennedy and Oliver did not have the increase in MAP scores the other students had, their growth in DIBELS scores (Figures 4.15 and 4.17) continue to support the influence multisensory reading interventions have on students struggling to read. It is vital to compare Kennedy’s DIBELS scores with her Burke Reading Inventory responses (Table 4.3) and my observations made during the intervention sessions to further provide
validity. The responses she gave on her post-inventory indicated that she benefitted from multisensory reading instruction, and the increase in her reading ability affected her attitudes and perceptions as a reader. This is evident when Kennedy stated during her pre-inventory that she is not a good reader and then responded to that same question in her post-inventory that she is a good reader because she can read more than she used to.

Additionally, it is imperative to discuss Ellie’s quantitative data in relation to her qualitative data. She did not show growth in her MAP scores (Figure 4.5), showed minimal growth on three out of five of her DIBELS scores (Figure 4.14) and based on her Burke Reading Inventory responses (Figure 4.5) it was difficult to determine if her reading attitude had significantly changed. As a student, Ellie is an eager learner; however, her missing intervention sessions and arriving late to others clearly affected her reading achievement. Had Ellie attended every session from beginning to end like the other students, I believe her achievement would have improved.

Overall, I found that the quantitative data did support the qualitative data, and multisensory reading intervention can lead to an increase in reading achievement and overall attitudes about reading. The students were all actively engaged in learning new strategies to improve their reading all within their zone of proximal development. This supports cognitive constructivism where learning is active and social constructivism where learning develops through social interaction. If this group of students were to continue this reading intervention, I predict they would continue to see an increase in MAP RIT scores and DIBELS scores and their overall reading attitudes would continue to improve.
Summary

In conclusion, the goal of this action research was to determine the impact of multisensory Orton-Gillingham based reading instruction on a small population of students’ phonetic development and how this specific type of instruction affected their attitudes about reading. My data analysis began by analyzing students’ MAP and DIBELS assessments with pretests and posttest administered at the beginning and the end of the intervention. While the overall MAP RIT scores did not increase for each student and did not support a positive impact of this intervention on their achievement, DIBELS scores for each student did increase, thus supporting a positive impact on students’ reading achievement. To further understand my quantitative data results, I integrated my qualitative data collected through student interviews, observations and field notes finding that the qualitative and quantitative data supported each other. Examining evidence from multiple sources of data adds to the validity of a study (Creswell & Creswell, 2018). Thus, the use of multiple methods of data have added to the credibility of the findings of this study.
CHAPTER 5

IMPLICATIONS

This chapter includes an overview of this action research study, along with a discussion of the findings, and an action plan. It also contains reflections on the research and methodology as well as this study’s limitations. Finally, the chapter closes with recommendations for future research.

Overview of the Study

Due to a lack of consistent, systematic phonics instruction within my school and because my school has such a substantial percentage of students needing reading intervention and supplemental instruction, I conducted this action research study to determine the effects of multisensory phonics instruction on reading achievement and attitudes about reading. I hoped to provide data to support the use of consistent, systematic multisensory phonics instruction within the reading classroom. Additionally, I hope to spark necessary conversations with school leaders that would initiate implementation of consistent, systematic phonics instruction starting in kindergarten.

The nature of a special education teacher requires one to focus on the individual child and their instructional goals. In a perfect world, each student needing intervention would get significant one-on-one time with their teacher to work on their specific instructional goals; however, we live in an imperfect word. Therefore, students must be placed in small groups to maximize instructional time. Constructivists believe that
students construct meaning from their social surroundings, so effectively grouping
students gives them opportunities to learn from others. While there are numerous ways to
group students, in my classroom I prefer to group by ability level or strategy instruction.

For this study, I chose to group my sample students based on ability level and
strategy needs. In keeping with the teachings of Maria Montessori and Lev Vygotsky, my
small group instruction was student-centered, where learning was hands-on and
multisensory, and my job was to facilitate learning (Bodrova, 2003; Montessori, 1967;
Vygotsky, 1978). This student-centered, multisensory approach compelled students to
become actively engaged in their literacy experiences.

The six students chosen for this intervention were selected because they
represented a small portion of my school’s student body that had distinctive
characteristics essential for the design and research of this study. This project focused on
two of the five essential components of effective reading instruction as determined by the
National Reading Panel report, phonemic awareness, and phonics (NICHD, 2000). Since
the purpose of this study was to determine the impact of multisensory Orton-Gillingham
based reading instruction on a small population of students’ phonetic development and
how this specific type of instruction affected their attitudes about reading, the use of
Brainspring’s Phonics First program was used. Students participated in sixteen
intervention sessions which last approximately forty minutes and consisted of six lesson
components.

