EXAMINING THE EFFECTIVENESS OF A MULTI-SENSORY INSTRUCTIONAL READING PROGRAM IN ONE RURAL MIDWESTERN SCHOOL DISTRICT

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Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY
May, 2010

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ACKNOWLEDGMENTS

I want to express my sincere gratitude to all of my family for their support, guidance, understanding, and encouragement during this entire process. Tatia, without you, I would have never been able to finish. I will always appreciate your sacrifices and unselfishness. To my committee: I want to thank all of you for your helpful pointers and direction. Your generous comments provided a solid foundation for my research, transforming it to a well-built structure. This research would not have been possible without the faculty in the College of Education of Oklahoma State University both past and present. I have personally witnessed your tireless efforts to reinforce the need for passionate educators. To my fellow classmates: Thank you for all the great times in class. I will miss our spirited discussions. Don't give up, just focus.

I would like to thank Dr. Mwarumba Mwavita for his dependable and trustworthy input throughout this study. Your explanations of data analysis have been invaluable. Without your contributions and mentorship, this study would not have been possible.

Finally, I would like to thank Dr. Jo Myers. I didn't have a clue what you were talking about when you told me about this great idea for a research study three years ago. This study was defined by those initial discussions. You were always there to listen and revitalize my spirits when nobody else truly understood.

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CHAPTER I

INTRODUCTION TO THE STUDY

Reading is a complicated skill. Learning to read is a complex process that involves the combination of many competencies and abilities. According to Tan and Nicholson (1997) “reading is a multi-component skill whereby the reader has to use a number of different cognitive processes involving word recognition, access of word meanings, parsing of sentences, semantic analysis of sentences and interpretation of overall text” (p. 276). Weaver (2002) describes that “reading means constructing meaning and using everything you know in order to do it” (p.3). The consequences for being unable to read and poor reading skills are significant for both students and adults. Ivey and Broaddus (2000) report that without the vital skill of the ability to read, students may be retained. They are additionally at risk for continued failure and the potential of eventually dropping out of school notably increases (Ivey & Broaddus, 2000). Denti and Guerin (1999) said that of the students who drop out of school, the most common shared characteristics are weak reading skills and grade-level retention. Furthermore, students who have failed to earn a high school diploma have an unemployment rate two times higher than graduates and their earning power decreases 42% (Shinn, 2001). Dropouts are more likely to become dependent on government programs, experience health problems and incur a higher number of confrontations with law enforcement (Martin, Tobin, & Sugai, 2002). Today, school systems and teachers are increasingly targeted as being

responsible for societal problems entwined with lack of or poor reading skills. Schools are faced with increasing pressures from powerful business and government forces mainly outside of education (Weaver, 2002) to verify that they are teaching students to read. Additionally, there are many differences in assumptions, practices, and research methods of how to teach reading.

The debate over methods and techniques of reading instruction led to the formation of the National Reading Panel (2000). After conducting what the panel deemed a thorough meta-analysis of 38 experimental and quasi-experimental studies, the National Reading Panel released its findings and identified five essential elements of reading: phonemic awareness, phonics, fluency, vocabulary, and comprehension. The panel's conclusions have been controversial. Camilli and Wolfe (2004) identified that the panel's meta-analysis was designed to ignore the effects of literacy activities and focus only on the extraction of quantitative information from previous reading studies. Furthermore, the panel included only one member with K-12 teaching experience suggesting that there was a lack of expertise (Camilli & Wolfe, 2004). The NRP's report has been the main weapon in the attack on other approaches to literacy development (Weaver, 2002). Nonetheless, the recommendations of the NRP have been pivotal in providing direction for government forces that are now mandating legislatively, that school systems must use research based reading instruction based on the results of the NRP report. Furthermore, the NRP report was the foundation for NCLB (Strauss, 2002).

The No Child Left Behind Act (NCLB) was created in 2001 with the goal to improve students' literacy skills, emphasizing the use of reading methods that incorporate scientifically based research. The enactment of NCLB shifted reading policy from being

emphasized as a local concern to the national political arena. The NCLB legislation, which was based on perceived trends, put pressure on state departments to raise standards. NCLB requires the testing of students in reading in grades three through eight and at one additional time in high school. The results of these tests are to be made known to the public in the form of yearly school report cards (USDOE, 2003). To ensure educational improvement is occurring, NCLB requires all states, school divisions and schools meet annual Adequate Yearly Progress (AYP). Adequate yearly progress in Oklahoma requires school districts to meet specific targeted test score achievement or face possible Oklahoma State Department of Education sanctions. Each year AYP testing achievement requirements increase. NCLB requires that students in all schools and school districts are to achieve what seems an inconceivable 100% proficiency in reading by 2014 (USDOE, 2003). Borkowski and Sneed (2006) state that NCLB has placed student testing mandates on school systems without increasing federal funding for education in any significant matter. When additional funding has been made available, additional intensified governmental control and regulations are attached. One such funding increase from NCLB came from the passage of the Reading First Initiative which provided federal funding for school systems in the form of grants that integrate research based reading programs into their curriculum. Reading First has created controversy with many reading professionals because of the link between approved reading programs and mandated government guidelines (Strauss, 2002). Furthermore, under the authorization of NCLB, funding is directly tied to implementation of scientifically based literacy instruction. Programs that cannot meet this requirement are not funded (USDOE, 2003).

The NCLB requirements cause significant problems for rural school systems (Jimmerson, 2005) primarily because of lower socio-economic populations and imbalances in school funding. In many rural schools the student body contains a large number of low-income students. Students who come from poor socio-economic backgrounds often have weaker literacy skills because of the lack of financial resources available to them, (Nicholson, 2003) and may be less successful in literacy learning (Snow, Burns, & Griffith, 1998). This deficiency affects the literacy experience relationship between parent and child often reducing the role of family literacy. Home literacy is strongly associated with children's memories of parental work. Thus, a lack of literacy keeps a consistent cycle of poverty (Brandt, 2001). Heath (1983) suggests that schools rather than families should change to accommodate low-income students and families' literacy use, and not strictly target middle class literacy. However, having a low socio-economic status does not mean that low-income families do not value education. Taylor and Dorsey-Gaines (1988) described studies of low-income families whose children were successful in school. The families made incredible sacrifices to support their children's education. Rural school districts often have a wide range of economic variation from low to high-income families. Yet, rural school districts are frequently associated and labeled as simply poor or underachieving based on the number of low-income students. Additionally, school funding formulas may continue to create an economic disparity. Rural school districts often times have a much lower revenue base of property and local taxes when compared to larger suburban schools, resulting in reduced funding levels, insufficient supplies and fewer teachers. However, rural districts must

show equal levels of continuous improvement according to NCLB (Jimmerson, 2005) as schools with greater financial resources.

School districts and teachers are faced with a daunting task. Under increased governmental pressure, they must help solve society's literacy failures while at the same time being blamed for teaching inadequacies. Legislation has directed which specific reading programs they may select and mandated a non-attainable complete 100% student achievement rate by a specific date or face potential political and financial sanctions. Finally, even with government acknowledgement of lower socio-economic status in rural schools, school districts are instructed to execute these directives with little increased funding.

Statement of the Problem

An administrative review conducted in a rural Midwestern school district of the third-grade student reading achievement scores revealed lower achievement results for district students when compared to the State of Oklahoma Department of Education's average student achievement scores in two categories: phonemic awareness and reading fluency. This researcher was a member of the administrative team. School district leaders understood the potential negative affects poor reading skills would have on the students. Children who experience a low rate of reading achievement fall further behind their classmates by fourth grade (Case, Speece, & Molley, 2003). Furthermore, the school district was not using a structured phonics instructional program school wide and early childhood teachers had varied experience teaching phonics. School district leadership was concerned with student failure to meet state standards, which could result in a reduction of funding or punitive sanctions under the mandated guidelines of NCLB from

the Oklahoma State Department of Education. The school district chose to address these concerns by implementing an Orton-Gillingham based multi-sensory supplemental phonics instructional reading program in grades kindergarten through third grade. The Institute for Multi-Sensory Education's (IMSE) Orton-Gillingham based supplemental reading program was offered to the school district for a reduced cost and was selected by administrators after attending a free professional development exercise demonstrating the multi-sensory techniques used during instruction. The IMSE supplemental reading program is relatively unproven and no other school systems in Oklahoma were currently using the program. Furthermore, the current IMSE program was developed in 2002 and has very little research suggesting the validity of its content or success in other school districts nationwide.

The school district additionally identified the need to consistently use a reading assessment tool to bridge the gap between early reading assessment and the Oklahoma State Department of Education's third grade reading achievement tests. Reading assessments are required for school systems in Oklahoma with the Oklahoma State Department of Education mandating that school systems use one of three Oklahoma State Department of Education approved reading assessment tools. Schools are directed to use either the Basic Early Assessment of Reading (BEAR), Literacy First, in Oklahoma, or the Dynamic Indicators of Basic Literacy Skills (DIBELS) (OSDE, 2007). Monetary funding for the three assessments was provided through grant application by the Oklahoma Department of Education (OSDE, 2007). Both schools researched in this study use the Dynamic Indicators of Basic Literacy Skills (DIBELS) as their reading assessment.

Purpose of the Study

The purpose of the study was to examine the effectiveness of an (IMSE) Orton-Gillingham based multi-sensory supplemental phonics instructional reading program when incorporated with classroom reading instruction beginning in kindergarten through first grade in one rural Midwestern school district. The IMSE supplemental phonics reading program is designed to be integrated into existing reading curricula to provide a multi-sensory, phonetic, and organized instructional tool. The IMSE supplemental phonics reading program provides direct instruction in phonemic awareness and application of phonetic rules for 30 minutes of a 90 minute reading instructional block each day. The remaining 60 minutes of the reading instructional block includes systematic instruction using the Scott Foresman *Reading Street* basal reading curriculum. Since the IMSE reading program instruction and teaching materials combine auditory, visual, and kinesthetic learning styles, it is called multi-sensory. Each instructional lesson is designed to use two or more modalities (Lyon & Liuzzo, 2003). The purpose of this study is not to examine individual components of the IMSE supplemental phonics reading program, but rather to evaluate the program's effectiveness in a rural school system using the DIBELS assessment scores.

The effectiveness of the program was measured in this case using the DIBELS assessments as the research instrument in four categories: letter naming fluency (LNF), phoneme segmentation fluency (PSF), Nonsense word fluency (NWF), and Oral reading fluency (ORF). The DIBELS assessments were used in the (Experimental Group) school district to measure students' progress in kindergarten through first grade from the beginning of the year to the end of the year over a continuous two year time period from

the fall of 2007 to the spring of 2009. Additionally, the DIBELS assessment scores were used to compare the end of year assessment results from first grade students receiving the IMSE Orton-Gillingham based multi-sensory supplemental phonics instructional reading program (Experimental Group) to first grade students in a different, but demographically similar, rural Midwestern school district (Control Group) receiving 30 minutes of a 90 minute reading instructional block of systematic phonics using the Macmillan-McGraw Hill *Treasures* reading program. The IMSE, Scott Foresman *Reading Street,* and the Macmillan-McGraw Hill *Treasures* programs are aligned with the U. S. Department of Education and National Institute for Literacy's (2001) guide, *Reading: Know What Works,* which is based directly on the reports of the National Reading Panel (2000) and the National Research Council (Snow, Burns, & Griffin, 1998).

School districts are consistently judged for effective instruction by quantitative measures (Hess & Petrilli, 2006). This judgment forces school leadership to react to the political forces targeting test scores. Reading achievement, or lack there of, is at the forefront of the national educational debate (Pinnell, Pilulski, Wixson, Campbell, Gough, & Beatty, 1995). School districts are faced with providing beneficial reading instruction which is publicly evaluated by student achievement scores. However, in Oklahoma a gap exists between the required private reading assessments in kindergarten through 2nd grade and the public mandatory state wide reading achievement testing required by the Oklahoma State Department of Education that begins in third grade. By focusing and understanding student reading successes or failures earlier through reading assessments, school districts will have more information to make analytical decisions regarding instructional techniques.

Research Questions

Do students who are taught using the (IMSE) supplemental phonics instructional reading program improve in reading performance from the beginning of the year to the end of the year as measured by (DIBELS) assessments?

Do students who are taught phonics using the (IMSE) supplemental phonics instructional reading program (Experimental Group) score higher on the DIBELS assessment than students taught using only a basal reading program (Control Group)?

Hypothesis

H1: Students who are instructed with the (IMSE) supplemental phonics instructional reading program reading performance will improve from the beginning of the year to the end of the year as measured by DIBELS assessments.

H2: Students who are instructed phonics with the (IMSE) supplemental phonics instructional reading program will score higher on the (DIBELS) assessment than those taught by the traditional method (control group).

Significance of the Study

The IMSE supplemental phonics instructional reading program has been implemented since 2007 in the school district under study. Though perceived to be effective by parents and teachers, there is no statistical evidence available to define the program's effectiveness. Furthermore, it is unclear whether students receiving this instruction have made significant progress toward acquiring the reading skills. The fundamental objective of the school district is to teach students reading skills. This study is one method of research to determine the effectiveness of the IMSE supplemental phonics instructional reading program.

Since the IMSE supplemental phonics program is relatively new in comparison to other reading programs, there is little research about this program available. This researcher found only one other published research study regarding its methods. The study was conducted within a high-needs urban school district and provided strong evidence that students who received the systematic IMSE-based phonics instruction performed better on tests of phonological awareness and decoding than students who did not receive the instruction (Scheffel, Shaw, & Shaw, 2008). Further research needs to be conducted, and the present study, centered in a rural school district, provides a different or an additional perspective.

