The Effect of Read Naturally on Reading Achievement of Upper Elementary Students

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Abstract

The purpose of this study was to investigate the effectiveness of the Read Naturally, an intervention program designed to increase oral fluency rate, as measured by AIMSweb, of identified at-risk readers in fourth, fifth, and sixth grades. In addition, this study investigated whether the effect of Read Naturally on the oral fluency rate of at-risk fourth, fifth, and sixth grade students was influenced by membership in the super-subgroup. In this study the super-subgroup was defined by the state of Missouri to include Black students, Hispanic students, students with disabilities, English Language Learners, and low income students. The sample size for this study consisted of 27 students attending a suburban, public elementary school. Read Naturally was administered to students in the fall, winter, and spring of the 2013-2014 school year. A quantitative research design was used to determine the effect of Read Naturally on oral reading fluency during each of the three testing periods (fall to winter, winter to spring, and fall to spring). One-sample *t* tests were conducted to determine growth in oral reading fluency. Results revealed statistically significant growth in the oral reading fluency of fourth and fifth grade students. On average, the oral reading fluency growth for fourth and fifth graders participating in Read Naturally was higher than the null value of 0 at each of the three testing periods. In addition, results indicated marginally significant growth in the oral fluency of sixth graders participating in Read Naturally. On average, during the fall to winter testing period, the oral reading fluency growth for sixth graders tended to be higher than the null value of 0. During the winter to spring and fall to spring testing periods, growth in the oral reading fluency of sixth graders was statistically significant. On average, the oral reading fluency growth for sixth graders

during the winter to spring and fall to spring testing periods was higher than the null value of 0. Two-sample *t* tests were conducted to address the effect membership in the super-subgroup had on oral reading fluency. There was no statistically significant difference between the oral reading fluency growth of fourth grade students in the super-subgroup and fourth grade students not in the super-subgroup. The results for fifth graders indicated the oral fluency growth for fifth graders in the super-subgroup was lower than the oral reading fluency growth for fifth graders not in the super-subgroup. Further, the growth in oral reading fluency tended to be lower for sixth grade members in the super-subgroup as compared to sixth grade students in the non super-subgroup. The implications of this study can suggest an effective intervention program to use with struggling readers in grades 4 through 6 as well as with students in fourth and fifth grade whose demographics are similar to those of the super-subgroup. Recommendations for future research include repeating the study using a larger sample size, conducting an experimental study of an oral reading fluency intervention such as Read Naturally, and examining a cohort of students over time.

Dedication

This dissertation is dedicated to my amazing family. An extreme sense of gratitude is felt for my parents, Steve and Scherry Salmon. Although they themselves were not college graduates, they influenced me to pursue my educational goals. From an early age they taught me the value of education and instilled within me the belief that I could accomplish anything I set my heart on. It was through their constant love, generosity, and encouragement that I was able to accomplish all that I have. My only regret is not having my mom here at the end of this journey to celebrate with me.

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Table of Contents

List of Tables

Chapter One

Introduction

The ability to read provides the needed foundation for all future learning. A child's early years in school are spent learning to read and their remaining educational years are spent reading to learn (Chall, 1983, 1996; Palumbo & Sanacore, 2009). Learning to read is a process-oriented activity in the primary grades and text-oriented in the upper grades (Palumbo & Sanacore, 2009). In the early years of school, children learn patterns of letters and sounds which evolve into the application of this knowledge to construct meaning from text. Reading develops over time and with experience. The journey to be a competent reader begins in the primary grades with reading instruction focused on the acquisition of basic skills such as phonemic awareness and phonics. From these, word knowledge and decoding develop and continue to evolve into more sophisticated levels of knowledge-based competencies such as vocabulary and comprehension. The application of these skills allows the reader to engage with and make meaning of the text. Continued development in reading is necessary to keep pace with the increasing demands of academic content, succeeding in school, and fulfilling life potential (Alexander, 2012; Lyon & Chhabra, 2004).

Although most children learn to read in the primary grades, not all children are proficient readers by the end of third grade. A significant number of children are not developing the needed skills to be successful in school and the workplace (Morrison, Bachman & Connor, 2005). According to the National Center for Education Statistics (NCES) (2010) two-thirds of fourth graders cannot read on grade level. Statistics have shown students not reading on grade level have an increased chance of being a school

drop-out, ending up in jail, or living on welfare. Efforts to close the achievement gap and increase the literacy rate in America have been a focal point of national policy and state legislation for decades. From the Elementary and Secondary Education Act (ESEA) of 1965 to the *Nation at Risk* report published in the early 1980's by the National Commission on Excellence in Education to the No Child Left Behind Act of 2002 within the current decade, literacy skills and reading achievement remain high priorities. Accountability for the academic achievement of all students, including minority, disabled, and the economically disadvantaged, has resulted in the need for scientifically based reading programs, high-quality reading instruction, and ongoing assessment to ensure that all children learn to read by the end of third grade. More than two decades of reading research has suggested that nearly all students, with appropriate instruction, can become competent readers (Denton, Fletcher, Anthony, & Francis, 2006; Lyon, Fletcher, Fuchs, & Chhabra, 2006). Schools must ensure the continual development of reading skills and address areas of deficit so all students are prepared for college and career (Missouri Department of Elementary and Secondary Education [DESE], 2013). When a student does not respond to instruction, steps must be taken to address skill deficits.

Despite the abundance of research on effective approaches to teach children to read, the study of intervention programs that serve students who are not proficient readers is needed. Commercial intervention programs aimed to increase reading skills are readily available. However, instructional time is a scarce resource. Research can contribute to finding the intervention programs that, when used with fidelity, will contribute to the development of fluent readers.

Background

For some children, learning to read comes naturally. For others, learning to read is difficult and often discouraging. Without early identification and intervention, poor readers in first grade often remain poor readers in future grades (Denton et al., 2006; Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Stanovich, 1986; Torgesen & Burgess, 1998).

In 2000, the National Institute of Child Health and Human Development (NICHD) reported the research findings of the National Reading Panel (NRP) on effective instructional methods in key skill areas of reading. This pivotal report influenced instructional methods and approaches to teaching children how to read (NICHD, 2000a). The panel was charged with evaluating existing research, determining the most effective instructional approaches, and reporting their findings. The NRP reviewed over 100,000 research studies on reading and combed through a wide range of theories, instructional programs, assessments, curricula and educational policies all related to reading (NICHD, 2000a). The findings of the panel provided guidance as to what the focus should be when teaching students how to read.

The analysis of the NRP revealed that the best approach to reading instruction for all students is one that includes explicit instruction in five key areas. The key areas were identified as: phonemic awareness, phonics instruction, fluency, vocabulary, and comprehension (NICHD, 2000a). Phonemic awareness was defined as knowing that words are made up of individual sounds; it is an understanding about spoken language. A phoneme is the smallest unit of sound. Having the ability to manipulate individual

sounds into oral speech is called phonemic awareness. Phonemic awareness is the most basic skill in the process of learning to read (NICHD, 2000a).