This study focused on teaching reading skills using multiple modalities, or
multisensory instruction, with the following research questions guiding this research:
- How does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?

- To what extent does multisensory Orton-Gillingham based reading instruction impact phonetic development in students in first and second grade who are also in Tier 2 and Tier 3 RTI?

- How does multisensory Orton-Gillingham based reading instruction impact attitudes about reading in students in first and second grade who are also in Tier 2 and Tier 3 RTI?

To answer the first two research questions, quantitative data were analyzed from students’ pretest and posttest results on MAP Growth Reading RIT scores and DIBELS scores. First, the scores from the pretest and posttest results of the students’ MAP Growth RIT were analyzed. They showed a considerable increase in both first graders’ scores, and a slight increase in one out of four of the second graders’ scores. As discussed in chapter 4, the lack of increase in the second graders’ scores could be contributed to second graders being emergent and beginning readers and taking the MAP Growth 2-5 Reading, which is intended for independent readers. If these second graders had taken the MAP Growth K-2 Reading Assessment, there would have been significant growth in their RIT scores like the first-grade students’ scores.

Next, the results from the pretest and posttest from each student’s DIBELS assessments were analyzed. These scores showed an increase in five out of the six students’ scores on at least four subtests. The results from both sets of quantitative data imply that multisensory Orton-Gillingham based reading instruction does have a positive
impact on student’s phonetic development creating stronger decoding and encoding skills as well as increasing long-term retention of reading and spelling skills. With multisensory instruction, short-term memory is activated, and connections are increased to construct long-term memory when learners acquire information. (Van den Heuvel et al., 2009 as cited in McTighe & Willis, 2019). McTighe and Willis (2019) noted “the more ways that learning is experienced and applied, the more effectively it is incorporated, stored, and retrieved from memory” (p.100). Through multisensory teaching, strong neural connections are made in the brain which results in better retention of concepts (McIver, 2017). The results of the quantitative data from this study support the statement that when material is presented using more than one modality the likelihood of retaining that material is much greater.

To answer the third research question, qualitative data were analyzed from pre-inventory and post-inventory Burke Reading Inventory responses and field notes. Based on this qualitative data analysis, students developed an increased confidence in their reading abilities. This increase in confidence was not instantaneous but developed due to strategic planning and scaffolding of learner centered instruction. The intensive practice in specific reading strategies helped students develop more confidence in their reading which in turn created and increase in positive attitudes about reading. With the gradual release of responsibility came student autonomy over their learning aiding in building confidence. By using Vygotsky’s zone of proximal development to instruct students on their instructional level, boredom and disinterest was tempered from the use of material that was too easy, and frustrations were eliminated because of material being too difficult. Students remained in their zone of proximal development with just the correct
amount of scaffolding to create autonomy over the tasks (Antonacci, 2000). This learner centered environment was conducive to developing students with a growth mindset and positive attitudes towards learning (Eyler, 2014).

Shams and Steitz (2018) postulated that “learning mechanisms operate optimally under multisensory conditions” (p. 415). When students have reading and literacy experiences through multiple modalities learning is optimized. The results from this action research study add to a growing body of literature that supports the use of multisensory reading instruction with students who have reading difficulties (Geiss, 2003; Hook, 2001; Litcher & Roberge, 1979, as cited in Richey & Goeke, 2006; Richey & Goeke, 2006; Stoner, 1991). Students receiving learner centered instruction not only have an increase in reading achievement, but they have a more positive attitude towards learning (Sakata, n.d.).

When used consistently and systematically with fidelity, multisensory OG based reading instruction is an effective intervention for increasing reading achievement and attitudes of reading in students with reading difficulties. Based on these findings, a detailed action plan is explained below.

**Action Plan**

The cyclical nature of action research means that as one study ends, the application of knowledge obtained from that study leads to new questions, new curiosities, and new research (Efron & Ravid, 2013, Duesbery & Twyman, 2020). As I reached the end of this study, I realized that although the results of my study reflected and supported my constructivist philosophy of education, I have more work to do to
improve the learning environment and advocate for the substantial percentage of students who have reading difficulties at my school.