The IMSE Orton-Gillingham multi-sensory supplemental phonics program is based on the Orton-Gillingham approach developed by neurologist Dr. Samuel T. Orton and educator Anna Gillingham at the New York Neurological Institute in 1925 (Henry, 1998). Dr. Orton believed individuals with reading disabilities should be taught fundamental phonics skills through drill and repetition with alphabet letters displayed visually and written by the student until competent association was achieved. Furthermore, if a reading intervention occurred early enough in a student's learning career, Orton concluded he or she might overcome his or her reading difficulties (Henry, 1998). The instructional techniques Orton-Gillingham developed were specifically targeted for students with reading disabilities (Henry, 1998). There has been significant research completed regarding the use of synthetic and multi-sensory phonics instruction for students who struggle with reading (Foorman et al., 1997; Joshi et al., 2002; Sadoski et al., 2006: Shaw et al., 2008; Torgensen et al., 2001). However, little research is available for using multi-sensory reading instructional techniques in the typical

elementary school classroom. A significant element of this study is to research the implications of applying the IMSE multi-sensory instructional methods, which are based on Orton-Gillingham's teaching techniques for students with reading disabilities, to all students in a regular classroom setting.

Limitations

The statistical data was collected using DIBELS assessments conducted by teachers in their classrooms. This method may allow for a certain unknown variance in student assessment results such as teacher miscalculations or misinterpretations of individual student reading abilities. Additionally, teaching methods differ among faculty members. The validity of this study is limited to the validity of the DIBELS assessments and other psychometric properties (e.g., reliability) of the instruments used and the accuracy of the teachers using those instruments. Another limitation is the potential research bias of the researcher. As an administrator in the district where the majority of research takes place, I must consistently scrutinize my role as the researcher. I witnessed but did not supervise the implementation of the multi-sensory reading program and the DIBELS assessment in the elementary school. This is an important point. The elementary principal directed the implementation of both programs and the appropriate teacher professional development. Supervision of the principals was conducted by the Superintendent. The design of this study will potentially minimize researcher biases. In this case, the DIBELS assessment is the research instrument. The data I acquired did not contain any student information. All information I collected was coded before I received it and data only contained identifying sex and raw DIBELS assessment data. I did not have access to any identifying student or teacher information at either school district.

Definition of Terms

Dynamic Indicators of Basic Early Literacy Skills (DIBELS) is a formative diagnostic assessment and indicator of beginning literacy skill development used in Kindergarten through sixth grade classrooms (Good & Kaminski, 2002).

Fluency refers to the ease one has in reading individual words together. Fluent readers show expression and a degree of naturalness (Salinger, 2003)

Institute for Multi-Sensory Education (IMSE) Curricula is a supplemental phonics instructional reading program providing structured, multi-sensory phonetic instruction based on Orton-Gillingham principles.

Multi-sensory instruction is the process of teaching students using their ears, eyes, hands, and voices to synthesize and retain what has been taught (Henry, 1998).

Orton-Gillingham multi-sensory phonics is a phonetic instructional approach based on the rationale of teaching fundamental decoding and vocabulary skills to mastery using visual, auditory, and kinesthetic methods in order for achievement of successful reading comprehension (Joshi, Dahlegren, & Boulware-Gooden, 2002).

Phonemes are the smallest meaning-signaling units of sound in a language (Weaver, 2002).

Phonemic Awareness is the recognition that there are separated sounds in words and the ability to hear these sounds in the words (Weaver, 2002).

Phonics are letter-sound relationships, and the related skills used in analyzing words in to phonemes or larger units and blending them to form recognizable words (Weaver, 2002). It may additionally be referred to as the teaching of letter-sound relationships.

Reading requires both decoding and comprehension; it encompasses deciphering the alphabetic code to determine the words and thinking about what has been read to construct meaning (Harvey & Goudvis, 2000).

Synthetic Phonics Instruction is an approach where students are taught individual letter-sound relations and then are taught explicitly to blend these letters into words (Stahl, 2001).

Systematic Phonics Instruction is an instructional approach that introduces letter sound correspondences in a predetermined sequence (Camilli & Wolfe, 2004). Phonics instruction may be provided systematically or incidentally.

Summary

This chapter provided an introduction into the research study. The purpose of this study was to examine the effectiveness of an IMSE supplemental phonics instructional reading program in a rural Midwestern school district. Reading is an essential skill. Poor reading skills frequently lead to significant problems for students and adults. Rural school districts and teachers face significant challenges teaching students to read. They are confronted with an increasing pressure to deliver instruction that meets unattainable federal and state government student achievement mandates. The playing field is not equal in many categories when comparing rural schools to suburban schools. However, rural schools must maintain similar levels of student achievement score success as suburban schools with increased levels of low-income student populations and decreased financial resources or face governmental sanctions. The rural Midwestern school system used in this study selected IMSE Orton-Gillingham supplemental phonics reading program based on a review of state test scores indicating lower student achievement and

the reduced cost of the IMSE program due to its relatively unknown nature. As a part of the rural Midwestern school system's administrative team, this researcher sought to determine the effectiveness of the IMSE program by using the DIBELS assessment. Chapter two will include a review of the literature. Specific sections of chapter two will target the importance of reading achievement, essential components of reading instruction, synthetic phonics research, Orton-Gillingham and the multi-sensory approach, and literacy assessments. Chapter three will include the study's methodology, research design, participants, instrument, and procedure. Chapter four will be the analysis and evaluation. Chapter five will include the study summary, conclusions, and discussion.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This chapter provides a review of literature that focuses on the important points relevant to the study and supports the purpose of the study. Each component of this chapter serves as an applicable element and relate to the scope of the study. Educators are increasingly blamed for student reading failure. This is why it is essential to understand the importance of reading achievement. Furthermore, student reading achievement is now a national educational issue and educators face escalating scrutiny, demanding student reading achievement under the auspices of NCLB. But, how should educators teach students to read? The review included examining the essential components of reading instruction focusing on the debate over methods and techniques of reading instruction. This debate led to the formation of the National Reading Panel (2000). The National Reading Panel's recommendations for reading instruction were all included in NCLB. These segments were all included in the review because they are pertinent to the study having a pressurized impact, specifically on rural school systems. Rural school systems must select research based reading programs with little or no knowledge of the programs, only mandated directives from state departments' of education and the federal government.

A review of systematic and synthetic phonics instruction was conducted to gain

insight and understanding related to all of the phonics instructional programs that were used in this study including: the IMSE Orton-Gillingham supplemental phonics reading program, Scott Foresman *Reading Street*, and the Macmillan-McGraw Hill *Treasures* programs. All three programs advocate a systematic approach to teaching phonics. Furthermore, the extensive search of literature revealed an absence of studies on the IMSE Orton-Gillingham program. However, Scheffel, Shaw, and Shaw (2008) conducted a recent study evaluating the IMSE Orton-Gillingham program and throughout the study, student progress was measured using the Dynamic Indicators of Basic Early Literacy (DIBELS) reading assessment (Good & Kaminski, 2003).

Literacy assessments were the final element of the literature review. These have become increasingly significant for schools due to the impact of high stakes testing. Specific literature targeting the DIBELS assessment was examined. For this study, the DIBELS assessments were the critical component to determine if the IMSE Orton-Gillingham reading program was effective. The inquiry revealed a large number of studies validating the DIBELS as an effective assessment instrument. However, studies suggest educators may use DIBELS to drive instructional practices rather than only as an assessment instrument.

The Importance of Reading Achievement

Reading is an essential skill and the ability, or lack of, directly impacts an individual's economic standing in society (Brandt, 2001). Reading levels for students in the United States have remained comparatively steady over the last 20 years (National Center for Educational Statistics, 1999). However, these levels are regarded as no longer acceptable for students to enter society and compete in the economic market of the 21st

century (Good, Kaminski, Simmons, & Kame'enui, 2001). Fletcher and Lyon (1998) report the National Institute of Child Health and Human Development (NICHD) noted the failure to acquire adequate reading skills was a public health concern because these individuals may develop poor health habits based on poor reading skills; this was supported by extensive research over the past 35 years focusing on reading skills of young students.

The majority of research conducted on reading targets elementary school instruction (Camilli, Vargas, & Yurecko, 2003). Research strongly supports teaching reading at this level, to the point of proficiency, to prevent student frustration, strengthen the desire for lifelong learning, and avoid the consequences of remediation difficulties such as grade retention and dropping out (Slavin, Madden, Dolan, Walsh, Ross, & Smith, 1994). Failure to learn to read during the elementary school years has long-term consequences for students; these consequences include lack of self-confidence, non-motivation to learn, frustration leading to troublesome behaviors and increased likelihood of committing delinquent acts (Musti-Rao & Cartledge, 2004).

Once students enter middle school, they are expected to be able to read materials or textbooks independently. In most school systems, direct reading instruction, specifically in phonemic awareness, phonics, fluency, comprehension, and building vocabulary, has occurred in the elementary grades and is unavailable at the middle school level (Lebzelter & Nowacek, 1999). Students should be reading for meaning by the end the elementary-school experience (grade five). However, some students do not, and many middle school teachers are reluctant or inadequately trained, to teach reading (Ivey & Broaddus, 2000).

The National Assessment of Education Progress (NAEP) reported that 66% of 8th and 12th graders read below grade level proficiency (Whitehurst, 2005). Denti and Guerin (1999) stated that of the students who drop out of school, the most common shared characteristics are weak reading skills and grade-level retention. Struggling students may simply choose to drop out rather than be confronted by educational failure and social-emotional problems at school. The repercussions from dropping out can be financially disastrous. Students who have failed to earn a high school diploma have an unemployment rate two times higher than graduates and their earning power decreases 42% (Shinn, 2001). Stollar (2002) reports that over 70% of inmates in prison in the United States are considered poor readers and inmates are unable to complete basic reading and writing tasks including writing letters to their family members.

Reading and academic achievement have been placed at the forefront of national educational issues. Hursh (2005) reported that political and corporate leaders promoted high-stakes testing, school choice, and accountability to encourage success by all students in the United States. Political and corporate leaders believed in the importance of increasing the global economy by reducing the inequality in education.

The No Child Left Behind Act (NCLB) was created in 2001 with the goal to improve students' literacy skills, emphasizing the use of reading methods based on scientific research. Former President George W. Bush announced in 2001 that all students would achieve the appropriate grade level reading skills by the end of their third grade year (USDOE, 2003).

One of the major provisions of NCLB is accountability. The law requires all states to have an accountability plan and use scientifically based research for educational

methods. The central focus of NCLB is increasing student academic performance and improving low-performing schools (Yell & Drasgow, 2005). According to NCLB, it is the individual states' responsibility to establish challenging content and assign achievement standards for the students. The content standards are based on learning expectations for each grade level. Academic achievement standards rate student proficiency as low, proficient, or advanced (Hess & Petrilli, 2006). NCLB requires the testing of students in reading in grades three through eight. The results of these tests are made known to the public in the form of yearly school report cards (USDOE, 2003). Under this process, policies and procedures are positioned to set rewards or sanctions to schools based on students' test scores. To ensure educational improvement is occurring, NCLB requires all states, school divisions, and schools meet annual Adequate Yearly Progress (AYP) benchmarks referred as to Annual Measurable Objectives. The AYP benchmarks target students meeting basic standards on the reading tests. The testing data must be disaggregated into specific subgroups to reveal how each group is progressing towards the benchmarks. By the school year 2013-2014, NCLB requires that students in all schools and school districts are to achieve 100% proficiency in reading. Hess and Petrilli (2006) stated this goal is unrealistic, unobtainable, and would be nearly impossible. However, the law exists and students, teachers, and school systems are judged according to current NCLB guidelines.

Essential Components of Reading Instruction

Learning to read is a complex process. Generally, children learn to speak and understand language in the first three years of life. Lyon (1999) reported reading development initially begins from birth and involves early language and literacy

experiences, which assist in developing phonemic awareness, oral vocabulary, and print awareness. Lyon (1999) found that when children were engaged with an adult reading to them or participating in rhyming activities, phonemic awareness was emerging. Children who did not have these language and literacy experiences suffered from deprivation of linguistic, vocabulary, and print awareness skills (Lyon, 1999).

There has been a continuing debate over the methods and techniques of reading instruction. Throughout American history, reading instruction has shifted between many pedagogical and philosophical theories. The controversy involves whether the teaching of sound-symbol correspondence should be in the form of explicit, systematic instruction or embedded within context (National Reading Panel, 2000). For the most part, local and regional educational professionals have governed literacy instruction. However, following the release of *A Nation at Risk* in 1983, politicians began to play an increased role in education including reading instruction. *A Nation at Risk* (1983) produced a fear among many Americans that declining education would pose a national security threat (Reutzel & Smith, 2004).

Foorman, Breier, and Fletcher (2003) said the debate over the best reading approach to use for children began with phonemic awareness and the basal *Mcguffey Readers* in the 1800s. The Mcguffey Readers consisted of a graded series of books that are now called a basal reading series. They were followed by the Look and Say Method of the early 1930s to 1960s and continued with the Language Experience Approach of the 1970s and the Whole Language Approach of the late 1980s and early 1990s.

During the 1990s, the Whole Language Approach was the primary leader in beginning reading instruction. Goodman (1986) identifies that whole language is firmly

supported by four humanistic-scientific pillars. The first is whole language has a strong theory of learning. Language learning is easy when it's whole, real, and relevant. Language learning is personal, social and empowering. According to Goodman (1986) "language learning is learning how to mean and make sense of the world in the context of how our parents, families, and cultures make sense of it" (p.276). Secondly, whole language is based on scientific knowledge and theories of language. Third, a view of teaching includes respect for and an understanding of teaching. Teachers are considered professionals who constantly draw on a scientific body of knowledge in carrying out their work. Finally, a language-center view of the curriculum is essential. Integration is a key principal for language development and learning through learning (Goodman, 1986). Goodman (1989) argues that whole language is a philosophy, not a curriculum that needs to be patched with skills instruction.

Whole language advocates the teaching of phonics within the context of authentic and meaningful literary activities. Proponents of whole language believe children learn to read through literature immersion and reading frequency. Whole language programs promote using text-based strategies for reading instruction. Text-based strategies require the reader to use signals from syntax, semantics, pictures, phonics knowledge, and content from previously read passages to identify unfamiliar words. Whole language is considered a "top down" approach where the reader constructs a personal meaning for a text based on using their prior knowledge to interpret the meaning of what they are reading (Boothe & Walter, 1999). Problems associated with whole language include a lack of structure that has been traditionally supplied by the scope and sequence, lessons

and activities, and extensive graded literature found in basal readers. Whole language also puts a heavy burden on teachers to develop their own curriculum (Reyhner, 2008).