Phonics, a key concept in learning to read, should not to be confused with phonemic awareness. Phonics explains the relationship between letters and sounds (NICHD, 2000a). Phonics instruction helps readers understand how letters are linked to sounds, called phonemes. Phonics provides a foundation for learning to read and spell.

The NICHD (2000a) identified fluency instruction as another of the five essential factors necessary for reading. Fluency serves as the bridge between word recognition and comprehension. Fluent readers spend less time on decoding words, therefore leaving more time to construct meaning or comprehending what is read. A fluent reader reads with speed, accuracy, and proper expression which translate into comprehension (Rasinski, 2003).

Vocabulary is essential to the development of reading skills. Vocabulary is both the recognition and understanding of words. Growth in reading is dependent on growth in word knowledge (NICHD, 2000a). Vocabulary development relies on both the spoken and written word. "The larger the reader's vocabulary, the easier it is to make sense of the text" (NICHD, 2000a, p. 13).

Comprehension, the essence of reading, allows the reader to understand what is being read. Reading comprehension is a complex cognitive process that requires an active interaction between the reader and the text (NICHD, 2000a). The development and application of comprehension strategies deepens the level of understanding of what is read.

Children who fail to become good readers in the primary grades are at-risk of future learning. In a report of the NICHD (2000a), 74% of children entering first grade who are at risk of reading failure continued to have problems reading as adults. High-quality classroom instruction should meet the needs of most students (Torgesen, 2005). For struggling readers, intensive intervention may be needed in addition to high-quality classroom instruction. Reading interventions can significantly change a student's academic path to improvement (Denton et al., 2006). Although it is widely known that early intervention is best to address reading difficulties and to prevent future reading problems, not all at-risk readers in the primary grades receive timely interventions, or participate in effective interventions (Flynn, Zheng, & Swanson, 2012).

Response to Intervention (RTI) was found to be an effective strategy for improving reading outcomes for students (Denton et al., 2006; NCLB, 2002). RTI was developed as a tiered-system to focus on the most effective delivery of instruction to children in the general classroom and to reduce referrals to special education (DESE, 2013). Intervention models utilizing RTI include tiered levels of support that begin in the regular education classroom and could progress to students receiving more intensive help. The most common framework for RTI is a three-tiered framework for instructional supports (Denton et al., 2006).

Tier 1 is the universal level. All students receive core academic instruction in this tier. Approximately 80-90% of students achieve proficiency at this level (Howard, 2009). Tier 2 is comprised of core curriculum plus targeted instruction for students needing additional academic support. Students participating in Tier 2 instruction continue to receive in-class instruction as well. Five to 15% of students fall into this tier

(Howard, 2009). Typically, students in Tier 2 work in a small group setting. Tier 3, the most intensive intervention level, includes core curriculum supplemented by individualized academic supports. The intensive intervention is delivered in a 1:1, no more than 1:3, setting. Approximately 1-5% of students require this level of intensive interventions (Howard, 2009).

At the onset of the 2010-2011 school year, the Lee's Summit R-7 School District (LSR-7), a suburban district in Missouri, adopted a RTI model as a means to address struggling students. Specifically, students achieving below the 25th percentile on the Academic Improvement Monitoring System (AIMSweb) were identified as struggling students and recommended for placement in a Tier 2 reading intervention. AIMSweb was the universal screening, progress monitoring, and data management system approved by the State, and the LSR-7 School District decided to use it to support RTI. AIMSweb, a universal screening and progress monitoring system, was selected by the LSR-7 School District to provide a snapshot of students' reading abilities. AIMSweb is a standardized set of commercially published passages (Howe & Shinn, 2002). This computer-based benchmark testing tool was developed by Pearson Education and customized with standards for reading in Missouri (Caldwell, personal communication, 2013). However, AIMSweb is curriculum independent, meaning that it can be used regardless of the reading program in use. AIMSweb assesses reading fluency and accuracy.

Read Naturally, an intervention designed to improve reading fluency, was selected as an intervention for students needing support through Tier 2. Read Naturally is a computer-based intervention aimed to improve reading fluency, accuracy, and comprehension (Ihnot, personal communication, 2015). It includes three empirically

supported strategies – reading from a model, repeated readings, and progress monitoring (Ihnot, personal communication, 2015; What Works Clearinghouse, 2013).

The district used for the current study was LSR-7, located in western Missouri. The district stretches more than 117 square miles and operates an early childhood center, 18 elementary schools, three middle schools, and four high schools (LSR-7, 2014). According to the DESE (2014b), the student to staff ratio in 2013 was 20:1 with the student to administrator ratio being 266:1. In all, the professional staff has an average of 15.2 years teaching experience. The LSR-7 serves nearly 18,000 students in kindergarten through twelfth grades. Graduation rates from 2011-2014 have increased from 90.39% to 94.06%, or by 3.67%. Enrollment trends over the past three years indicate a district-wide growth of 91 students.

Meadow Lane is one of eighteen elementary schools in the LSR-7 School District. According to DESE School Data and Statistics (2014b), Meadow Lane serves approximately 565 students in grades kindergarten through sixth. Approximately 49% are female and 51% are male. Less than 1% (n=4) of the 565 students were identified as English Language Learners (ELL), and slightly less than 6% (n=33) of the total population received special education services through an individualized education program. Further, 52.2% of the 565 students receive free or reduced price school lunches. The table below shows the demographics of students in grades four through six enrolled at Meadow Lane during the 2013-2014 school year.

Table 1

Demographics of Fourth through Sixth Graders at Meadow Lane in 2013-2014

		White	Asian	Black	Hispanic	Native American	Multi-Racial	Total
Grade 4	N	41	4	11	5	0	2	63
	%	65	6	17	7	0	3	
Grade 5	N	45	3	15	6	1	9	79
	%	57	4	19	8	1	11	
Grade 6	N	45	2	17	8	0	7	79
	%	57	2	21	10	0	8	

Note. Adapted from "Demographic Data", by DESE School Data and Statistics, 2014b

During the 2011-2012 school year, Meadow Lane Elementary implemented Read Naturally as an intervention to improve reading fluency for identified struggling readers in fourth, fifth, and sixth grades. Read Naturally, considered by the school district as a Tier 2 intervention, continued to be offered for the next two years (J. Caldwell, personal communication).

Statement of the Problem

A citizen of the 21st century must be able to think critically, communicate, collaborate, and demonstrate creativity. Each of these is grounded in literacy. More than ever before, literacy is critical to a student's future success in school and beyond (Torgesen et al., 2007). Legislation and reform efforts have focused heavily on early literacy as a means to improve outcomes for students. However, there is growing interest in reading instruction beyond the primary grades.