My research indicates that intensive, multisensory phonics instruction increases reading achievement and attitudes about reading in students with reading difficulties. Struggling readers deserve high quality, research-based curricula and evidence-based interventions taught by highly skilled educators (National Center on Response to Intervention, March, 2010). *Phonics First* can be integrated into an existing reading program as a supplement for struggling students who need a multisensory approach to learning, or it can be used as a stand-alone curriculum in kindergarten through third grade classrooms (Brainspring, 2018). The data I collected during my study can be utilized to form an action plan for the next school year as I collaborate with other school leaders to implement consistent OG based multisensory phonics reading instruction on a larger scale at my school. This action plan will have two parts. The first part of the plan will be to continue to expand upon the intervention I have already incorporated into my classroom. Since I have the opportunity to teach students for multiple years, the sample participants in this study will remain in an intervention group when school reconvenes, and I will continue to implement *Phonics First* with them consistently throughout the next school year. I will also begin using *Phonics First* with another group of third graders with reading difficulties. Figure 5.1 details part one of the action plan.
The second part of the plan will be to implement *Phonics First* at my school. Because of the substantially large numbers of students at my school needing reading intervention, kindergarten through third grade teachers will be at the core of this part of the plan. First, I will present the findings of my research along with other research related to the effectiveness of multisensory phonics reading interventions to school and district leaders. Next, the necessary tools and resources will be provided to teachers and assistants who will be working with students in kindergarten through third grade. These tools and resources will include thirty hours of highly intensive and comprehensive *Phonics First* training, as well as all materials needed to implement *Phonics First*. By the end of the training, participants will be prepared to implement *Phonics First* lessons. Then, those who have trained will work collaboratively creating plans for implementation in individual classrooms. Once the action plan is implemented, a system of support will be provided through collaboration, observation, evaluation, and coaching (Instruction Partners, n.d.). This action plan is intended to span a complete school year, as data collection and data analysis is also conducted.
Recommendations for Future Research

This action research leads to several recommendations for further research. First, future research will help strengthen the existing research of OG instruction. There is a multitude of research on phonemic awareness, phonics, vocabulary, comprehension, and fluency, the five effective components of reading instruction (National Institute of Child Health and Human Development [NICHD], 2000). However, the increasingly popular Orton Gillingham approach to reading is lacking in empirical evidence (Kraus, 2017). Despite two meta-analysis studies and What Works Clearinghouse reports examining the effects of OG reading interventions for students with or at risk for word-level reading, research is insufficient in the number and qualities of the studies (Stevens et al., 2021). While the International Dyslexia Association (IDA) does not endorse a specific reading program, it does support systematic, explicit, phonics-based reading instruction; however, a response to IDA’s stance on effective reading instruction was formally issued by the International Literacy Association (ILA) stating that while phonics instruction is an important component of literacy instruction, there is no evidence phonics instruction is
better than or as effective as other approaches to literacy instruction (International Dyslexia Association, 2020, International Literacy Association, 2016). Future comparative case studies can be performed to compare reading achievement in students with reading difficulties randomly assigned to an OG based reading intervention and students with reading difficulties who receive nonstructured literacy interventions.

Secondly, in addition to a lack of research on OG reading instruction, little research exists in Brainspring’s *Phonics First*; therefore, more research is warranted on the effectiveness of this reading program. Additionally, it will prove beneficial to research reading achievement by comparing classes that are implementing *Phonics First* as a whole group with classes not implementing this program as part of their reading instruction. This research can also help support the action plan by examining the efficacy of whole group implementation and helping to determine curriculum decisions.

Finally, further research could be completed on teachers’ experiences implementing *Phonics First*, focusing on what successes and/or concerns they encountered, as well as teacher self-efficacy during the implementation of *Phonics First*.

**Summary**

Reading is not instinctive, yet it is necessary to navigate through life successfully. Many students in my district do not come from literacy and language rich homes where education is a priority, and these students increasingly manifest reading difficulties from as early as the first few weeks of kindergarten. To improve reading achievement and attitudes of reading in first and second grade students with reading difficulties, Brainspring’s *Phonics First* multisensory reading program was implemented.
Quantitative data were collected from MAP Growth Reading RIT pretest and posttest scores and DIBELS pretest and posttest scores, and qualitative data were collected from Burke Reading Inventory responses and observations collected in field notes. Through analysis of the quantitative data, I was able to measure reading achievement, while the analysis of the qualitative data allowed me to probe deeper into students’ attitudes and perceptions about reading.

The findings of this data were summarized in this study with an action plan created for further action research. Limitations in this research study were discussed and recommendations for future research provided.

As I reflect upon my research, being able to conduct an action research study in my own classroom so I can improve my own practice and my students’ learning has been one of the most rewarding experiences. I am grateful that I was able to center my research around two of my passions, literacy and helping struggling students. I will continue to bring my action plan to fruition, ensuring the struggling readers at my school get the appropriate, most effective interventions to make them successful.
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APPENDIX A

BURKE READING INVENTORY

Name_________________________________ Age_________ Date________

Sex____________________ Interview Setting________________________

1. When you are reading and come to something you don’t know, what do you do?

2. Do you ever do anything else?

3. Who is a good reader you know?

4. What makes ________________ a good reader?

5. Do you think ________________ ever comes to something she/he doesn’t know?

6. If answered “Yes” – When ________________ comes to something he/she doesn’t know, what do you think he/she does?
   If answered “No” – Suppose ________________ comes to something he/she doesn’t know. What do you think he/she would do?