The reading debate continued throughout the 1990s, ultimately leading the convening of the National Reading Panel in 1997 at the request of the Congress of the United States of America. Researchers and theorists within the field of reading conducted a meta-analysis of scientific reading studies to determine the effectiveness of various approaches to reading. The panel representatives included five essential elements of reading instruction in their report: phonemic awareness, phonics, fluency, vocabulary, and comprehension (National Reading Panel, 2000).

The National Reading Panel's Report

The first element the National Reading Panel (2000) examined was phonemic awareness. Phonemic awareness is the knowledge and use of the smallest units of spoken language also called phonemes. Phonemic awareness is an oral skill and should not be confused with phonics which is the understanding the letter-sound relationships in printed words. Phonemic awareness promotes learning to read and vice versa that learning to read promotes phonemic awareness. Thus, learning to read and phonemic awareness are reciprocal; each facilitates the other (Weaver, 2002). Results from the meta-analysis concluded the teaching of phonemic awareness is effective in improving manipulation of phonemes and aids students in reading known, new, and nonsense words. Additionally, two significant approaches to teaching phonemic awareness developed from the panel inquiry. The teaching of sound segmentation and blending and the manipulation of phonemes were regarded as beneficial in terms of reading achievement (National Reading Panel, 2000). According to Moats (2000) Phoneme awareness instruction, when

linked to systematic decoding and spelling instruction, is a key to preventing reading failure in children who come to school without these prerequisite skills (p. 14).

The second element included in the National Reading Panel's (2000) report was phonics instruction. Phonics is knowledge of the correlation between sounds and letters or sound-symbol relationships. Phonics assists readers in decoding unfamiliar words. Phonics instruction is an important element of a comprehensive reading program because the knowledge of the alphabetic code assists in being able to read written words (National Reading Panel, 2000).

Systematic phonics instruction is an instructional approach that introduces letter sound correspondences in a predetermined sequence (Camilli & Wolfe, 2004). The results from the meta-analysis support the notion that systematic phonics instruction contributes more significantly to beginning reading growth than non-systematic or no phonetic instruction. Furthermore, it was concluded by the panel that systematic phonics instruction aids in assisting students to apply their knowledge of the alphabetic code, and as a result, they recommended schools and teachers implement phonics instruction (National Reading Panel, 2000). The National Reading Panel (2000) determined that systematic phonics instruction in kindergarten and first grade produced favorable results. However, the panel noted that instruction in systematic phonics is only one part of a comprehensive reading program. Because the focus of systematic phonics instruction is improvement of students' skills in word attack and word identification leading to improved comprehension, phonics instruction must be integrated with phonemic awareness, fluency, vocabulary, spelling, writing, and strategic comprehension (National Reading Panel, 2000). However, the NRP's support for a "balanced approach" in its full

report was not included in both the official published report summary and in the funding by the U.S. Department of Education of NCLB Reading First grants to school districts (Garan, 2002). The National Reading Panel (2000) recommended five phonics instruction methods: analogy phonics, analytic phonics, synthetic phonics, phonics through spelling, and incidental or implicit instruction.

Fluency, or the ability to read text quickly and accurately, was the third component of reading instruction targeted by the National Reading Panel (2000). According to Hudson, Lane, and Pullen (2005) fluency is comprised of three elements: accurate reading of the connected text at a conversational rate with expression, maintaining accuracy and expression over long periods of time, and reading effortlessly without distraction. Vocabulary and comprehension were the final two essential components of reading instruction (National Reading Panel, 2000). All five of the components phonemic awareness, phonics, fluency, vocabulary, and comprehension are included in NCLB (USDOE, 2003).

Although the National Reading Panel conducted a large-scale analysis, not all researchers agreed with its recommendations and results. Yatvin (2000), a member of the National Reading Panel, suggested the panel provided valuable insights. However, she charged that the panel's members had produced an unbalanced final report that did not fully assess or explore many topics related to reading instruction. Some of the topics Yatvin identified as being overlooked included the effectiveness of direct instruction, decodable texts, integrated reading and writing, quality literature, and scripted instruction. Camilli, Vargas, and Yurecko (2003) concluded that the findings of the National Reading Panel were not inclusive enough for the conclusions drawn related to

phonics instruction. Further, the National Reading Panel did not challenge the accuracy of measurement and analytic procedures of the 38 studies they selected for the meta-analysis (Camilli, Vargas, & Yurecko, 2003).

Camilli, Vargas, and Yurecko (2003) identified three prominent criticisms of the NRP's meta-analysis regarding the methodology, procedures, evidence and conclusions, with which research activities were conducted. The first criticism was that a narrow population of children was represented in the 38 studies that comprised the meta-analysis (Garan, 2002). The second criticism was that the term "reading" was used inconsistently. The third criticism was that the overall process to conduct the meta-analysis was flawed because the study on phonics instruction was completed in a very short time (Camilli, Vargas, & Yurecko, 2003). Pressley, Duke, and Boling (2004) called for expansion of research in reading and the use of a broader range of methods. They questioned the findings of the National Reading Panel, suggesting that the federal government, through the National Reading Panel, incorporated a definition of scientifically based research which was purposely narrowed. However, even with the identification that the National Reading Panel's conclusions were flawed, it was regarded as the initial starting point for the NCLB legislation and led to the mandates that school systems must now meet.

Systematic and Explicit Phonics

A systematic and explicit phonics program contains instruction that is sequenced and direct. Teaching of letters and sounds is organized in a format that teaches the relationship that letters and sounds have with one another to form words. Systematic phonics instruction produces the greatest impact on children's reading achievement when it begins in kindergarten and first grade (Armbruster, Lehr, & Osborn, 2001). Shanahan

(2005) suggests systematic phonics instruction gives children a faster start in learning than responsive instruction or no phonics instruction. Frequently, systematic and explicit phonics instruction is included in packaged basal reading programs that have become widely used in public school systems.

The origins of basal reading programs are historic. During the 1950s, the *Dick and Jane* readers published by Scott Foresman used a "whole word" approach to teaching reading where words were repeated on each page enough times that, according to behaviorist research, students could remember them (Reyhner, 2008). Behaviorist learning theory focuses on extrinsic rewards like money, grades, and gold stars rather than intrinsic rewards like feeling good about successfully accomplishing a difficult task (Reyhner, 2008). Reyhner (2008) suggests behaviorism as applied to reading instruction is teacher-centered and includes a phonics, sound, and skills emphasis. Smith (1988) suggests the “whole word” perspective is based on the premise that readers do not stop to identify individual letters or groups of letters in the identification of a word. Today, many basal reading programs use a balanced approach to reading instruction.

Basal reading programs are very popular in elementary schools throughout the United States. The vast majority of school systems use basal programs from large commercial publishers to help deliver instruction to beginning level readers (Hiebert & Martin, 2001; Shannon & Crawford, 1997). Basal reading programs are used in more than 95% of all school districts and account for nearly two-thirds of reading expenditures (Chall & Squire, 1986). Current basal reading programs like the Scott Foresman *Reading Street* (2009) program often include a scripted, systematic phonics program within the curriculum. Teachers are given specific instructions including lesson formats, lengths,

and complete scripts of instructional material targeting 90 minutes of reading instruction five days per week. These lessons typically include 30 minutes of systematic and explicit phonics instruction. For many educators, scripted phonics programs may be a hindrance to their teaching style and effectiveness. Yet, for new or less experienced teachers, scripted programs may be beneficial (Shanahan, 2005). Not all basal reading programs include scripted and systematic phonics. However, public school educators are often only offered these type of basal programs because they are on an approved purchasing list that includes "research based" curriculum. Large publishers often have identified that their materials should meet these requirements thus resulting in larger quantities of sales but with fewer offerings to school systems.

The two basal reading programs in this study, Scott Foresman *Reading Street* (2009) and Macmillan-Mcgraw Hill *Treasures* program (2009, use systematic and explicit phonics instruction in a scripted format. The Scott Foresman *Reading Street* (2009) program directs teachers through the teacher's planning guide (2009) to follow explicit, systematic instruction for all teaching methods, including systematic phonics. The Scott Foresman teachers planning guide (2009) suggests that "phonics instruction helps children understand the systematic relationships between letters and sounds. Becoming familiar with letter-sound relationships helps children become successful readers and writers. In Scott Foresman *Reading Street* you will find explicit teaching of letter-sounds in a carefully developed sequence". (p. 8)

The Macmillan Mcgraw-Hill *Treasures* program (2009) advocates that effective phonics instruction should be systematic, meaning it should include a well-planned, sequential phonics curriculum that supports daily teaching. Dr. Timothy Shanahan, a co-

author of the *Treasures* program (2009), suggests that phonics instruction should have clearly specified learning goals and sufficient numbers of lessons to ensure those goals can be accomplished successfully. Instruction needs to be systematic and well coordinated throughout the lesson plans, ensuring that children can hear the language sound within words prior to trying to match those sounds with letters (Shanahan, 2009). The Scott Foresman and Macmillan Mcgraw-Hill reading programs are currently aligned with each of the National Reading Panels' five recommended components of reading instruction.

Synthetic Phonics

Synthetic phonics is an instruction method that incorporates the teaching of the basic components of language in a sequence beginning with the letters and sounds progressing chronologically to blend the sounds in syllables and words. Synthetic phonics involves the synthesis of phonemes into whole spoken words (Brooks, 1999). It involves the systematic presentation and teaching of specific sets of letter groups prior to an introduction of books or whole words. The groups of letters and their corresponding sounds are specifically selected because they form a large number of three-letter regular words (Brooks, 1999). Synthetic phonics programs are guided by the philosophical position that children respond favorably to systematic instruction in the acquisition of phonemic awareness and alphabetic coding (Brooks, 1999). Synthetic phonics instruction frequently uses a multi-sensory instructional approach and can be taught in a systematic method. However, this is not to be confused with systematic phonics.

Torgensen, Alexander, Wagner, Rashotte, Voeller, & Conway's (2001) study was a comparison of a multi-sensory systematic phonemic decoding intervention, a

synthetic approach, to an embedded phonics instruction method. The multi-sensory approach used colored blocks or pictures of mouth placements of sounds emphasizing the auditory, kinesthetic, and visual modalities. Students learned how to sequentially process sounds auditorally in syllables. Instruction focused on students learning sounds, letters, syllables and spelling patterns (Torgensen et al., 2001). The embedded phonics instruction method began with an assessment of the students' knowledge of letters, sounds, sight words, and the ability to blend sounds into words. Students learned phonemic awareness through direct instruction in phonics. Phonics was integrated into written expression and spelling. As students were engaged in reading literature, they were applying strategic word identification skills. Students, who were between the ages of eight and ten years old, received the same amount of intervention time in both instruction methods (Torgensen et al., 2001). The study revealed the majority of the time (85%) spent using the multi-sensory phonics instruction method was in students acquiring phonics word attack skills with individual words. This percentage contrasted with students in the embedded phonics approach who spent only 20% of their time engaged in instruction focusing on phonics. Additionally, students using the multi-sensory approach spent only 5% of their time applying word level skills to reading and comprehension compared to the students receiving embedded phonics instruction who spent 50% of their time on these same skills (Torgensen et al., 2001).

Orton-Gillingham and the Multi-Sensory Approach

Another synthetic phonics approach, the Orton-Gillingham multi-sensory approach, is based on the rationale of teaching fundamental decoding and vocabulary skills to mastery in order for successful reading comprehension to emerge (Joshi et al.,

2002). The Orton-Gillingham approach was developed by neurologist Dr. Samuel T. Orton and educator Anna Gillingham at the New York Neurological Institute in 1925 (Henry, 1998). Orton believed individuals with reading disabilities should be taught fundamental phonics skills through drill and repetition with alphabet letters displayed visually and written by the student until competent association was achieved. Furthermore, if a reading intervention occurred early enough in students' learning careers, Orton concluded that students might be able to overcome their reading difficulties (Henry, 1998).

Henry (1998) described the two principles which guide the Orton-Gillingham approach:

1. Teachers need to assist students in association of visual, auditory, and kinesthetic language simultaneously. When reading letters, children should trace the letter as they see it and pronounce the name of the letter and sound. Children blend letters and read words, sentences, and controlled vocabulary stories. Spelling is included and students learn letter-sound mastery by repetition and practice.
2. Teachers should focus instruction on a student's specific weaknesses. Instruction should be targeted to create the process of connecting smaller parts of the words into larger and more complex wholes.

Joshi, Dahlegren, & Boulware-Goodens' (2002) study focused on the Orton-Gillingham multi-sensory phonics approach. The Orton-Gillingham multi-sensory approach incorporated direct sequential instruction applying reading and language elements including alphabet knowledge, oral language, phonemic awareness, reading,

spelling, comprehension, and vocabulary. The experimental group consisted of first-grade students who were taught using this method, which included auditory, visual, and kinesthetic modalities, to trace, say, and write the sounds of consonants, vowels, and words. The control group of students received instruction using the Houghton Mifflin Basal Reading program (Joshi et al., 2002). Teachers were provided an additional 42 hours of training in the Orton-Gillingham approach. Joshi et al. (2002) reported the experimental group out-performed the control group in all of the following areas: phonological awareness, decoding, and comprehension.