According to the National Center for Education Statistics (2010), the average reading achievement scores of fourth grade students on NAEP has remained stagnant

over the last few years showing little change. For example, on average, 67% of fourth graders were at or above the basic range of proficient in 2009. By 2013 the average was 68%. Further, 33% of fourth graders were at or above proficient in 2009 while in 2013 the average was 35%. As students move beyond the primary grades, they are presented with more challenging reading material and are required to use a broader range of skills.

When students enter the fourth grade as an at-risk reader their limitations impede achievement not just in communication arts, but also in other content areas. A struggling reader or a student at-risk of reading failure requires more instruction than typically given in a classroom setting. Struggling at-risk readers need to be identified and provided an intervention to fill gaps of missing skills. Evidence suggests that academic outcomes can improve for at-risk readers with the integration of intensive targeted instruction (Torgesen et al., 2007). Older students with reading difficulties benefit from interventions focused on oral reading fluency as well as vocabulary and comprehension (Rasinski & Hoffman, 2003; Torgesen et al., 2007).

Purpose Statement

The purpose of this study was to investigate the effect of the Read Naturally intervention program on the oral fluency rate, as measured by AIMSweb, on identified at-risk readers in fourth, fifth, and sixth grades. Specifically, the purpose of this study was to investigate whether the effect of Read Naturally on the oral fluency rate of at-risk fourth, fifth, and sixth grade students was influenced by membership in the super sub-group. The super sub-group was comprised of Black students, Hispanic students, low-income students, students with disabilities, and English Language Learners. Students of

these demographics were identified by the State of Missouri as historically low performing based on the state's student achievement data (DESE, 2014a).

Significance of the Study

The significance of this study lies within the problem of upper elementary students reading below grade level. The problem of students reading below grade level is addressed within this study by determining the effect of Read Naturally, a computer-based reading intervention program used within a Response to Intervention (RTI) service delivery model. Specifically, the present study could suggest an effective intervention program to use with struggling readers in grades four through six as well as with students whose demographics are similar to those of the super-subgroup. In addition, this study could help determine if Read Naturally supported the reading growth claimed by the vendor. Results of this study could provide guidance to teachers and administrators as they examine the needs of students in the area of reading achievement to determine reading interventions which would be best paired with defined reading deficits.

Delimitations

Delimitations are the characteristics that limit the scope and define the boundaries of the study (Roberts, 2004). This study was delimited in the following ways: (1) the population included one public, suburban elementary school in Missouri; (2) the study focused on only those students lacking proficiency in fluency; (3) subjects in the study participated in Read Naturally during the 2013-2014 school year; (4) subjects in the study were students in fourth, fifth, and sixth grades; and (5) reading progress was monitored by AIMSweb.

Assumptions

Assumptions are factors in the research "that are accepted as operational for purposes of the research" (Lunenburg & Irby, 2008, p. 135). The following assumptions were made in order to conduct this study:

1. AIMSweb benchmark assessments were implemented with fidelity and efficacy by trained individuals.
2. Read Naturally instruction was implemented with fidelity.
3. Interventionists received training from a district reading specialist.
4. Students were motivated to give their best effort during Read Naturally instruction.
5. Students were encouraged to perform their best when assessed by AIMSweb.

Research Questions

According to Creswell (2009), research questions derive from the broad, general purpose statement to more focused, specific questions. The following research questions guided this study:

RQ1. To what extent do fourth grade students participating in Read Naturally show growth from fall to winter in oral reading fluency, as measured by AIMSweb?

RQ2. To what extent do fourth grade students participating in Read Naturally show growth from winter to spring in oral reading fluency, as measured by AIMSweb?

RQ3. To what extent do fourth grade students participating in Read Naturally show growth from fall to spring in oral reading fluency, as measured by AIMSweb?

RQ4. To what extent is the fall to winter growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally affected by membership in the super-subgroup?

RQ5. To what extent is the winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally affected by membership in the super-subgroup?

RQ6. To what extent is the fall to spring growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally affected by membership in the super-subgroup?

RQ7. To what extent do fifth grade students participating in Read Naturally, show growth from fall to winter in oral reading fluency, as measured by AIMSweb?

RQ8. To what extent do fifth grade students participating in Read Naturally, show growth from winter to spring in oral reading fluency, as measured by AIMSweb?

RQ9. To what extent do fifth grade students participating in Read Naturally, show growth from fall to spring in oral reading fluency, as measured by AIMSweb?

RQ10. To what extent is the fall to winter growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally affected by membership in the super-subgroup?

RQ11. To what extent is the winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally affected by membership in the super-subgroup?

RQ12. To what extent is the fall to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally affected by membership in the super-subgroup?

RQ13. To what extent do sixth grade students participating in Read Naturally, show growth from fall to winter in oral reading fluency, as measured by AIMSweb?

RQ14. To what extent do sixth grade students participating in Read Naturally, show growth from winter to spring in oral reading fluency, as measured by AIMSweb?

RQ15. To what extent do sixth grade students participating in Read Naturally, show growth from fall to spring in oral reading fluency, as measured by AIMSweb?

RQ16. To what extent is the fall to winter growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally affected by membership in the super-subgroup?

RQ17. To what extent is the winter to spring growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally affected by membership in the super-subgroup?

RQ18. To what extent is the fall to spring growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally affected by membership in the super-subgroup?

Definition of Terms

The following terms were defined for the purpose of this study:

At-risk. A classification given to students who, after an assessment of their reading skills, are deemed as at-risk for poor reading outcomes (Compton, Alberto, Compton, & O'Connor, 2014).

Basic. A student achieving at this level of competence demonstrates partial mastery of the knowledge and skills necessary for that grade level. A student can derive overall meaning from what is read, make connections between text and personal experiences, and make inferences (NAEP, 2013).

Data-based decision-making. Information obtained from assessment including universal screening, diagnostic assessment, and ongoing progress monitoring and supports effective instructional decision-making (DESE, 2012).

Fluency. Reading fluency is the ability to read text quickly, accurately, and with appropriate expression (Kuhn & Stahl, 2003; NICHD, 2000a; Rasinski, 2003).

Proficiency. A student reaching this level of competence can demonstrate subject-matter knowledge, application of such knowledge and analytical skills appropriate to the subject matter (NAEP, 2013).

Progress monitoring. A component of RTI used for instructional decision-making based on a student's response to an intervention. Progress is measured by comparing expected and actual rates of growth. It occurs regularly and frequently over the course of an intervention (DESE, 2012).

Reading Rate. Reading fluency is measured by reading rate which is the number of words read correctly in one minute on grade level text (Rasinski, 2012).

Super-Subgroup. In Missouri's accountability system, this group is known as the Student Gap Group. It is comprised of five subgroups; Black students, Hispanic students, low-income students, students with disabilities, and English Language Learners. Students of these demographics are historically low performing based on the state's student achievement data (DESE, 2014a).