7. If you know someone is having trouble reading, how would you help that person?

8. What would a/your teacher do to help that person?

9. How did you learn to read?

10. What would you like to do better as a reader?

11. Do you think you are a good reader?

12. Why or Why not?
APPENDIX B

ASSENT FORM

Multisensory Phonics Instruction in Struggling Readers

I am a student at the University of South Carolina working on a research study about the use of multisensory teaching methods based upon Brainspring’s Phonics First program. I am interested in learning more about how you feel about reading and how the program Phonics First impacts your reading achievement. Your parent/guardian has already agreed for you to be a part of the study, but it is up to you if you would like to participate. If you want to be in the study, you will be asked to do the following:

- Complete the MAP Reading Growth Assessment at the beginning and the end of the study.
- Complete DIBELS reading assessments with me in the resource room. Each assessment will take approximately one minute.
- Answer some questions from me about what reading strategies you use when you read and how you feel about reading. This will be done in the resource room and will take approximately 15 to 20 minutes. This conversation will be recorded so I can be sure that I accurately obtain the answers you share with me.
- Participate in Phonics First multisensory reading lessons. These lessons will involve using different types of materials and different ways to learn new skills in reading. By participating in each lesson you will be working with a small group of students from your grade level. Lessons will take place during your grade’s focus time and will last approximately 30-45 minutes daily in the resource classroom. You will not miss any related arts, recess, or lunch during these reading lessons. Lesson will be recorded so I can review the lessons at a later date.

Anything you share will be private and only I will know your answers to the questions I ask. You do not have to be in this study if you do not want to be, and if you decide to stop after we begin, that’s okay too. If you decide you want to be in this study, please sign your name.

I, _____________________________________________, want to be in this research study.
APPENDIX C

PARENTAL CONSENT FORM

Multisensory Phonics Instruction in Struggling Readers

I am a student at the University of South Carolina, and I am working on a study about the impact of multisensory phonics instruction in struggling readers. I am seeking your permission to have your child participate in this study. Please read the following information carefully before you decide whether or not to give your permission. Also note that if you do give your permission, your child will also have to agree to be part of the study.

KEY INFORMATION ABOUT THIS RESEARCH STUDY: This action research study intends to measure the impact of multisensory phonics instruction in struggling readers. Your child will participate as always in the resource class, but will also be asked to do the following:

PROCEDURES: If you give permission for your child to participate in this study, they will do the following:

- Complete the MAP Reading Growth Assessment at the beginning and the end of the second semester within their homeroom.
- Complete DIBELS reading assessments within the resource classroom, which will be given at the beginning and ending of the study, and throughout the study.
- Answer some questions from me about what reading strategies they use and how they feel about reading which will take approximately 15 to 20 minutes. This conversation will be recorded so I can be sure that I accurately capture what the student has shared.
- Participate in 30 to 45 minutes Phonics First reading lessons with a small group of same age peers. These lessons will be conducted during their focus time in the resource classroom. No core instruction will be missed, nor will your child be excluded from related arts, recess, or lunch. These lessons will be recorded so that I accurately take notes about the lesson after it is completed.

DURATION: The study will take place during the second semester of the 2021-2022 school year.
**RISKS/DISCOMFORTS:** The study poses minimal risks to you or your child. Aside from possible discomfort ordinarily encountered with surveys and/or assessments, there are no foreseeable discomforts or dangers to either you or your child in this study. Being in the study will not affect class work and will have no impact on your child’s grades.

**BENEFITS:** Taking part in this study will not directly benefit you or your child. The results of this study will increase my knowledge and provide important data about the impact multisensory phonics instruction has on reading achievement and reading attitudes.

**CONFIDENTIALITY OF RECORDS:** Information obtained about your child during this research study will remain confidential and released only with your written permission. Data collected will be stored securely and identifiable information will be removed from any documentation before publication. Results of this research study may be published; however, the data will be presented in group form and individual children will not be identified. Pseudonyms will be used for the school and any involved adults.

**VOLUNTARY PARTICIPATION:** Your child’s participation is voluntary. I ask that you discuss this letter with your child and inform your child that participation is voluntary. Your child is free not to participate, or to stop participating at any time, for any reason without negative consequences. In the event that you do withdraw from this study, the information you have already provided will be kept confidential.

I give my child to participate in this study. I have been given a copy of this form for my own records. If you wish your child to participate, you should sign below.

I, ________________________________________________, permit my child to participate in a program of research named above being conducted by Mandy Dixon.