Lyon and Liuzzo (2003) developed an Orton-Gillingham based reading program founded on the fundamental principles of Orton-Gillingham's combination of visual, auditory, and kinesthetic multi-sensory instructional techniques. They incorporated Orton-Gillingham's original methods teaching dyslexic students how to read into a comprehensive reading program for all students. The reading program known as the Institute for Multi-Sensory Education (IMSE) uses a balanced approach to literacy instruction. The IMSE reading program provides a method of organized, direct instruction in phonemic awareness and application of phonetic rules and word attack strategies (Lyon & Liuzzo, 2003). The IMSE program focuses on directly teaching the fundamental structure of language, starting with simple sound-symbol relationships and progressing to phonetic rules and word-attack strategies using multi-sensory methods (Scheffel et al., 2008). There are five components of the IMSE reading program beginning with the three-part drill. The three-part drill uses three components to utilize multi-sensory learning pathways: visual, auditory, and kinesthetic (Lyon, & Liuzzo 2003). The three-part drill begins with instruction of phonemes visually, followed by

auditory/tactile instruction utilizing methods of hearing and touch. The final part of the three-part drill occurs with instruction delivered by the teacher from a flip chart/blending board. Students verbalize the blending of constant and vowels together with the teacher. The drill is a review of all phonetic concepts known or taught including practicing phonetically regular words using all learning pathways. The second part of the lesson involves teaching a new phoneme rule using a multi-sensory instructional technique. An example of a kinesthetic method of instruction is the use finger tapping as a tool to help students focus on the sound/symbol relationship. Students are encouraged to tap out (with their non-writing hand) each phoneme or group of phonemes (Lyon & Liuzzo, 2003). The third part of the program is vocabulary and syllable division. Vocabulary words are used from all components of the program. Syllable division is based upon phonetic elements that are learned. The fourth part of the program is dedicated to teaching and reviewing non-phonetic and high-frequency words. The final section of the program incorporates reciprocal reading strategies during oral reading. Reciprocal teaching is used to foster comprehension of orally read text by asking students to clarify, summarize, and predict from text (Scheffel, Shaw, & Shaw 2008).

A recent study by Scheffel, Shaw, and Shaw (2008) has provided additional research on the Orton-Gillingham based multi-sensory approach. The study evaluated the Institute for Multi-Sensory Education's (IMSE) supplementary Orton-Gillingham based phonics instructional reading program for students in the first-grade across three elementary schools within a single school district. Throughout the study, student progress was measured using the Dynamic Indicators of Basic Early Literacy (DIBELS) reading assessment (Good & Kaminski, 2003). DIBELS was designed to assess the five major

skill areas in reading identified by the National Reading Panel (2000). The control group of students received traditional reading instruction for 90 minutes per day in a core reading program while experimental group students received 30 minutes of supplemental phonics reading instruction using the IMSE reading program during the 90 minute reading block (Scheffel et al., 2008). The results of Scheffel et al.'s (2008) study indicated significant gains in alphabetic principle and phonemic awareness skills for first-grade students in the experimental group. The use of the DIBELS reading assessment provided clear numerical value and acceptable student achievement using the DIBELS recommended student achievement benchmarks for student success (Scheffel et al., 2008). Although originally designed for learning disabled students, the Scheffel et al. (2008) study may provide evidence for using the Orton-Gillingham's instructional methods in a regular classroom.

Literacy Assessments

Early literacy assessment instruments have played a significant role in the prevention of future reading problems (Good, Kaminski, Simmons, & Kame'enui, 2001). Assessment instruments at the primary level should provide reliable data for acceptable educational decisions and accountability. School accountability is highlighted at both the state and national level. The goal of the No Child Left Behind Act (NCLB) was to improve children's literacy skills through the use of empirically validated and scientifically based reading methods (USDOE, 2003). Educators face rewards or sanctions determined by standards-based assessments and must make instructional decisions which are data-driven. Therefore, early literacy assessment instruments are critical.

Curriculum-based measurements (CBM) provide data which can inform and drive instruction (Deno, 2003). The formative assessments representing the instructional materials used by teachers in normal classrooms are short, concise, psychometrically sound, and use standardized procedures. Assessments of student progress are obtained for each student at designated times throughout the school year. Typically, CBMs are collected for students three times each academic year. The information gathered from the assessments provides guidance for instructional adaptation, a provision often missing from summative standardized testing. Curriculum-based measurement has been validated as an effective resource for writing data-based, instruction driven, measurable goals for individual students (Fuchs & Fuchs, 1998), and can be used to predict success on standardized high-stakes tests (Good, Simmons, & Kame'enui, 2001). Deno (2003) described the implementation of a CBM model in urban elementary school following a school district mandate for school improvement under increased pressure to raise academic standards. However, the CBM school-wide student progress monitoring system was designed to go beyond accountability and promote instructional improvement. The primary features of the CBM model used in the study included data clarity, efficiency, validity, and utility (Deno, 2003).

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) is a formative assessment used as a curriculum-based measurement (CBM). DIBELS was developed in the late 1980s as an assessment to monitor progress and evaluate the effectiveness of instruction (Kaminski & Good, 1998). The DIBELS measures are indicators of beginning literacy skill development used to assess kindergarten through 6th grade beginning literacy skills (Good & Kaminski, 2002). The essential reading skills measured and

assessed by DIBELS include phonemic awareness, alphabetic principle, fluency, and comprehension (Good & Kaminski, 2002). In the oral reading fluency measure, students are asked to read three unfamiliar passages for one minute. The number of words read correctly in one minute is regarded as the achievement score for the passage. Oral reading fluency has been demonstrated to be an accurate assessment of overall reading proficiency and comprehension (Good et al., 2001). DIBELS assessments are generally conducted three times a year in the classroom in a one-on-one setting during a teacher to student literacy conference. The assessments are leveled and increase in difficulty (Good et al., 2001). The DIBELS assessment identifies targeted areas of reading deficiencies for further instruction or interventions (Good et al., 2002). The DIBELS assessments was developed to provide schools with an assessment tool that is predictive, cost effective, time efficient, and provides both formative and summative evaluation of student progress (Kaminski, Cummings, Powell-Smith, & Good, 2008).

Research has been completed to examine the correlations between DIBELS and state high stakes testing results. Good et al., (2001) found DIBELS oral reading fluency is a reliable predictor of performance on Oregon's statewide achievement test. Barger (2003) researched the DIBELS oral reading fluency as a predictor of student performance on a high stakes test in North Carolina. He concluded that the oral reading fluency may be useful in predicting students' success on the high-stakes assessment with a rate of 100 correct words per minute as the minimum cut off point for accuracy; scores below 100 correct words per minute were less predictable of outcomes.

Contrasting research has been completed to examine the utility of the DIBELS in a more global sense. Kamii and Manning (2005) studied the correlation between

DIBELS' phonemic segmentation fluency (PSF) scores and the reading and writing skills of students in Alabama. They suggested that there was a problem with the Phonemic Segmentation Fluency subtest as a predictor of later reading which requires deriving meaning from print, not just decoding of nonsense words. School systems that use DIBELS assessment results when combined with high stakes state tests, in effect are using the DIBELS assessment as a measure of the quality of reading instruction programs (Kamii & Manning, 2005).

Additionally, DIBELS have been blamed for creating the literacy gap that it was designed to decrease (Tierney, 2006). The United States Department of Education's Reading First Initiative approves DIBELS as a researched based assessment. Assessment scores are scrutinized by school districts and states for confirmation that student progress is achieved. This scrutiny creates an emphasis on using DIBELS to drive instruction. Furthermore, the pressure placed on educators to increase scores coerces teachers to teach their students to master the DIBELS assessment subtests, giving the appearance of improved reading ability when it does not exist (Goodman, 2006; Tierney, 2006).

Further criticisms surround DIBELS emphasis on speed, not comprehension. The DIBELS timed measures are designed to be fast, one-minute measures. The focus of the assessment is on reading rate and speed, not on expression or meaning (Rasinski & Lenhart, 2008). Additionally, Goodman (2006) suggests the timed tests emphasize speed first and accuracy second. Researchers of DIBELS measures have concerns that these measures may incorrectly predict reading performance by overusing word fluency (Tierney, 2006). Being a highly visible approved assessment by the United States Department of Education and the Oklahoma State Department of Education provides

incentive for school districts to use DIBELS. Furthermore, the relative low cost of DIBELS allows school districts the option to choose DIBELS over a more costly diagnostic assessment which may provide greater details about academic deficiencies (Wilde, 2006).

Summary

There have been several research studies highlighting the individual and societal consequences of poor reading skills. Students with reading problems may lack self-confidence, become unmotivated, and have a higher likelihood of dropping out of school (Musti-rao & Cartledge, 2004). This literature review highlighted the tremendous pressures educators are under to reach the NCLB requirement of 100% student proficiency in reading by 2013-2014. NCLB forces school systems to improve student achievement while strongly suggesting the use of specific programs. Furthermore, under the cloak of NCLB, reading programs must be scientifically based and research proven. However, the definition of scientifically based research may be politically motivated. The debate over the methods and techniques of reading instruction specifically, "whole language versus phonics" led to the formation of the National Reading Panel, which subsequently guided the direction of NCLB. Remarkably, the National Reading Panels support for a "balanced approach" to reading was not included in the official summary report by the U. S. Department of Education. The National Reading Panel (2000) recommended five essential elements of reading instruction including phonemic awareness, phonics, fluency, vocabulary, and comprehension. Understandably, These elements, specifically phonics instruction, are now included in several basal reading programs. Basal reading programs are used by 95% of school systems.

The literature review revealed further research is needed regarding the use of a multi-sensory phonics programs in schools. The bulk of the research found during this review was conducted in urban settings. Additionally, the review indicated a lack of multi-sensory research targeting kindergarten through third grades. This researcher could not find any published studies that occurred in rural school districts further lending to the potential significance of this study. Scheffel, Shaw, & Shaw's (2008) study of the IMSE Orton-Gillingham reading program in an urban setting indicated significant gains for students receiving treatment. Furthermore, The study used the Dynamic Indicators of Basic Early Literacy (DIBELS) as the assessment instrument to determine the effectiveness of the program.

Finally, this review brought to light that literacy assessments have been useful in the prevention of future reading problems (Good et al., 2001) Additionally, they are an important tool to bond and connect the elements of a reading program together. There is a demand for literacy assessments in school systems. They must have an accurate method of measurement and data collection to meet the accountability requirements of NCLB. Literacy assessments are effective when used to indicate, inform and evaluate student progress. However, the review indicated some school systems may use these assessments exclusively to dictate curriculum decisions and drive instruction. Literature regarding the DIBELS assessment instrument used in this study was reviewed extensively. Research suggests that the DIBELS assessment is relatively inexpensive and has been found to be a reliable predictor of student performance in state achievement testing (Good et al., 2001). This is a significant element of the literature review. As stated previously, the rural Midwestern school examined in this study selected the IMSE Orton-Gillingham reading

program because an administrative review of third-grade state achievement scores revealed lower district scores when compared to the Oklahoma State Department of Education's statewide reading achievement scores. Both of these points indicate school systems are led to, or often make decisions to select curriculum and assessment materials based on high-stakes testing pressures and costs rather than sound evaluation.

CHAPTER III

METHODOLOGY

Introduction

This chapter examines the research strategy adopted in this study. Both of the research questions and their appropriate hypotheses are described. Included in this chapter is an analysis of the theoretical framework from the researchers perspective and a description of the theoretical foundations of each program described in this study. Understanding the theory behind the IMSE Orton-Gillingham reading program, Scott Foresman basal reading program (Experimental Group), Macmillan-Mcgraw Hill basal reading program (Control Group), and the DIBELS assessment will lend to implications and limitations of the study. Both groups of the study's participants are described. Although smaller in size, the control group's demographics were very similar and comparable to the experimental group. An explanation of the DIBELS assessment instrument and how the assessments were conducted, including data collection is provided followed by the procedure. The study has two analytical steps or components. The first component is a comparative analysis of beginning of year DIBELS assessment results to end of year DIBELS assessments for students receiving the IMSE supplemental instructional reading program in addition to the Scott Foresman basal reading program within the same school district. The second component is a comparative analysis of end of year DIBELS assessment scores for students receiving the IMSE supplemental

instructional reading program (Experimental Group) to students from a different school district who received the Macmillan-Mcgraw Hill basal reading program (Control Group).

The purpose of this research study was to examine the effectiveness of an (IMSE) Orton-Gillingham based multi-sensory instructional reading program when incorporated with kindergarten through first grade classroom reading instruction in one rural Midwestern school district. The IMSE supplemental reading program is designed to be integrated into existing reading curricula to provide a multi-sensory, phonetic, and organized instructional tool. The IMSE supplemental reading program involves direct instruction in phonemic awareness and application of phonetic rules for 30 minutes of a 90 minute reading instructional block each day. The remaining 60 minutes of the reading instructional block includes systematic instruction using Scott Foresman (2009) basal reading instruction curriculum.

The first research question for this study was: Do students who are taught using the (IMSE) supplemental phonics instructional reading program improve in reading performance from the beginning of the year to the end of the year as measured by (DIBELS) assessments? The hypotheses of this question was that students who were instructed with the (IMSE) supplemental phonics instructional reading program reading performance would improve from the beginning of the year to the end of the year as measured by DIBELS assessments.

The second research question for this study was: Do students who are taught phonics using the (IMSE) supplemental reading instructional program (Experimental Group) score higher on the DIBELS assessment than students taught using only a basal

reading program (Control Group)? This quasi-experimental study hypothesized that students who were instructed using the IMSE supplemental reading program along with the Scott Foresman (2009) basal reading program (Experimental Group) would score higher on the DIBELS reading assessments than students who were instructed using only the Macmillan-Mcgraw Hill (2009) basal reading instruction program. The null hypotheses was that there was no significant relationship between the DIBELS reading assessment scores of the students who were taught using the IMSE reading program along with the basal reading program and the DIBELS reading assessment scores of the students taught using only a basal reading program. The independent variable for this research was the basal reading instruction of the students who do not participate in the IMSE program. The dependent variable for this research was the DIBELS reading assessment scores. The methodology of this quasi-experimental study was a pretest posttest factorial design. Statistical analysis of the data was conducted using SPSS multiple independent measures *t* tests.

Theoretical Framework

The epistemology of this study is objectivism. Crotty (1998) states that the objectivist epistemology holds that meaning, and therefore meaningful reality, exists independently of the operation of any consciousness. According to Crotty (1998), in the objectivist view, understandings and values are considered to be objectified in the people we are studying, and if we go about it in the right way, we can discover the objective truth. The theoretical perspective of this study is post-positivism. One of the tenets of post-positivism is the idea that there is one meaningful reality, but we cannot know it with certainty. This study was inquiry aimed. I used the DIBELS assessments to provide

one method of measurement of the IMSE program's effectiveness. The comparison of quantitative data is objective and unbiased.