Overview of the Methodology

A quantitative research design was used to determine the effect of a research-based reading intervention on fluency achievement scores of at-risk readers. A non-experimental, pre-test and post-test design involved the use of a purposive sample of students in grades four through six. The population of students identified for this study included fourth, fifth, and sixth grade students scoring below the 25th percentile on AIMSweb in the fall of the 2013-2014 school year. The sample for this study included fourth, fifth, and sixth grade students enrolled at Meadow Lane Elementary School during the 2013-2014 school year. Read Naturally, an intervention program designed to improve oral reading fluency, was administered to selected students in the fall, winter, and spring of the 2013-2014 school year. The AIMSweb data were input into an Excel spreadsheet and scores were analyzed.

Organization of the Study

This chapter included an introduction of the study, the problem statement and background information. The significance, purpose statement, delimitations, and assumptions of the study were also provided as well as the research questions and definitions of key terms. The final component of chapter one was a brief overview of the methodology. Chapter two presents a review of the literature beginning with an overview of how children learn to read and the impact reading programs have on student achievement. In addition, an overview of RTI is presented as well as research on Read Naturally. Chapter three describes the methodology used. Information is provided on the research design, population and sample, sampling procedures, instrumentation, measurement, validity and reliability, data collection procedures, data analysis and hypothesis testing, and concludes with limitations of the study. Chapter four includes descriptive statistics, and the results of the hypothesis testing, and additional analyses when appropriate. Finally, chapter five interprets the findings, provides implications, lists recommendations for future studies, and states conclusions.

Chapter Two

Review of Literature

Literacy in America continues to be an area of concern for educators. Although most children learn to read effectively during their elementary years, not all children are proficient readers by the end of fourth grade. The implications for children not reaching levels of reading proficiency extend beyond formal schooling. In the United States, an estimated 30 million adults are considered illiterate and read below a fifth grade level (Kutner et al., 2007). Many individuals lack the basic literacy skills necessary to function effectively in today's complex society (Kutner et al., 2007).

A common goal of education is to ensure that all students are equipped with the literacy skills needed to be college and career ready, able to compete in the global economy and productive citizens (Carnegie Council on Advancing Adolescent Literacy, 2010). Children with reading difficulties not only encounter challenges in school, but throughout life (Compton et al., 2014; Fiester, 2013; Lesnick, George, Smithgall, & Gwynne, 2010). Children who are poor readers are more likely to be retained, drop out of school, commit crime, and end up on welfare later in life (Buffum, Mattos, & Weber, 2010; Compton et al., 2014; Lesnick et al., 2010). The price of failing to close the reading achievement gap is huge.

Chapter two includes a review of the literature. The purpose of this review of literature was to analyze findings of studies that relate to literacy in public schools, specifically at the elementary level. First, a historical perspective of educational policies is presented, including Response to Intervention (RTI). This includes a discussion of special education law and its influence on general education. Second, an examination of

research about improving reading for upper elementary grades (4^{th} – 6^{th}), with a focus on fluency, is provided. Finally, research regarding the effectiveness of computer-based reading interventions is reviewed.

Historical Perspectives

For decades, education laws and reform efforts have sought to combat illiteracy in America by influencing instructional practices (Fuchs & Fuchs, 2006; NCLB, 2002; NICHD, 2000a; Prasse, 2006). Recent federal mandates have caused a shift in state laws and local school policies. The shift lies in the accountability to meet the individual needs of each child. Reading, an essential skill for leading a productive life, receives a lot of attention and remains on the priority list for student success.

Since the 1960s, the National Assessment of Educational Progress (NAEP) has been an on-going assessment of what public school children in America know and are able to do in the academic subjects of mathematics and reading (Kessinger, 2011; NCES, 2010). The NAEP is given to a random sample of students in grades 4, 8, and 12 to assess how well U.S. students are meeting educational standards and to monitor changes in academic achievement over time. The NAEP has served as the primary indicator of national and state reform efforts (Kessinger, 2011). Since the No Child Left Behind (NCLB) Act of 2002, the NAEP has assessed reading in grades 4 and 8 every two years and every four years in grade 12.

The NAEP reading assessment is designed to measure the comprehension of grade-level materials. Nearly four out of ten 4^{th} graders read below a basic level needed for school success (NAEP, 2011). The NAEP (2011) reading assessment gauged the performance of 4^{th} grade students in reading for literacy experience and information.

Approximately 34% of 4th graders scored at or above proficiency. Higher percentages of Asian/Pacific Islander and White students scored at or above this level in comparison to Black, Hispanic, and Native Americans. In its 2011 report, NAEP found that of all those who took the exam, approximately one-half of Black, Hispanic, and Native Americans 4th graders scored below the basic achievement level. Furthermore, students eligible for free or reduced price meals scored lower on the NAEP than students who were not eligible (NAEP, 2011). Similarly, an international comparative study of student achievement, known as the Progress in International Reading Literacy Study (PIRLS) found that, although all U.S. 4th grade students scored higher than the international average, the majority of U.S. Black and Hispanic 4th graders scored below the U.S. average (Mullis, Martin, Foy, & Drucker, 2012). Furthermore, 4th graders in schools with "moderate to high proportions of poverty scored lower than the U.S. national average" (Thompson et al., 2012, p. 15).

The current state of literacy in U.S. public schools is reflected in national and international comparisons of reading data. Finding ways to combat discrepancies in reading performance of U.S. students when compared to other nations has been on-going. For more than four decades educational policies have been developed and revised in an effort to improve educational outcomes for all students.

Despite the political unrest during the civil rights movement, education received a great deal of attention in the 1960s and 1970s (Keogh, 2007). The increased interest in disadvantaged children, including minority, disabled, and those in poverty, spurred the federal government to get involved in education, which until this time, had been left to individual states. The government took steps to provide equality in education through

federal fund distribution associated with legislative acts. Through the passage of the Elementary and Secondary Education Act (ESEA) of 1965 and the Education for All Handicapped Children Act (EHA) of 1975, the federal government sought to remediate disparities in education. These two pieces of federal legislation, one considered regular education and the other considered special education, were examined.

The ESEA (1965) established the involvement of the federal government in K-12 education. Historically, state and local boards of education reigned over education policy. Schools under local control established their own curriculum and set of academic standards. Personnel and pedagogical decisions were made by teachers, administrators and local school boards. The ESEA was established under the principle that children from low-income homes required more educational services than their peers from more affluent homes (Public Law 89-10, Section 201). At the core of ESEA is Title 1, which was intended to provide financial assistance to schools educating children from low-income homes (Public Law 89-10, Section 201). The money distributed to local schools through Title 1 was based on the level of poverty in the school district. Funding was earmarked for compensatory education programs, such as supplemental reading instruction, designed to provide educational opportunities for poor students and to compensate for the lack of resources available in impoverished schools. The goal of ESEA was to improve educational opportunities for children of poverty by providing additional funding of resources, programs, and initiatives to schools serving these students.

Over time, there have been significant changes to the ESEA that reflect the conditions of education. In the 1980s, the National Commission on Excellence in

Education declared America's public, private and parochial schools and colleges as mediocre and failing to educate children to be competitive in a global society (U.S. DOE, 1983). In the report *A Nation at Risk*, concerns were expressed regarding the academic performance of American students in comparison to students in other countries. The report mobilized public support for more rigorous standards for students and teachers (Hurst, Tan, Meek & Sellers, 2003).

In 1994 the ESEA was reauthorized as the Improving America's Schools (IASA) Act (PL 103-382). This federal law was built on standards-based reform and was designed to ensure higher learning expectations for all students and to provide support to the school in the efforts to help students reach high state standards. Further, this piece of legislation not only focused on raising academic standards, but to also hold schools accountable for student performance (IASA, 1994, Section 1116). It was the last reauthorization of the ESEA before NCLB.

In 1998 an amendment to the ESEA emerged. Criteria were established for how federal funds could be used for selecting reading methods, materials, and programs (Allington, 2001). The Reading Excellence Act (REA) was enacted to "improve students' reading skills and teachers' instructional practices by implementing scientifically based reading research" (Mesmer & Karchmer, 2003, p. 636). The REA legislation was the first time the act of reading had been defined by the federal government (Howard, 2009; Mesmer & Karchma, 2003).

In addition to expectations, as outlined in the ESEA, federal legislation was enacted to address the needs of children with disabilities. The EHA (1975) was enacted to provide equal access to education for children with a disability (Public Law 94-142,

Section 601). Further, it was established to support state and local education agencies in protecting the rights of children with disabilities and their parents, while meeting the educational needs of each child (U.S. DOE, 2006).

Prior to PL 94-142, many states had laws excluding certain students from receiving a public education (Prasse, 2006). For example, in 1977, 80% of students with disabilities were placed in residential facilities (National Council on Disability, 2004; U.S. DOE, 2006). Many of these children were institutionalized in facilities where learning opportunities were virtually non-existent. While the basic needs of these individuals were met, rarely were they assessed or provided opportunities for education or rehabilitation (U.S. DOE, 2006). The original purpose of EHA was to find children with disabilities, assess their needs, determine eligibility for services, and provide them with an appropriate education (Prasse, 2006).

PL 94-142 seemed to be effective in paving the way for children with disabilities to receive appropriate educational services. However, the law did not provide a clear definition of what special education services meant. According to the law, special education simply meant something different than what nondisabled children were receiving in the classroom (Schraven & Jolly, 2010). The lack of clarity in the law lead to an increase in the number of children receiving special services and an over-identification of children, particularly those of minority groups, in special education (Keogh, 2007; International Reading Association, 2007; Schraven & Jolly, 2010; Walmsley & Allington, 2007).

Several amendments have been made to the original PL 94-142. In 1997, it was reauthorized under the title of Individuals with Disabilities Education Act (IDEA).

Children with disabilities were not only entitled to a free appropriate public education, but they were to be educated with non-disabled peers (IDEA, 1997). This effort lead to children with disabilities being educated in the least restrictive environment – most often thought to be the general education classroom. Furthermore, IDEA placed a greater emphasis on the educational outcomes for special education students. Students with disabilities not only needed to be included in regular education classrooms, but they should be held to the same achievement standards as non-disabled peers (Zigmond, Kloo, & Volonino, 2009).

In 1976, less than 2% of children had been identified as learning disabled, and by the year 2000 that number nearly quadrupled (Fuchs & Fuchs, 2006). Furthermore, the diagnostic approach, or discrepancy model, used to diagnose students as learning disabled, came into question. Traditionally, a student was identified as learning disabled when there was a discrepancy between the student's intellectual ability and achievement. Discrepancy was defined as being at least a 1.5 standard deviation between one's ability and actual performance. Often, this approach was considered a "wait to fail" model meaning that a student would not receive help until there was a quantifiable gap in their learning (Prasse, 2006). The concerns caused by the exponential increase of students identified using the discrepancy model and questions about the validity of the model itself lead to an examination of how schools identified students for special education (Griffiths, Parson, Burns, VanDerHeyden, & Tilly, 2007; MacMillan, Gresham, & Bocian, 1998; Prasse, 2006).

The IDEA of 1997 was reauthorized in 2004 and became known as the Individuals with Disabilities Education Improvement Act (IDEIA) which placed a greater

emphasis on pre-referral services to decrease over identification, especially of minority students, and avoid unnecessary referrals to special education (Klotz & Nealis, 2005; U.S. DOE, 2006). Regulations of the reauthorization allowed for the local education agency to use up to 15% of its special education funds to provide interventions designed to reduce the number of students categorized as learning disabled (IDEIA, 2005). Early intervention services were for all students, but with a greater focus on students in kindergarten through third grade who were identified as needing additional academic support (Klotz & Nealis, 2005; IDEIA, 2005). A further provision of the law required states to track the number of minority students being identified for special education and to provide early-intervention programs for children in groups that are determined to be overrepresented (Klotz & Nealis, 2005).

Furthermore, a provision within the reauthorization of IDEIA ensured that the lack of achievement by students was not due to teacher instruction (U.S. DOE, 2006). Prior to being referred for special education, data had to demonstrate that the student was provided appropriate instruction in regular education settings. The instruction had to be delivered by qualified personnel. Additionally, parents were to be notified of their child's performance and provided documentation of their progress, based on assessments of achievement given at reasonable intervals (U.S. DOE, 2006).

Since 1965 the ESEA has been reauthorized seven times, most recently in 2002. The passage of NCLB was thought to be the most comprehensive nationwide reform effort since the ESEA of 1965. The intent of NCLB (2002) was to close achievement gaps between high and low performing students, regardless of a student's background. NCLB established a system of accountability to ensure all students were making adequate

yearly progress as defined by state proficiency standards. The goal of NCLB (2002) was to provide a quality education to every child regardless of ability, background, or family income. This legislation pressured schools to improve academic proficiency levels of all students, including students receiving special education services, English Language Learners, children of poverty and minority students. According to Fuchs and Fuchs (2006) NCLB aimed to assess all students and to identify those considered at-risk so that remediation strategies could be put into place early to prevent the further development of learning problems. Students were assessed annually in grades three through eight and at least once in grades ten through twelve. Results of student performance were reported for all groups of students, including minority students, English Language Learners, students with disabilities, and students from low-income families. NCLB required all students in each state to reach the level of proficiency in math and reading by 2014.

Although IDEIA federal legislation regarding accountability predated NCLB, the 2004 reauthorization brought IDEIA in closer alignment with NCLB's performance accountability. In 2004, nearly 30 years after PL 94-142 was passed, a significant change was made to how states could determine whether a child had a specific learning disability (IDEIA, 2005). The change provided state and local education agencies more flexibility. The law permitted the use of a process to determine if the child responded to a scientific, research-based intervention as part of the evaluation procedure (IDEIA, 2005). This process came to be known as Response to Intervention (RTI).