The theoretical framework for this study is based on teaching reading with a balanced approach of instruction. Each reading program component, and the DIBELS assessment identified in this study, uses this approach as their framework. As an educator, I value the understanding that all individuals learn differently. Students learn at different levels and rates. For reading instruction one specific method of instruction is not superior over another. From my perspective, a balanced approach is a successful method of teaching students to read. This approach includes teaching reading in a systematic method but incorporating different types of instruction and activities on a daily basis targeting individual student needs. Reading instruction needs structure and at the same time flexibility. Student engagement is a key component of learning. My theoretical base is similar to the IMSE Orton-Gillingham program.

The IMSE Orton-Gillingham phonics reading program is based on the rationale of teaching fundamental decoding and vocabulary skills to mastery in order for successful reading comprehension to emerge (Joshi et al., 2002). IMSE considers a balanced approach of instruction that includes both implicit and explicit instruction the key to success in teaching reading. Their approach combines a strong literature program that includes a rich mixture of written and oral language with organized, direct instruction to meet the needs of the emergent reader (Lyon & Liuzzo, 2003). Additionally, IMSE suggests that incorporating a structured, systematic phonetic approach into curriculum provides children with the tools they need to become effective readers. Systematic instruction is also the basis for the basal reading programs used in this study.

Both the Scott Foresman (2009) basal reading program (Experimental Group) and the Macmillan-Mcgraw Hill (2009) basal reading program (Control Group) are based on the priority skills model. Priority skills are the critical element of reading. They include phonemic awareness, phonics, fluency, vocabulary, and text comprehension. They are developed across and within grades to assure that instructional emphasis is placed on the right skills at the right time to maintain a systematic sequence of instruction (Reading Street, 2009). This model ensures that students receive the right instructional emphasis at each grade level and a more accurate alignment to state standards. Predictable explicit instructional routines appear throughout teaching materials. Both basal reading series emphasize balancing instructional methods and techniques including incorporating differentiated instruction by grouping students according to their individual instructional levels. The DIBELS assessments aid in indicating where students may be grouped.

The Dynamic Basic Indicators of Early Literacy (DIBELS) were designed as a formative assessment and evaluation tool to be used for low-stakes educational decisions. DIBELS assessments were developed to be economical and efficient indicators of a student's progress toward achieving a general outcome (Dynamic Measurement Group, 2007). DIBELS are not intended to be used as the sole measure of a child's or school's success but rather within a system of literacy linked to a model of data-based decision making (Dynamic Measurement Group, 2007). DIBELS were designed to be indicators of five key early literacy skills. These skills are identical to the skills found in the priority skills model. DIBELS are used to indicate a student's progress toward the meaningful outcome of reading accurately and fluently. Good & Kaminski (2002) founders of the DIBELS assessments, suggest that teachers should not limit instruction to only those

skills that are measured by DIBELS. They should provide a wide range of learning experiences with print as well as instruction in all the skills that are known to facilitate early reading (Dynamic Measurement Group, 2007).

Research Design

The design for the first research question in this study was a quasi-experimental pretest post-test factorial design. For the second research question, a post-test comparison between the experimental group and control group was utilized in this study. The post-test scores were compared through the use of descriptive and inferential statistics including multiple *t* tests. According to Kirk (1995), independent *t* tests aid in determining the significance of the mean difference between groups. The statistical analyses conducted determined the significance of the difference between the means of the Oral Reading Fluency scores of the experimental and control groups. The *t* tests were generated using the statistical functions of SPSS version 16. The analyses allowed for inferences and generalizations to be made regarding the effectiveness of explicit multi-sensory reading instruction on oral reading achievement rates. A significance level of $p \leq .05$ will be utilized.

Participants

Based on the study design, there are two groups of participants. First, DIBELS assessment scores were collected a convenience sample of kindergarten and first grade students continuously enrolled in one rural Midwestern school system from the fall of 2007 to the spring of 2009. The DIBELS assessment was used in the Experimental Group school district to measure kindergarten and first grade student progress from the beginning of the year to the end of the year over a two-year time period. The second

research question was addressed by collecting end of year DIBELS assessment scores archived over a two year time period from first grade students who were continuously enrolled at both the initial Experimental Group school district and a similar rural Midwestern school district (Control Group) during the same time period. Students who were not continuously enrolled over the two year period of time or did not participate in the DIBELS assessments as outlined were omitted from the study.

The experimental group consisted of 64 kindergarten and first grade students who received IMSE supplemental phonics instruction for 30 minutes of their 90-minute reading instruction block each day throughout kindergarten and first grade. The remaining 60 minutes included instruction from the basal reading instruction program Scott Foresman (2009). The 90 minute block of instruction began with the IMSE supplemental instruction including direct instruction in phonemic awareness and application of phonetic rules using multi-sensory methods. Teachers were instructed to supplement the phonics instruction with the IMSE multi-sensory teaching methods. This was followed by explicit, systematic instruction from the Scott Foresman (2009) basal reading curriculum adopted by the school district in 2004. Activities in this hour long reading instructional block included: whole-group instruction, small-group instruction, independent reading, guided practice, and literacy centers. The Scott Foresman (2009) curriculum suggests a balanced approach to reading instruction. The curriculum provides a scripted, five days per week instructional plan for teachers to follow. Scott Foresman uses a “whole word” approach to teaching reading where words were repeated on each page enough times that, according to behaviorist research, students could remember them (Reyhner, 2008).

In the summer of 2007, four kindergarten and four first grade teachers attended a 30-hour, weeklong training seminar in the IMSE supplemental phonics instruction reading program. During the training, teachers learned the theory and practice of the IMSE method of instruction. Classroom instructional materials were provided for the teachers by IMSE. These materials targeted a number of multi-sensory methods and included sand trays, blending boards, red word screens, and teacher card packs. The IMSE program was implemented in the fall of 2007. Since the IMSE instruction and teaching materials combine auditory, visual, and kinesthetic learning styles, it is called multi-sensory. Each instructional lesson is designed to use two or more sensory modes (Lyon & Liuzzo 2003). The IMSE reading program provides a method of organized, direct instruction in phonemic awareness and application of phonetic rules and word attack strategies (Lyon & Liuzzo 2003). The demographics of the rural Midwestern school system at the time of the study included a socioeconomic status of 54% of the students receiving free or reduced lunches. The student population was 58% Caucasian, 40% Native American, 1% Hispanic, and 1% African American. There were approximately 1250 students enrolled in this rural Midwestern school system. Data was gathered from these participants to answer for both research questions.

The control group consisted of a total of 40 first grade students from a comparable rural Midwestern school system approximately 25 miles from the initial one. Students received 90 minutes of daily reading instruction using the Macmillan-McGraw Hill (2009) basal instructional reading program. The school system adopted the basal reading program in 2006 and all of its teachers have received professional development training in use and instruction of the program including the three kindergarten and two first grade

teachers who instructed the student participants. The Macmillan-McGraw Hill program was based on a systematic and explicit phonics instruction. Students received approximately 30 minutes of phonics instruction with the remaining instruction targeting phonemic awareness, vocabulary, comprehension, and fluency. Lessons for the Macmillan-Mcgraw Hill (2009) program are scripted in a suggested five-day format allowing for a flexible grouping option. The comparable school system had an enrollment of approximately 1100 students. The student population had an ethnic makeup of 55% Caucasians, 41% Native American, 2% Hispanic, and 2% African American. Approximately 59% of the students received free or reduced lunches. The data collected from this school system was used to answer my second research question.

Instrument

The Dynamic Indicators of Basic Early Literacy (DIBELS) reading assessment was the primary instrument used in this study. The DIBELS was developed to monitor student progress (Good & Kaminski, 2003) and is designed to measure change, not growth and development over time (Dynamic Measurement Group, 2007). DIBELS provides educators with a tangible method for monitoring progress in the area of reading acquisition and is an indicator of reading development (Good & Kaminski, 2003). DIBELS assessments are short, standardized measures of early literacy development and are administered to students individually (Good & Kaminski, 2003).

Typically, DIBELS assessments are given to all students at the beginning, middle, and the end of the year. Additional assessments can be given to specific students if their teacher feels it necessary for improvement. The DIBELS assessments measure the number of words or letters read correctly during a timed one minute assessment. The

passages are leveled and increase in difficulty (Good et al., 2001). DIBELS sets benchmark goals for student success. When achieving these benchmarks, they have an 80 to 100 percent chance of reaching their next benchmark goal (Dynamic Measurement Group, 2007). Significant benchmark goals related to this study included Letter Naming Fluency (LNF) of eight letters per minute at the beginning of kindergarten and 40 at the end of the year, Nonsense Word Fluency (NWF) of 25 words per minute at the beginning of the year in first grade and 50 by the end of the year, Phoneme Segmentation Fluency (PSF) of 35 sounds per minute at beginning of the year first grade and 35 by the end of the year, and an Oral Reading Fluency (ORF) of 40 words correct per minute by the end of year first grade (Dynamic Measurement Group, 2007). Students who do not meet these goals or who score in the bottom quarter are considered candidates for remediation based on their individual assessment scores (Dynamic Measurement Group, 2007).

Teachers from both rural Midwestern school systems were required to be trained in giving the DIBELS assessments in their respective classrooms. The training was provided free of charge by the Oklahoma State Department of Education. The DIBELS assessments were conducted by the teachers from both the experimental and control group sites in their respective classrooms and were recorded using hand-held Palm Pilots. Both school districts provide the Palm Pilots and the operating software necessary to record the DIBELS assessments. The operating software named *mClass: DIBELS* (Wireless Generation, 2010) was developed based on the original written DIBELS assessment scoring methods authored by Dr. Roland Good and Dr. Ruth Kaminski (Wireless Generation, 2010). Teachers documented student progress on the timed assessment marking errors or omissions. The data from the Palm Pilot was then

connected to a personal computer where the results were archived and analyzed or printed for student, teacher, or parent evaluation.

For the first research question, the DIBELS assessment scores were used to examine the differences in student results during kindergarten and first grade using the beginning of the year assessment scores compared to the end of the year assessment scores. The effectiveness of the program was measured in this case using the DIBELS assessment scores as the research instrument in three categories: Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF), Nonsense Word fluency (NWF). Specifically, Letter Naming Fluency (LNF) was investigated in kindergarten. Letter Naming Fluency assesses the students' ability to identify alphabetic letters (Good & Kaminski, 2003). For first grade, DIBELS assessment scores for Phoneme Segmentation Fluency (PSF) and Nonsense Word Fluency (NWF) were used. Phoneme Segmentation Fluency (PSF) assesses the students ability to identify and manipulate individual sounds in words (Good & Kaminski, 2003). The knowledge of sound/symbol correspondence and blending of sounds is assessed with Nonsense Word Fluency (NWF).

For the second research question, a comparison of the end of year Oral Reading Fluency (ORF) DIBELS assessment scores of first grade students from both the experimental and control group in each rural Midwestern school districts was used. Oral Reading Fluency measures students' ability to decode and read a connected text effortlessly (Good & Kaminski, 2003). The DIBELS assessment produces a raw score for fluency in each category.

The validity and reliability of this study rely on the analysis of the Curriculum-Based Measurement (CBM). Reading procedures, the basis for DIBELS indicated high

correlations, which provide evidence of reliability of this instrument (Good & Kaminski, 2002). Through the use of a test-retest process, the reliability coefficients for DIBELS ranged from .92 to .97 (Good & Kaminski, 2002). Tindal, Marston, and Deno (1983) established alternate-form reliability of different reading passages derived from the same level that ranged from .89 to .94. The reliability coefficients for the various versions of the DIBELS Oral Reading Fluency assessments varied from .89 to .96 (Kaminski et al., 2008). Validity for Curriculum-Based Measurements (CBM) has been established (Good & Kaminski, 2002). Good and Jefferson (1998) have outlined that CBM reading assessment measures are valid indicators of reading ability.

Procedure

Prior to collection of all data for this study, permission was obtained from both participating school districts and their respective superintendents. I met with both school superintendents to explain my interest in the archived data. Participant identifiers in data collected were coded and did not include any of the 18 qualifiers listed for Non-Human Subject research by the Institutional Review Board of Oklahoma State University. Once approval was given, I analyzed the collected archival data. I examined the raw DIBELS test scores for kindergarten students receiving the IMSE Orton-Gillingham multi-sensory reading instruction starting in 2007 through first grade in 2008. I then compared the 2008 data of first grade students with the other rural Midwestern school system's archived DIBELS data. All demographic information was obtained via websites to protect the anonymity of the students.

Summary

The methodology of this study is founded in the theoretical framework that a balanced approach to teaching reading is effective. The rationale of the IMSE Orton-Gillingham phonics reading program is based on a balanced approach including both implicit and explicit methods of instruction. Both the Scott Foresman (2009) basal reading program (Experimental Group) and the Macmillan-Mcgraw Hill (2009) basal reading program (Control Group) use the priority skills model as the foundation to reading instruction. The priority skills model includes skills targeting phonemic awareness, phonics, fluency, vocabulary, and comprehension. This model focuses on students recieveing the right instructional emphasis at each grade level in a systematic method of instruction. The DIBELS assessments were designed to be indicators of the above five key early literacy skills. DIBELS are used to indicate a student's progress toward the meaningful outcome of reading accurately and fluently (Dynamic Measurement Group, 2007). The founders of DIBELS Good and & Kaminski (2002) suggest that teachers should provide a wide range of learning experiences to facilitate early reading. All of the programs listed above identify alignment with the National Reading Panel's report five elements of essential elements of reading instruction.

CHAPTER IV

ANALYSIS OF DATA

Introduction

The purpose of this quasi-experimental quantitative research study was to examine the effectiveness of an (IMSE) Orton-Gillingham based multi-sensory supplemental phonics instructional reading program when incorporated with basal reading instruction beginning in kindergarten through first grade in one rural Midwestern school district. The effectiveness of the program for this study was determined by examining the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessments. The DIBELS assessment scores were used in the (Experimental Group) school district to measure the progress of 64 kindergarten and first grade students who were continuously enrolled from the beginning of the year in kindergarten to the end of the year in first grade over a two year time period beginning in the fall of 2007 and ending in the spring of 2009. Additionally, the DIBELS assessment scores were used to compare the end of year assessment results from 64 first grade students receiving the IMSE Orton-Gillingham based multi-sensory supplemental phonics instructional reading program (Experimental Group) along with the Scott Foresman basal reading program to 40 first grade students in a different, but demographically similar rural Midwestern school district (Control Group) using strictly the Macmillan-McGraw Hill basal reading instruction program.