Response to Intervention

RTI was included in IDEIA as a means to distinguish between children truly having a learning disability from those whose learning difficulties could be resolved with

an evidenced-based intervention in the general education classroom (Fuchs, Mok, Morgan, & Young, 2003). According to Johnston (2011), RTI was reflected in the IDEIA in two ways, "an identification frame and an instructional frame" (p. 4). First, RTI could be used as an alternate means to identify who was or was not learning disabled (Callender, 2007; Johnston, 2011; O'Connor, Harty, & Fulmer, 2005). Second, RTI, when used as an alternative identification frame for special education, must be based on outcomes of targeted interventions and not on a mathematical discrepancy between IQ and academic achievement. RTI worked against the previous "wait to fail" or discrepancy model by providing early identification and early intervention for struggling students.

The purpose of RTI was to provide a framework for efficiently allocating resources to improve student outcomes (Buffum, Mattos, & Weber, 2012; Fuchs & Fuchs, 2006;). Fuchs and Fuchs (2006) cited two reasons for the adoption of a RTI model. The reasons were (1) the rapid rise in costs associated with the over identification of students needing special education and (2) shortcomings of the IQ-achievement discrepancy model for identifying students with learning disabilities.

Consensus between special education and regular education pushed RTI to the forefront as a viable alternative to the IQ-achievement discrepancy model in identifying students having a learning disability (Scanlon & Sweeney, 2008; VanDerHeyden & Jimerson, 2005). Schools were now allowed to use evidence of a student's response to instruction and intervention (Griffiths et al., 2007). RTI was founded on the objective to prevent most children from being identified as learning disabled (Johnston, 2011). RTI changed the way the educational needs of students were identified and met.

RTI, which began as a response to address the lack of outcomes for special education students, quickly emerged as a general education initiative. Its intent was to distinguish between students with a true disability from those whose shortfalls in learning were correctable with proper instruction (Fuchs & Fuchs, 2006). RTI was designed to integrate both general education and special education into one system to serve the needs of all students. It was not only a mechanism to identify children with learning disabilities, but to also reduce inappropriate referrals to special education due to insufficient instruction (Swanson, Solis, Ciullo, & McKenna, 2012; Walmsley & Allington, 2007). One goal of RTI was to broaden strategies used in the regular classroom before considering a referral for special education (Fuchs & Fuchs, 2006; Howard, 2009).

Fuchs, Mok, Morgan and Young (2003) described RTI as a process to provide additional support to a greater number of students identified as struggling learners. Further, they suggested that providing individualized and intensive instruction effectively separated those with a true disability from those missing skills due to a lack of instruction. The RTI process involved the identification of students not meeting grade level expectations. These students, presumed to be at-risk, were provided an instructional intervention. The goal of the intervention was to accelerate the student's rate of growth so they could catch up to grade level expectations (Scanlon & Sweeney, 2008). Buffum, Mattos, and Weber (2010) suggested RTI was not a means to an end, but rather an ongoing process to improve teaching and learning. Students learn at different rates and therefore, may benefit from additional time, resources, and support needed to learn (Buffum, Mattos, & Weber, 2010).

Levels of response to intervention. Although the initial concept of RTI was for identification of a specific learning disability, RTI became an instructional delivery mechanism. RTI as an instructional tool was a provision to improve learning outcomes for all students (National Center on Response to Intervention, 2010). The framework of RTI consists of a process for data-based decision making in order to differentiate instruction and provide an intervention to improve student achievement. According to VanDerHeyden (2014), there is no single, universal model of the RTI process. However, most RTI models include a multilevel system of support that becomes more intensive and individualized as a student moves through the levels. Most RTI models primarily consist of three levels; primary, secondary and tertiary. Schools may vary the number of levels, and refer to them as tiers instead of levels.

Tier 1. Tier 1 is the primary level of support. In this level standard instructional practices of the core curriculum occur in the general education classroom for all learners. Each learner is expected to meet identified grade-level expectations (Fuchs, Fuchs, & Compton, 2012; Howard, 2009). Intervention within Tier 1 begins simply as differentiated instruction in the general education classroom. When Tier 1 is implemented with fidelity, research shows that approximately 80% of students respond favorably to instruction (Howard, 2009).

Assessments that occur in Tier 1 include universal screening, formative assessment and standardized progress monitoring. A universal screening instrument is used with all students to determine grade level performance. The universal screening instrument can identify which students may need accelerated instruction as well as which students may need more practice or direct instruction. Different instructional strategies

or interventions can then be put into place for each student. This assessment is typically given at three different times during the school year, and measures a wide-range of skills (Hughes & Dexter, 2011).

Formative assessments are used to monitor student progress and make instructional decisions based on student needs. The on-going formative assessments can identify students not responding to general classroom instruction (Fuchs et al., 2012; Jenkins, Hudson, & Johnson, 2007). When students are unresponsive to core instruction or fail to show growth in Tier 1, students are moved to Tier 2 and provided supplemental instruction (NCRTI, 2010).

Tier 2. Tier 2 is described as a strategic level of intervention and is used with targeted students (Mellard & Johnson, 2007). In Tier 2 students participate in an intervention in addition to receiving the core curriculum that is targeted to address a specific skill deficit (Buffum, Mattos, & Weber, 2010). Most interventions usually take place individually or in a small group within the general education setting. The intervention should be based on empirical evidence of its effectiveness (Fuchs et al., 2012). The intervention often prescribes the instructional procedure, duration, and frequency of implementation (Fuchs et al., 2012; Mellard et al., 2004).

While participating in an intervention at Tier 2, a student's progress is monitored to determine how well the student is responding to the intervention. Assessment is more frequent and in-depth than in Tier 1. A student participates in ongoing progress monitoring of the effect of the intervention (Buffum, Mattos, & Weber, 2010; Howard, 2009). If the student is responsive to the intervention, they may stay at Tier 2, or return to Tier 1. On the contrary, if a student does not respond to one or more interventions at

Tier 2, they move to a third tier and receive an individualized, intensive level of support by a well-trained teacher (Fuchs et al., 2012; NCRTI, 2010).

Tier 3. This tier is the most individualized and intensive level of support when a student is not making adequate progress within one or more Tier 2 interventions (Mellard & Johnson, 2007; Howard, 2009). In some models, progression to Tier 3 shifts instructional placement from a general education classroom setting to placement within a specific program of service, such as special education (Denton et al., 2006). At Tier 3 targeted intervention and instruction are provided by a specially trained teacher or professional, such as a speech therapist (NCRTI, 2010).