Two research questions and hypotheses were created following a review of relevant literature. The first research question for this study was: Do students who are taught using the (IMSE) supplemental phonics instructional reading program improve in reading performance from the beginning of the year to the end of the year as measured by (DIBELS) assessments? This quasi-experimental study hypothesized that the IMSE supplemental reading program, when used in conjunction with the Scott Foresman (2009) basal reading program, will improve students' assessment scores from the beginning of the year to the end of the year based on the measurements of the DIBELS assessment scores. The null hypotheses is that there is no significant improvement in students' reading performance from the beginning of the year to the end of the year as measured by the DIBELS reading assessments.

The second research question for this study was: Do students who are taught phonics using the (IMSE) supplemental reading instructional program (Experimental Group) score higher on the DIBELS assessment than students taught using only a basal reading program (Control Group)? This quasi-experimental study hypothesized that students who were instructed using the IMSE supplemental reading program along with the Scott Foresman (2009) basal reading program (Experimental Group) would score higher on the DIBELS reading assessments than students who were instructed using only the Macmillan-Mcgraw Hill (2009) basal reading instruction program. The null hypotheses is that there is no significant relationship between the DIBELS reading assessment scores of the students who were taught using the IMSE reading program along with the basal reading program and the DIBELS reading assessment scores of the students taught using only a basal reading program. The independent variable for this

research was the basal reading instruction of the students who do not participate in the IMSE program. The dependent variable for this research was the DIBELS reading assessment scores.

Data Analysis

For the first research question, the DIBELS assessment scores were used to examine the differences in student results during kindergarten and first grade using the beginning of the year assessment scores compared to the end of the year assessment scores. The effectiveness of the program was measured in this case using the DIBELS assessment scores as the research instrument in three categories: Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF), Nonsense Word fluency (NWF). Specifically, for kindergarten, Letter Naming Fluency (LNF) was investigated. For first grade, DIBELS assessment scores for Phoneme Segmentation Fluency (PSF) and Nonsense Word Fluency (NWF) were used. The SPSS version 16 was used to analyze the pretest and post-test DIBELS assessment scores using paired *t*-tests. A significance level of $p \leq .05$ was utilized. Paired *t* tests aid in determining the significance of the mean difference between groups (Kirk, 1995). Additional comparisons were made to the DIBELS benchmark goals (Dynamic Measurement Group, 2007) suggested for student success.

For the second research question, a comparison of the end of year Oral Reading Fluency (ORF) DIBELS assessment scores of first grade students from both the experimental and control group in each rural Midwestern school districts were used. Oral Reading Fluency measures students' ability to decode and read a connected text effortlessly (Good & Kaminski, 2003). The DIBELS assessment produces a raw score for

fluency in each category. Data analysis using the (ORF) of first grade students DIBELS assessment scores was performed using an independent sample *t* -test. The *t*-tests were generated using the statistical functions of SPSS version 16. The generated analyses allows for inferences and generalizations to be made regarding the effectiveness of explicit multi-sensory reading instruction on oral reading fluency achievement rates. A significance level of $p \leq .05$ was utilized.

The results of this research study indicated there was statistical significance found in both research questions. Thus, for the first research question, the hypothesis that students who are instructed with the (IMSE) supplemental phonics instructional reading program as measured by DIBELS assessments will improve from the beginning of the year to the end of the year was accepted. Furthermore, the second research question hypotheses was accepted after the results of the study indicated that students who received the (IMSE) phonics instruction when supplemented with the Scott Foresman basal reading program (Experimental Group) scored higher on the DIBELS assessments than students who were taught using Macmillan-McGraw Hill basal reading program (Control Group).

Descriptive Data Findings for Research Question 1

DIBELS assessment scores for kindergarten Letter Naming Fluency (LNF) are analyzed in tables 1 through 6. The beginning of year scores (BOY) serve as the pretest scores. The end of year (EOY) scores serve as the post-test scores for the purposes of this study. Tables 1 through 4 compare students' BOY and EOY scores to the DIBELS benchmark goals as defined by the Dynamic Measurement Group (2007). Table 5 represents a comparison of the BOY and EOY mean scores. Table 6 is a paired samples *t*-

test comparing the Letter Naming Fluency beginning of the year scores to Letter Naming Fluency end of the year scores.

Table 1

Letter Naming Fluency (LNF) Beginning of the Year (BOY) DIBELS Benchmark Comparisons for Kindergarten

DIBELS Benchmarks	DIBELS Status	Number of Students	Percentages
LNF < 2	At Risk	1	2%
2 < = LNF < 8	Some Risk	2	3%
LNF > = 8	Low Risk	61	95%

Table 1 delineates the students' beginning of the year (BOY) Letter Naming Fluency (LNF) assessment scores from the experimental group in kindergarten. The data is categorized by the recommended DIBELS benchmark goals (Dynamic Measurement Group, 2007). The beginning of the year (BOY) scores were collected from student assessments completed in September during kindergarten and serve as the pretest scores.

Table 2

Letter Naming Fluency (LNF) Beginning of the Year (BOY) Scoring Range

DIBELS LNF Range	Number of Students	Percentages
0-10	4	6.25
10-20	15	23.44
20-30	13	20.31
30-40	20	31.25
40-50	7	10.94

50-60	4	6.25
60-70	0	0
70-80	1	1.56
	64	100.0

Table 2 separates the students' beginning of the year (BOY) Letter Naming Fluency (LNF) assessment scores into categorized DIBELS ranges. The table breaks down the actual student scores based on the DIBELS benchmark goals (Dynamic Measurement Group, 2007) listed in table 1 and gives the percentage for each category range.

Table 3

Letter Naming Fluency (LNF) End of the Year (EOY) DIBELS Benchmark Comparisons for Kindergarten

DIBELS Benchmarks	DIBELS Status	Raw Scores	Percentages
LNF < 29	At Risk	3	5%
29 < = LNF < 40	Some Risk	9	14%
LNF > = 40	Low Risk	52	81%

Table 3 illustrates Letter Naming Fluency (LNF) raw scores at the end of the year (EOY) categorized by the recommended DIBELS benchmark goals (Dynamic Measurement Group, 2007). The end of the year (EOY) scores were collected from student assessments completed in May during kindergarten and serve as the post-test scores. The DIBELS assessment passages are leveled and increase in difficulty (Good et al., 2001). DIBELS sets benchmark goals for student success. Students have an 80 to 100 percent chance of reaching their next goal if they achieve each benchmark (Dynamic

Measurement Group, 2007). Student raw scores from both the BOY and EOY for LNF were separated by the defined DIBELS benchmark goals' three levels: at risk, some risk, and low risk. The BOY data displays that 61 students or 95 % of the sample LNF scores were defined as being low risk with an LNF of greater than or equal to 8. The EOY analyses revealed 52 students or 81% of the sample were considered low risk and had achieved the benchmark with an LNF greater than or equal to 40.

Table 4

Letter Naming Fluency (LNF) End of the Year (EOY) Scoring Range

DIBELS LNF Range	Number of Students	Percentages
0-10	0	0
10-20	2	3.13
20-30	1	1.56
30-40	9	14.05
40-50	19	29.69
50-60	18	28.13
60-70	12	18.75
70-80	1	1.56
80+	2	3.13
	64	100.0

Table 4 separates the students' end of the year (EOY) Letter Naming Fluency (LNF) assessment scores into categorized DIBELS ranges. The table breaks down the actual student scores based on the DIBELS benchmark goals (Dynamic Measurement Group, 2007) listed in table 3 and gives the percentage for each category range.

Table 5

Descriptive Statistics for Kindergarten LNF Beginning of the Year (BOY) and the End of the Year (EOY)

Assessment	N	Minimum	Maximum	Mean	SD
BOY	64	0	73	28.152	13.80
EOY	64	18	90	50.46	13.29

Table 5 represents a comparison of kindergarten LNF BOY and EOY mean scores. The table includes the minimum and maximum raw student scores from the 64 student participants.

Table 6

Paired Samples Test for Kindergarten LNF Beginning of the Year (BOY) and End of the Year (EOY)

		Mean Difference	SD	t	Sig. (2-tailed)
Pair 1	BOY-EOY	-22.31	11.3	-15.70	.000

Table 6 is a paired samples *t*-test of the kindergarten LNF comparing the beginning of the year (BOY) DIBELS Letter Naming Fluency (LNF) assessment scores to the end of year (EOY) scores. The *t*-test indicates a significant difference in the BOY scores to the EOY scores. The BOY pretest mean was 28.15 with a standard deviation of 13.08. The EOY post-test mean was 50.46 with a standard deviation of 13.29. The mean difference was -22.31. The significance between the BOY and EOY was .000, which is less than the $p \leq .05$, indicating a significant difference between the BOY and the EOY.

DIBELS assessment scores for first grade Nonsense Word Fluency (NWF) are analyzed in Tables 6 through 12. The beginning of the year scores (BOY) serve as the pretest scores. The end of year (EOY) scores serve as the post-test scores. Tables 6

through 8 compare students' BOY and EOY scores to the DIBELS benchmark goals as defined by the Dynamic Measurement Group (2007). Table 11 represents a comparison of Nonsense Word Fluency beginning of the year and end of the year mean scores. Table 12 is a paired samples *t*-test comparing NWF BOY to EOY scores.

Table 7

Nonsense Word Fluency (NWF) Beginning of the Year (BOY) DIBELS Benchmark Comparisons for First Grade

DIBELS Benchmarks	DIBELS Status	Raw Scores	Percentages
NWF < 13	At Risk	6	9%
13 < = NWF < 24	Some Risk	21	33%
NWF > = 24	Low Risk	37	58%

Table 7 outlines the raw Nonsense Word Fluency (NWF) assessment scores collected from the experimental group in first grade. The data is categorized by the recommended DIBELS benchmark goals (Dynamic Measurement Group, 2007). The beginning of the year (BOY) scores were collected from student assessments completed in September of first grade and serve as the pretest scores.

Table 8

Nonsense Word Fluency (NWF) Beginning of the Year (BOY) Scoring Range

DIBELS NWF Range	Number of Students	Percentages
0-10	4	6.25
10-20	15	23.44
20-30	16	25.00

30-40	11	17.18
40-50	3	4.69
50-60	6	9.38
60-70	3	4.69
70-80	3	4.69
80+	3	4.69
	64	100.0

Table 8 separates the students' beginning of the year (BOY) Nonsense Word Fluency (NWF) assessment scores into categorized DIBELS ranges. The table breaks down the actual student scores based on the DIBELS benchmark goals (Dynamic Measurement Group, 2007) listed in table 7 and gives the percentage for each category range.

Table 9

Nonsense Word Fluency (NWF) End of the Year (EOY) DIBELS Benchmark Comparisons for First Grade

DIBELS Benchmarks	DIBELS Status	Raw Scores	Percentages
NWF < 30	Deficit	0	0%
30 < = NWF < 50	Emerging	13	20%
NWF > = 50	Established	51	80%

Table 9 represents the Nonsense Word Fluency (NWF) assessment at the end of the year (EOY) categorized by the recommended DIBELS benchmark goals (Dynamic Measurement Group, 2007). The end of the year (EOY) scores were collected from student assessments completed in May of first grade and serve as the post-test scores.

Students' raw scores from both the BOY and EOY for NWF were divided by the defined DIBELS three levels for first grade: deficit, emerging, and established. For first grade NWF, established is the DIBELS benchmark (Dynamic Measurement Group, 2007). The descriptive statistics indicated that there was a significant difference in the benchmark goals of NWF BOY first grade scores and the benchmark goals of NWF EOY first grade scores. The BOY analyses displayed that 37 students or 58% of the participants had achieved the benchmark goal. By the end of the year, 51 students or 80% were at benchmark.

Table 10

Nonsense Word Fluency (NWF) End of the Year (EOY) Scoring Range

DIBELS NWF Range	Number of Students	Percentages
0-10	0	0
10-20	0	0
20-30	0	0
30-40	7	10.94
40-50	6	9.37
50-60	14	21.88
60-70	10	15.62
70-80	3	4.69
80+	24	37.5
	64	100.0

Table 10 separates the students' end of the year (EOY) Nonsense Word Fluency (NWF) assessment scores into categorized DIBELS ranges. The table breaks down the

actual student scores based on the DIBELS benchmark goals (Dynamic Measurement Group, 2007) listed in table 9 and gives the percentage for each category range.

Table 11

Descriptive Statistics for Kindergarten NWF Beginning of the Year (BOY) and the End of the Year (EOY)

Assessment	N	Minimum	Maximum	Mean	SD
BOY	64	4	111	34.35	2.81
EOY	64	30	141	77.64	4.35

Table 11 represents a comparison of first grade NWF BOY and EOY mean scores. The table includes the minimum and maximum raw student scores from the 64 student participants.

Table 12

Paired Samples Test for 1st Grade NWF Beginning of the Year (BOY) and End of the Year (EOY)

		Mean Difference	SD	t	Sig. (2-tailed)
Pair 1	BOY-EOY	-43.28	28.3	-12.20	.000

Table 12 is a paired samples t-test for first grade NWF comparing the beginning of the year (BOY) DIBELS Nonsense Word Fluency (NWF) assessment scores to the end of year (EOY) scores. The data indicated a significant difference in the BOY scores when compared to the EOY scores. The pretest BOY mean was 34.35 with a standard deviation of 22.49. The post-test EOY mean was 77.64 with a standard deviation of 34.80. The *t*-test computed a mean difference of -43.28. The significance between the BOY and EOY was .000, which is less than $p \leq .05$ indicating a significant difference between the BOY and the EOY.

Tables 12 through 18 include the DIBELS assessment scores for first grade Phoneme Segmentation Fluency (PSF). The beginning of the year scores (BOY) serve as the pretest scores. The end of year (EOY) scores serve as the post-test scores. Tables 12 through 16 compare students' BOY and EOY scores to the DIBELS benchmark goals as defined by the Dynamic Measurement Group (2007). Table 17 delineates a comparison of the Phoneme Segmentation Fluency beginning of the year and end of the year mean scores. Table 18 is a paired samples *t*-test comparing the PSF BOY to EOY scores.

Table 13

Phoneme Segmentation Fluency (PSF) Beginning of the Year (BOY) DIBELS Benchmark Comparisons for 1st Grade

DIBELS Benchmarks	DIBELS Status	Raw Scores	Percentages
PSF < 10	Deficit	1	2%
10 < = PSF < 35	Emerging	21	53%
PSF > = 35	Established	37	45%

Table 13 represents the raw Phoneme Segmentation Fluency (PSF) assessment scores collected from the experimental group in first grade. The data is categorized by the recommended DIBELS benchmark goals (Dynamic Measurement Group, 2007). The beginning of the year (BOY) scores were collected from student assessments completed in September of first grade and serve as the pretest scores.

Table 14

Phoneme Segmentation Fluency (PSF) Beginning of the Year (BOY) Scoring Range

DIBELS PSF Range	Number of Students	Percentages
0-10	1	1.56

10-20	4	6.25
20-30	16	25.00
30-40	26	40.62
40-50	14	21.88
50-60	3	4.69
60-70	0	0
70-80	0	0
80+	0	0
	64	100.0

Table 14 separates the students' beginning of the year (BOY) Phoneme Segmentation Fluency (PSF) assessment scores into categorized DIBELS ranges. The table breaks down the actual student scores based on the DIBELS benchmark goals (Dynamic Measurement Group, 2007) listed in table 13 and gives the percentage for each category range.

Table 15

Phoneme Segmentation Fluency (PSF) End of the Year (EOY) DIBELS Benchmark Comparisons for 1st Grade

DIBELS Benchmarks	DIBELS Status	Raw Scores	Percentages
PSF < 10	Deficit	0	0%
10 < = PSF < 35	Emerging	13	20%
PSF > = 35	Established	51	80%

Table 15 represents the Phoneme Segmentation Fluency (PSF) assessments at the end of the year (EOY) categorized by the recommended DIBELS benchmark goals

(Dynamic Measurement Group, 2007). The end of the year (EOY) scores were collected from student assessments completed in May of first grade and serve as the post-test scores. Students' raw scores from both the BOY and EOY for PSF were divided by the defined DIBELS three levels for first grade: deficit, emerging, and established. For first grade PSF, established is the DIBELS benchmark (Dynamic Measurement Group, 2007). The data indicated that there was a significant difference in the BOY scores when compared to the EOY scores. The BOY analyses revealed that 29 students or 45% had achieved the benchmark goal. This increased significantly at the end of the year. 80% or 51 students had reached the benchmark goal at the EOY.

Table 16

Phoneme Segmentation Fluency (PSF) End of the Year (EOY) Scoring Range

DIBELS PSF Range	Number of Students	Percentages
0-10	0	0
10-20	0	0
20-30	3	4.69
30-40	21	32.81
40-50	24	37.50
50-60	14	21.88
60-70	1	1.56
70-80	0	0
80+	1	1.56
	64	100.0

Table 16 separates the students' end of the year (EOY) Phoneme Segmentation

Fluency (PSF) assessment scores into categorized DIBELS ranges. The table breaks down the actual student scores based on the DIBELS benchmark goals (Dynamic Measurement Group, 2007) listed in table 15 and gives the percentage for each category range.

Table 17

Descriptive Statistics for 1st Grade PSF Beginning of the Year (BOY) and the End of the Year (EOY)

Assessment	N	Minimum	Maximum	Mean	SD
BOY	64	7	54	34.01	9.66
EOY	64	29	60	44.07	12.90

Table 17 represents a comparison of first grade PSF BOY and EOY mean scores. The table includes the minimum and maximum raw student scores from the 64 student participants.

Table 18

Paired Samples Test for 1st Grade PSF Beginning of the Year (BOY) and End of the Year (EOY)

		Mean Difference	SD	t	Sig. (2-tailed)
Pair 1	BOY-EOY	-10.06	13.69	-5.87	.000

Table 18 is a paired samples *t*-test of first grade PSF comparing the beginning of the year (BOY) DIBELS Phoneme Segmentation Fluency (PSF) assessment scores to the end of year (EOY) scores. The *t*-test indicates a significant difference in the BOY scores to the EOY scores. The pretest mean of the BOY was 34.01 with a standard deviation of 9.66. The post-test EOY mean was 44.07 with a standard deviation of 12.90. The mean

difference was -22.31. The significance between the BOY and EOY was .000, which is less than $p \leq .05$ indicating a significant difference between the BOY and the EOY.

Descriptive Data Findings for Research Question 2

Tables 19 through 21 analyze a comparison of the end of year (EOY) Oral Reading Fluency (ORF) DIBELS assessment scores of first grade students from both the experimental and control group in each rural Midwestern school district. Table 13 compares the experimental group and the control group EOY ORF scores to the DIBELS benchmark goals as defined by the Dynamic Measurement Group (2007). Tables 14 and 15 summarize the results of an independent samples *t*-test that analyzes the EOY ORF of the experimental and control groups.

Table 19

Oral Reading Fluency (ORF) Experimental and Control Group DIBELS Benchmark Comparisons for 1st Grade

DIBELS Benchmarks	DIBELS Status	Control Scores	Control Percentages	Experimental Scores	Experimental Percentages
ORF < 20	At Risk	2	5%	1	2%
20<=ORF<40	Some Risk	14	35%	10	16%
ORF > = 40	Low Risk	24	60%	53	82%

Table 19 illustrates a comparison of the end of year (EOY) Oral Reading Fluency (ORF) scores from the experimental group and the control group as categorized by the recommended DIBELS benchmark goals (Dynamic Measurement Group, 2007). The end of the year (EOY) scores were collected from student assessments completed in May of first grade. Student raw first grade ORF EOY scores were separated by the defined DIBELS prescribed levels: at risk, some risk, and low risk. For first grade, low risk is the

DIBELS benchmark. This equates to an ORF greater than or equal to 40 words per minute (Dynamic Measurement Group, 2007). The analysis of the data indicated that 53 students or 82% of the experimental group student participants reached the (EOY) benchmark score. By comparison, 24 students or 60% of the control group students obtained an EOY ORF of 40. Thus, there was a statistically significant difference in the ORF scores of the experimental group and the ORF scores of the control group.

Table 20

Mean Differences between the Experimental and Control Group 1st Grade ORF

ORF Group	N	Mean	SD	Mean Difference
Experimental	64	72.75	34.56	19.15
Control	40	53.60	28.58	19.15

Table 20 summarizes the mean differences of Oral Reading Fluency (ORF) between the experimental and control group. The overall mean difference was 19.15.

Table 21

ORF Independent Samples T-Test

	Lavene's Test for Equality of Variances		T-Test for Equality of Means		
ORF	F	Sig.	t	df	Sig. (2-tailed)
Equal Variances Assumed	0.658	0.419	2.931	102	.004
Equal Variances Not Assumed			3.062	94.171	.003

	T-Test for Equality of Means
	95% Confidence

			Interval of the Difference	
ORF	Mean Difference	Std. Error Difference	Lower	Upper
Equal Variances Assumed	19.15000	6.53287	6.19208	32.10792
Equal Variances Not Assumed	19.15000	6.25311	6.7346	31.5654

Table 21 delineates the results of the independent samples *t*-test. The data indicated the experimental group had mean 72.75 with the control group mean at 53.60. Levene's test for equality of variances yielded a significance level of .419 that equates to greater than .05. Levene's test is necessary to verify the equal assumptions of the variances in the *t*-test. Therefore, we can assume the variances are approximately equal. The *t* score value was 2.91 with 102 degrees of freedom. The significant difference between the two groups was .004, which is less than $p \leq .05$ indicating a significant difference between the experimental and control group. The dramatically smaller p value is an indicator that the treatment rendered significant improvement upon the ORF of the experimental group.

Data Findings

The data outlined significant statistical student improvement in all three tested DIBELS assessments given to the experimental group from the beginning of the year (BOY) to the end of the year (EOY) including: Letter Naming Fluency (LNF), Nonsense Word Fluency (NWF), and Phoneme Segmentation Fluency (PSF). Furthermore, statistical significance was found in DIBELS BOY to EOY benchmark comparisons and BOY to EOY paired sample *t*-tests. The averaged overall mean scores of the students in the experimental group in each DIBELS assessment, improved from the BOY to the

EOY. Letter Naming Fluency BOY DIBELS score mean was 28 compared to an EOY of 50. Nonsense Word Fluency BOY DIBELS score mean was 34 compared to an EOY of 77. Phoneme Segmentation Fluency BOY DIBELS score mean was 34 compared to an EOY of 44. Thus, the assumption can be made through statistical analysis, that students who received the IMSE Orton-Gillingham based multi-sensory supplemental phonics instructional program when used in conjunction with the Scott Foresman basal reading program improved from the beginning of the year to the end of the year based on the measurements of the DIBELS assessments.

Data analysis of the second research question included a comparison of the end of year (EOY) Oral Reading Fluency scores from the experimental group and the control group and an independent samples *t*-test analyzing the EOY ORF of the experimental group and the control group. Both of these analyses indicated a statistical significance. The data indicated the experimental group had a DIBELS score mean of 72 with the control group mean at 53 total ORF. 53 students or 82% of the experimental group student participants reached the EOY DIBELS benchmark score compared to 24 students or 60% of the control group students. Furthermore, the *t*-test yielded a significant difference between the two groups of .004. The significance level utilized for the study was $p \leq .05$. Thus, the assumption can be made through statistical analysis, that students taught using the IMSE phonics program scored higher on the DIBELS assessment than students taught with only a basal reading program.

Summary

After a thorough analysis of the data, both research questions' hypotheses were accepted. The hypotheses for research question one was that students who were

instructed with the IMSE supplemental phonics instructional reading program as measured by the DIBELS assessments would improve from the beginning of the year (BOY) to the end of the year (EOY). The hypotheses for the second research question was accepted. Students who were instructed using the IMSE supplemental phonics instructional program with the Scott Foresman basal reading program (Experimental Group) scored higher on the DIBELS reading assessments than students instructed using only a basal reading instruction program.

These results revealed that there is a relationship between the IMSE Orton-Gillingham phonics reading improvement and student improvement from the beginning of the year to the end of the year. Furthermore, comparisons of students who received the IMSE phonics program (Experimental Group) to students receiving only the basal reading program (Control Group) indicated higher overall achievement as measured by the DIBELS assessments. Generally speaking, student improvement is expected in any program from the beginning of the year to the end of the year. If the findings of this study were based strictly on the first research question, the study could be considered limited. However, when combined with the findings of the second question, the study presents greater merit. Further discussion of this study's implications and limitations are presented in the chapter five discussion.

CHAPTER V

CONCLUSION

Reading is an essential skill. Individuals who read effectively have increased opportunities. Students with poor reading skills are at risk for failure. There have been long lasting debates over the methods and techniques used to teach reading. The continued arguments have led to reading achievement being placed at the forefront of national educational issues. Today, all public school systems are faced with increased academic requirements and accountability. The No Child Left Behind Act (NCLB) was created in 2001 with the goal to improve students' literacy skills. NCLB pressures state departments and school systems to raise educational standards with scientifically based programs and by monitoring student progress through test score achievement. Faced with testing achievement standards, school systems must implement literacy programs that can be monitored through assessment.

The purpose of this research was to examine the effectiveness of an (IMSE) Orton-Gillingham based multi-sensory phonics instructional reading program when incorporated with classroom reading instruction beginning in kindergarten through first grade in one rural Midwestern school district. The IMSE supplemental phonics reading program is designed to be integrated into existing reading curricula to provide a multi-sensory, phonetic, and organized instructional tool. The IMSE supplemental phonics instructional reading program provides direct instruction in phonemic awareness and

application of phonetic rules for 30 minutes of a 90 minute reading instructional block each day. For this study, the remaining 60 minutes of the reading instructional block included systematic instruction using Scott Foresman basal reading instruction curriculum.

The first research question for this study was: Do students who are taught using the IMSE supplemental phonics instructional reading program improve in reading performance from the beginning of the year to the end of the year as measured by the DIBELS assessments? This study hypothesized that the IMSE supplemental phonics instructional reading program, when used in conjunction with the Scott Foresman basal reading program, would improve students' assessment scores from the beginning of the year to the end of the year based on the measurements of the DIBELS reading assessments. The null hypotheses was that there was no significant improvement in students' reading performance from the beginning of the year to the end of the year as measured by the DIBELS reading assessments.

The second research question for this study was: Do students who are taught phonics using the (IMSE) supplemental phonics instructional reading program (Experimental Group) score higher on the DIBELS assessment than students taught using only a basal reading program (Control Group)? This study hypothesized that students who were instructed using the IMSE supplemental phonics instructional reading program along with the Scott Foresman basal reading program (Experimental Group) would score higher on the DIBELS reading assessments than students who were instructed using only the Macmillan-Mcgraw Hill (2009) basal reading program. The null hypotheses was that there was no significant relationship between the DIBELS reading assessment scores of

the students who were taught using the IMSE phonics program along with the basal reading program (Experimental Group), and the DIBELS reading assessment scores of the students taught using only a basal reading program (Control Group). The independent variable for this research was the basal reading instruction of the students who did not participate in the IMSE program. The dependent variable for this research was the DIBELS reading assessment scores.

A quasi-experimental quantitative method with a pretest post-test factorial design was used for this study. Statistical analysis of the data was measured by using SPSS to conduct multiple independent measures t-tests. The Dynamic Indicators of Basic Early Literacy (DIBELS) reading assessment served as the primary research instrument. The DIBELS assessments measure the number of words or letters answered correctly during a timed one-minute passage. The passages are leveled and increase in difficulty from the beginning of the year to the end of the year (Good et al., 2001). DIBELS assessment scores were collected from 64 kindergarten and first grade students continuously enrolled in one rural Midwestern school system from the fall of 2007 to the spring of 2009 at the beginning of the year and at the end of the year. Comparisons were made using DIBELS assessments in three categories: Letter Naming Fluency (LNF), Nonsense Word Fluency (NWF), and Phoneme Segmentation Fluency (PSF).