Fuchs and Fuchs (2006) suggested the RTI process could reduce unnecessary placement of students in special education, reduce programming costs and free up resources for children who truly need specialized services. RTI allows an increased number of struggling students to experience academic success when tiered levels of support are put in place (Fuchs et al., 2003; Howard, 2009). The focus of RTI is on early identification and intervention to address a student's learning need. Early identification can prevent problems, mitigate the impact of existing problems, and ensure maintenance of acquired skills (Coleman & Hughs, 2009). Emerging RTI research has shown a reduction in the percentage of students identified as learning disabled, and gains in student achievement being made.

Assessments within the RTI process are both formal and informal. These measures are used to document a student's performance and ability. Universal screening instruments and progress monitoring tools, such as AIMSweb, assess and monitor a student's mastery of specific skills and inform instruction. They consist of standardized

measures of skill development and curriculum-based measurements. The measurements are used to document where a student is performing when compared to normative expectations of same-age peers or grade-level expectations (Coleman & Hughs, 2009; Fuchs & Fuchs, 2006).

Hughes and Dexter (2011) examined 13 published studies on the effectiveness of RTI. Each of the studies employed an RTI model of at least two tiers and provided quantifiable measures of student outcomes. Further, "each of the 13 RTI programs was a protocol or problem-solving form of RTI" (Hughes & Dexter, 2011, p. 9). A standard protocol model was described as the implementation of a preselected, research-based intervention used when a previous instructional strategy or intervention has not produced desired results (Coleman & Hughs, 2009; Fuchs & Fuchs, 2006). The problem-solving model was described as the implementation of an intervention, decided on by a team of educators, that is specific to an individual student (Hughes & Dexter, 2011). Seven of the thirteen studies used a problem-solving model, five used the standard protocol model, and one used a combination of both (Hughes & Dexter, 2011). All of the studies took place at the elementary level; four of the studies focused on reading achievement, one on behavior, and three on mathematics. Hughes and Dexter (2011) noted that "all of the studies examining the impact of RTI on academic achievement reported some level of improvement, however, they could not clearly establish a causal relationship between the RTI program and student outcomes" (p. 9). Hughes and Dexter (2011) described the impact of RTI as emerging and stated that more longitudinal efficacy research is needed.

Standard protocol is a term used to describe research-based practices that are central to RTI. Research-based standard protocols were developed for two reasons:

(a) to provide consistency in instructional routines and (b) to ensure learning opportunities are grounded in best-practice. Standard protocols are ready-made lessons, materials, and strategies aimed to provide intensive support to students struggling in math or reading (Coleman & Hughs, 2009). Read Naturally is an example of a standard protocol instructional program often prescribed for use by struggling readers. It consists of two research-based instructional strategies: (a) modeling and (b) repeated reading. Both modeling and repeated reading have been found to improve oral reading fluency (Kuhn & Stahl, 2003). These strategies were examined further in the sections describing fluency and reading intervention strategies.

Response to Intervention in Missouri. Although the federal government approved the RTI system, they did not require a specific model of RTI to be used. DESE (2012) first supported the voluntary implementation of RTI by school districts across the state in 2008. RTI was described as a vehicle for systemic improvement efforts surrounding student learning. RTI was found to provide an organizational structure to enhance instructional effectiveness using evidence-based practices; systematic data collection and data based decision-making (DESE, 2012). The RTI framework in Missouri is a three-tiered model referred to as the Missouri Integrated Model (MIM). It was replicated from the State's public health services model. Just as health care was provided based on the urgency of a patient, the level of intervention a student received was based on the academic need of the student. Student progress is monitored at each level to determine the effect of the intervention on student growth. A requirement of RTI in Missouri is the use of a research-based intervention, meaning, the effectiveness of the intervention has been justified based on evidence (DESE, 2012; NCRTI, 2010).

The RTI model in the LSR-7 School District was based on the Missouri Integrated Model. The primary objective of RTI was to provide immediate intervention where needed to maximize student learning (LSR-7, 2012). The LSR-7 School District identified levels of RTI as Tier 1, Tier 2A, Tier 2B, and Tier 3. Students not responding to Tier 1 instruction as measured by a universal screening instrument, move into Tier 2A to receive instruction either individually or in a small group. In the LSR-7 School District, students in this tier have fallen below the 25th percentile benchmark on the universal screening instrument. These students are considered at-risk. A Tier 2 intervention is described as a program of instruction focused on a specific skill deficit (LSR-7, 2012). Instruction is provided in small groups and student progress is monitored on a regular basis for no less than six weeks. Students not responding to the previous targeted instruction move into a more intensive intervention within Tier 2. The LSR-7 School District identifies this as a Tier 2B and describes it as a change in frequency, duration, or intensity of an intervention. Either the same intervention or a different intervention targeted on the skills deficit can be used in Tier 2B. At Tier 3, instruction is provided to individual students not making enough progress in Tier 2B to meet educational benchmarks. Instruction at this tier is highly intensive. Students not meeting instructional benchmarks while participating in instruction at this tier may meet eligibility for a specific learning disability and receive special education services (LSR-7, 2012).

Key Components of Reading Instruction

Congress established the National Reading Panel (NRP) in 1997. A team of reading researchers, teachers, educational administrators and parents took into account the previous work of the National Research Council (NRC) who had identified and

summarized the research on factors influential to beginning reading skills (NICHD, 2000a). The NRP was tasked to not only examine the research-based knowledge, but to address how critical reading skills could be taught more effectively. Further, the NRP identified which methods, materials, and instructional strategies were most beneficial to teach students of varying abilities to read (NICHD, 2000a).

After a series of screenings, regional public meetings, and an extensive review process, the NRP conducted a meta-analysis of more than 100,000 research studies focused on the reading development of children in preschool through twelfth grade. Each of the studies reviewed by the NRP used an experimental or quasi-experimental design with a control group or a multiple-baseline method (NICHD, 2000a). The NRP reported instructional reading practices that appeared to be more effective than other approaches (Samuels & Farstrup, 2011). In its findings, the NRP emphasized five major components of reading acquisition: phonemic awareness, phonics, fluency, vocabulary, and comprehension. More attention was provided in the area of fluency because of its relevance to the current study.

Phonemic awareness. Phonemic awareness (PA) was defined as the ability to distinguish and manipulate sounds, called phonemes, in spoken words (NICHD, 2000a). The NRP took interest in analyzing the research on PA for several reasons. First, several studies identified PA as a predictor of how readily children will learn to read (Bryant, MacLean, Bradley & Crossland, 1990; Ehri et al., 2001; NICHD, 2000a; Ouellette & Haley, 2013; Rickenbrode & Walsh, 2013; Stanovich, 1986). Second, experimental studies revealed that training in PA was helpful in reading acquisition (NICHD, 2000a; Shanahan, 2005). Finally, claims about "the value of PA training programs in improving

a child's ability to read was of interest" (NICHD, 2000a, p. 7). The findings of the NRP revealed that children who had received PA instruction showed significant improvement in their reading ability when compared to peers who had not received PA training. Further, the effects of PA training on reading continued beyond the end of training (NICHD, 2000a). Further, the NRP concluded that PA training caused students of varying abilities to improve in PA and reading skills (NICHD, 2000a). Although the NRP found that explicitly and systematically teaching children to manipulate phonemes was effective, they cautioned that PA instruction is not a complete reading program nor is there a single way to teach PA (NICHD, 2000a).