Further analysis included using the DIBELS assessments to compare the Oral Reading Fluency (ORF) of first grade students receiving the IMSE supplemental phonics instruction (Experimental Group) with 40 purposively selected first grade students from a different, but similar demographic Midwestern school system (Control Group) who

received reading instruction through only a basal reading program. Total instruction time was similar for both groups.

Findings

This study was divided into two specific questions to determine the effectiveness of the IMSE supplemental phonics instructional reading program based on the DIBELS assessment scores. First, the study sought to identify if the IMSE program was effective within the rural Midwestern school system. Second, the study measured the effectiveness of the IMSE program by comparing DIBELS assessment scores from the rural Midwestern school system (Experimental Group) to a different rural Midwestern school system (Control Group) with similar demographics. The methods used in this study represent one way of examining the effectiveness of the IMSE program.

The data outlined significant statistical student improvement in all three tested DIBELS assessments given to the experimental group from the beginning of the year (BOY) to the end of the year (EOY) including: Letter Naming Fluency (LNF), Nonsense Word Fluency (NWF), and Phoneme Segmentation Fluency (PSF). Furthermore, statistical significance was found in DIBELS BOY to EOY benchmark comparisons and BOY to EOY paired sample *t*-tests. The averaged overall mean scores of the students in the experimental group in each DIBELS assessment improved from the BOY to the EOY. Letter Naming Fluency BOY DIBELS score mean was 28 compared to an EOY of 50. Nonsense Word Fluency BOY DIBELS score mean was 34 compared to an EOY of 77. Phoneme Segmentation Fluency BOY DIBELS score mean was 34 compared to an EOY of 44. Therefore, the hypothesis from the first research question was accepted. Students who received the IMSE Orton-Gillingham based multi-sensory supplemental phonics

instructional program when used in conjunction with the Scott Foresman basal reading program improved from the beginning of the year to the end of the year based on the measurements of the DIBELS assessments.

Data analysis of the second research question included a comparison of the end of year (EOY) Oral Reading Fluency scores from the experimental group and the control group and an independent samples *t*-test analyzing the end of the year (EOY) ORF of the experimental group and the control group. Both of these analyses indicated a statistical significance. The data indicated the experimental group had a DIBELS score mean of 72 with the control group mean at 53 total ORF. 53 students or 82% of the experimental group student participants reached the EOY DIBELS benchmark score compared to 24 students or 60% of the control group students. Furthermore, the *t*-test yielded a significant difference between the two groups of .004. The significance level utilized for the study was $p \leq .05$. Therefore, the hypothesis for the second research question was accepted. Students who were instructed using the IMSE supplemental phonics instructional program with the Scott Foresman basal reading program (Experimental Group) scored higher on the DIBELS reading assessments than students instructed using only a basal reading instruction program.

Discussion

There are limitations to any research. Understanding flaws or weaknesses give greater comprehension. This study used the DIBELS assessments as the sole measurement to potentially determine the effectiveness of the IMSE Orton-Gillingham phonics program in a rural Midwestern school system. This alone could be argued problematic. When evaluating educational programs, it is difficult to specify that a

program is effective based on only one measurement. This study was outlined with the intent to control several factors within the framework of the study design. DIBELS assessment categories, study participants, similar reading instructional practices, and participant demographics were all carefully selected to provide an effective overall study design. However, there were factors that were not controllable. This study did not evaluate teacher age, years of experience, and educational training. Like students, teachers have a wide variety of learning and teaching styles based on their background and personal experiences. This study assumed class sizes would equate to the Oklahoma State Department of Education recommendation of a 20 student to 1 teacher ratio. There was no inquiry into differences in class sizes from either the experimental or control group. Special education students were included in the study. However, they were not identified. No attempt was made to determine the number of special education students or recognize their learning disability in either the experimental or control group.

The DIBELS assessments for the first research question revealed that the average mean in each tested category improved from the beginning of the year to the end of the year. As educators, we expect to see improvement in student results in any class or program over the period of a year. However, by further analyzing the data in each category including the DIBELS benchmark comparisons and the *t*-test mean results, we can assume there is a statistical relationship between the student's DIBELS assessment results from the beginning of the year to the end of the year. The DIBELS student benchmark recommendations increase from the beginning of the year to the end of the year to help account for this expected growth. Additionally, the total percentage of students achieving the DIBELS recommended benchmark goals, increased in two out of

three categories from the beginning of the year to the end of the year. This study used archived data from the fall of 2007 to the spring of 2009. The rural Midwestern school system began using the DIBELS assessment in the fall of 2006. A limitation of this study was the inability to acquire data from the 2006 school year and compare student DIBELS assessment results from that year when treatment did not occur, to the DIBELS assessment results of this study. This data would have given further insight to the questions asked in this study by comparing students who did not receive the IMSE program to students that did.

Comparing differences and similarities of the experimental group and control group school systems were a significant element of the second research question. The control group was selected primarily for three reasons. First, the control group school system used a basal reading program. Second, they collected DIBELS assessment scores in the same manner as the experimental group. Third, the demographics of the school were similar to the experimental group. However, like the first question, no inquiry was directed towards teacher variation, class size, or special education population.

Furthermore, two specific differences are noteworthy. First, the teachers in the experimental group received 40 additional hours of professional development in the IMSE phonics program while the control group did not receive any additional professional development. Second, the teachers in the experimental group were trained and began using the DIBELS assessments in 2006. The control group first started using the DIBELS assessments in 2003. While all teachers in this study were trained using the DIBELS assessments, variation in assessment effectiveness was not included in this study.

Implications for Theory, Research, and Practice

The results of this study imply that using a balanced approach to reading incorporating both basal instruction and systematic phonics is effective. The theoretical framework of for each component of this study: IMSE Orton-Gillingham phonics reading program, Scott Foresman (2009) basal reading program (Experimental Group), the Macmillan-Mcgraw Hill (2009) basal reading program (Control Group), and the Dynamic Indicators of Basic Literacy Skills (DIBELS) are based on teaching reading with a balanced approach of instruction. All of the elements target a systematic method of instruction that incorporates different instruction techniques and methods. The priority skills model including focusing on phonemic awareness, phonics, fluency, vocabulary, and text comprehension is prevalent in each curricula and the DIBELS assessment.

The limitations of this research study are foundations for future research studies. Taking into consideration the uncontrollable factors of this research study could be a place to start. There was no inquiry to the differences or dissimilarities in teacher backgrounds, education or experiences. A qualitative or mixed methods study including as part of the research design the exploration of teachers' experiences using the IMSE multi-sensory reading program is a research opportunity. Researchers utilizing phenomenology as the guiding methodology, for example, could attempt to interpret and describe textually teachers' lived experiences implementing and teaching the IMSE reading program. Interviewing teachers would provide direct significant information, giving a greater understanding of their perceptions of the effectiveness of the IMSE reading program and lend insight to the mounting pressures teachers encounter in a test-results-oriented political environment. This research would allow for further definition of

the IMSE reading program's effectiveness beyond what is specifically defined by assessment scores. Another study could target the association between the IMSE reading program and DIBELS assessments. Teachers' instructional characteristics although similar, differ from classroom to classroom. The same could be said for their interpretation of students' individual DIBELS assessments. Interviewing teachers would provide a greater understanding of their individual classroom preparation and DIBELS assessment techniques lending to the validity of both programs.

Another area of research could involve the benefits of increased professional development. For this study, teachers were provided 40 hours of inclusive training of how to use the IMSE supplemental phonics reading program. The control group teacher received no additional professional development. What would the DIBELS assessment scores have revealed if the control group teachers had received 40 additional hours of professional development teaching phonics with in their basal reading program?

Research in this study was limited to the two periods of time in which the IMSE program was implemented in the rural Midwestern school system. There were no DIBELS assessment data comparisons to prior non-treatment years. Further research could compare the results of this study to other reading programs using the DIBELS assessments. Furthermore, future study research could be expanded into several different segments. First, this study tracked kindergarten and first grade students. Researchers could follow student progress through second grade by comparing DIBELS assessment results for Oral Reading Fluency. Second, additional research may investigate differences in gender. Third, Native Americans comprise a large segment of the population in Oklahoma. Further research could involve racial and/or cultural distinction.

Fourth, researching the implications of student socioeconomic status relating to the development of reading skills would be useful. Fifth, comparing special needs students with general population students would deepen understanding as related to the development of reading skills. Sixth, the use of the DIBELS assessments is common throughout Oklahoma. Many other school districts have implemented software that records DIBELS assessment scores on hand-held palm-pilots. Acquisition of archived data is accessible and may be useful in determining the effectiveness of other curricula.

The IMSE supplemental phonics instructional reading program is based on the Orton-Gillingham approach developed by neurologist Dr. Samuel T. Orton and educator Anna Gillingham. The instructional techniques Orton-Gillingham developed were specifically targeted for students with reading disabilities (Henry, 1998). There has been significant research completed regarding the use of synthetic and multi-sensory phonics instruction for students who struggle with reading (Foorman et al., 1997; Joshi et al., 2002; Sadoski et al., 2006: Shaw et al., 2008; Torgensen et al., 2001). However, prior to this study, little research was available regarding the use of multi-sensory reading instructional techniques or programs in the typical elementary classroom. The results of this study suggest that using methods and techniques originally composed for students with reading disabilities may be appropriate for mainstream reading instructional practices.

Summary

In conclusion, the purpose of this research study was to examine the effectiveness of an IMSE Orton-Gillingham based multi-sensory supplemental phonics instructional reading program when incorporated with basal reading instruction beginning in

kindergarten through first grade in one rural Midwestern school district using DIBELS assessment scores to define effectiveness. Based on the results of the study, both research questions' hypotheses were accepted. First, students who received the IMSE supplemental phonics instructional program when used in conjunction with the Scott Foresman basal reading program improved from the beginning of the year to the end of the year based on the measurements of the DIBELS assessments. Second, Students who were instructed using the IMSE supplemental phonics instructional program with the Scott Foresman basal reading program (Experimental Group) scored higher on the DIBELS reading assessments than students instructed using the Macmillan-Mcgraw Hill (Control Group) basal reading instruction program.

The study provided empirical evidence to support the school administration's decision to implement the program. Students who were instructed with Institute of Multi-Sensory Educations's supplemental phonics instructional program increased their proficiency in phonemic awareness, alphabetic principal skills, and scored higher in oral reading fluency when compared with students who did not receive the program. Though the study design prevents the conclusion that there is a direct cause and effect, a correlation of sorts seems to exist. These results are similar those identified by Joshi et al. (2002) and Scheffel et al. 2008.

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APPENDICE A

IRB APPROVAL

Oklahoma State University Institutional Review Board

Date:	Thursday, March 25, 2010
IRB Application No	ED1012
Proposal Title:	Examining the Effectiveness of a Multi-Sensory Instructional Reading Program in One Rural Midwestern School District
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 3/24/2011

Principal Investigator(s):

Steve Waldvogel
18465 Watson Way
Inola, OK 74036

Pamela Brown
237 Willard
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

X The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia Kennison, Chair
Institutional Review Board

VITA

Steven John Waldvogel

Candidate for the Degree of

Doctor of Education

Dissertation: EXAMINING THE EFFECTIVENESS OF A MULTI-SENSORY INSTRUCTIONAL READING PROGRAM IN ONE RURAL MIDWESTERN SCHOOL SYSTEM

Major Field: Curriculum and Instruction

Biographical:

Education:

Bachelors of Science in Hotel and Restaurant Administration from Oklahoma State University, Stillwater, Oklahoma, 1987.

Masters of Science in Trade and Industrial Education from Oklahoma State University, Stillwater, Oklahoma, 1994.

Completed requirements for Doctor of Education in Curriculum and Instruction from Oklahoma State University, May 2010.

Experience:

Culinary Arts Teacher, Lexington Skills Center, Lexington, Oklahoma.
Principal, Pioneer Technology Center, Ponca City, Oklahoma.
Assistant Superintendent, Inola Public Schools, Inola, Oklahoma.

Professional Memberships: Association for Supervision and Curriculum Development, International Reading Association, Oklahoma Association of Secondary Principals, Oklahoma Association of School Administrators.

ADVISER'S APPROVAL: Dr. Pam Brown

Name: Steven John Waldvogel Date of Degree: May, 2010

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: EXAMINING THE EFFECTIVENESS OF A MULTI-SENSORY INSTRUCTIONAL READING PROGRAM IN ONE RURAL MIDWESTERN SCHOOL SYSTEM

Pages in Study: 85 Candidate for the Degree of Doctor of Education

Major Field: Curriculum and Instruction

Scope and Method of Study:

The purpose of this research study was to examine the effectiveness of an (IMSE) Orton-Gillingham based multi-sensory instructional reading program when incorporated with kindergarten through first grade classroom reading instruction in one rural Midwestern school district. The IMSE supplemental reading program is designed to be integrated into existing reading curricula to provide a multi-sensory, phonetic, and organized instructional tool. The IMSE supplemental reading program involves direct instruction in phonemic awareness and application of phonetic rules for 30 minutes of a 90 minute reading instructional block each day. The remaining 60 minutes of the reading instructional block includes systematic instruction using Scott Foresman (2009) basal reading instruction curriculum.

Findings and Conclusions: Students who received the IMSE Orton-Gillingham based multi-sensory supplemental phonics instructional program when used in conjunction with the Scott Foresman basal reading program improved from the beginning of the year to the end of the year based on the measurements of the DIBELS assessments. Students who were instructed using the IMSE supplemental phonics instructional program with the Scott Foresman basal reading program (Experimental Group) scored higher on the DIBELS reading assessments than students instructed using the Macmillan-Mcgraw Hill (Control Group) basal reading instruction program.

ADVISER'S APPROVAL: Dr. Pam Brown