Phonics. The NRP defined phonics as the link between letters and sounds to form letter-sound correspondence and spelling patterns used to sound out, decode, and read words (NICHD, 2000a). Further, learning the common sounds of letters, letter combinations, and spelling patterns is involved in phonics knowledge. The goal of phonics instruction is for the student to understand that the sequence of letters in written words represent the sequence of sounds in spoken words. The NRP study recommended the explicit and systematic instruction of phonics principles. They found that students given instruction in phonics had a faster start in learning to read (NICHD, 2000a; Shanahan, 2005). Further, the NRP discovered that "older children who had received phonics instruction were better able to decode, spell words, and read orally" (NICHD, 2000a, p. 9).

Fluency. Oral reading fluency was defined as having the ability to read with speed, accuracy, expression and proper phrasing (NICHD, 2000a; Rasinski & Padak, 2008; Shanahan, 2005). Fluency was noted to be dependent on word recognition skills

and required the ability to efficiently read in order to make meaning of the text (NICHD, 2000b). In its examination of reading fluency studies, the NRP found positive evidence to support teaching fluency in order to improve reading outcomes (NICHD, 2000b; Shanahan, 2005). Further, it was found that fluency instruction improved reading achievement no matter how it was measured, and positive findings were evident for struggling readers as well as readers considered average (NICHD, 2000b; Shanahan, 2005).

Vocabulary. The NRP referred to vocabulary as having word knowledge and understanding the meaning of words (NICHD, 2000a). Vocabulary knowledge has been linked to academic success, and found to be crucial for reading comprehension. The NICHD (2000a) identified the importance of oral vocabulary to learning to read, and further emphasized the effect of vocabulary on reading comprehension. Vocabulary was found to be acquired both directly and indirectly. The indirect acquisition of vocabulary was done through listening and speaking whereas direct vocabulary instruction referred to the explicit teaching of words (NICHD, 2000a). The NRP analyzed 45 studies on teaching vocabulary. Explicit and implicit instruction in vocabulary was found to be effective (NICHD, 2000a; Shanahan, 2005). Examples of explicit instruction included introducing new vocabulary words, reading books with repetitive text, and teaching word origins. Research showed that a reader must know at least 90% of the words in text in order to comprehend the meaning of the text (Nagy & Scott, 2000). Students with a strong vocabulary were able to read increasingly difficult text with fluency and comprehension (Rasinski & Lenhart, 2007/2008). To acquire word knowledge from

reading required adequate decoding skills, the ability to recognize that a word is unknown and the competency to extract meaningful information about the word from the context.

Evidence confirmed there is a strong correlation between vocabulary knowledge and reading proficiency across the age span of elementary students (Beck, McKeown & Kucan, 2013). For example, the size and depth of vocabulary have been found to be a predictor of school achievement. Poor readers often lack diverse word knowledge and have limited vocabulary. Research also suggested there are profound differences in vocabulary knowledge among learners from different ability or socioeconomic groups (Beck, McKeown & Kucan, 2013; Christ & Wang, 2011).

Children living in poverty tend to hear less than a third of the words heard by children in higher-income homes (Hart & Risley, 1995, 2003). Hart and Risley (2003) suggested that by age 3, children in higher-income homes accumulate experience with 45 million words compared to an accumulation of 13 million words experienced by children of poverty. Vocabulary development has an impact on academic success, specifically in the area of reading comprehension (Christ & Wang, 2011). In its report, the NRP recognized the importance of continuous vocabulary development on growth in reading, but did not specify particular methods for vocabulary instruction, citing too many variables in a small number of studies.

Comprehension. Reading comprehension can be defined as the integration of new information with prior knowledge in order to derive meaning from text (NICHD, 2000a; Rickenbrode & Walsh, 2013; Shanahan, 2005). In its review of research, the NRP noted "three common themes surrounding the development of reading comprehension skills" (NICHD, 2000a, p. 13). First, comprehension was identified as a complex

cognitive process. Second, comprehension was described as an active process requiring thoughtful interaction between the reader and the text. Lastly, the "application of comprehension strategies was found to be highly effective in enhancing understanding" (NICHD, 2000a, p. 14). The NRP found that students benefitted from explicit reading comprehension instruction that included such strategies as questioning, monitoring for meaning, summarization, using graphic organizers, and comprehension strategy instruction to improve reading. Comprehension, the ultimate goal of reading, is facilitated by fluency. General findings suggest that students with strong fluency skills are likely to have strong comprehension skills (Allington, 2001; Herman, 1985; NICHD, 2000a). The NRP (NICHD, 2000a) revealed the importance of oral and reading vocabularies on comprehension. Further, the NRP (NICHD, 2000a) recommended explicit instruction on comprehension strategies. Findings confirm a strong relationship between fluency and comprehension. Markell and Deno (1997) conducted a study on 42 third-grade students to examine the relationship between changes in reading fluency associated with changes in comprehension. Their analysis revealed that reading fluency was an important factor in improvements in reading comprehension. Through their examination, they found that sufficiently large increases (i.e., 15-20 words) in reading fluency were necessary to reliably predict changes in comprehension. For example, if a student's oral reading fluency increased by 1-2 words read correct per week, it would take 10-20 weeks before changes in comprehension would be evident (Markell & Deno, 1997). Further, they found that a minimum criterion of 90 words read correct (WCPM) in one minute afforded most students to successfully comprehend. Neddenriep, Fritz, and Carrier (2011) expanded upon the Markell and Deno study, but examined fourth-grade

students over a shorter period. Their results were consistent with the findings of Markel and Deno. As students' oral fluency rates improved, comprehension increased. Neddenriep, Fritz, and Carrier (2011), also, found that a minimum fluency criterion of 90 WCPM was necessary for comprehension. The underlying elements of reading comprehension are language comprehension and decoding.

A Further Look at Fluency

Prior to the report of the NRP, fluency instruction was nearly non-existent in the curriculum (Rasinski, 2006). Although fluency had lost some of its luster, research in the last few decades suggests that is has remarkable potential for improving students' reading proficiency. Reading fluency has been viewed as an important skill because of its association with reading outcomes, such as comprehension. NCLB, Reading First, and the NRP have all identified fluency as a critical component of an effective reading program (NCLB, 2001; NICHD, 2000a). Fluency has been viewed as a critical link between phonics and comprehension (Rasinski & Hamman, 2010).

The classic study on the development of reading fluency was conducted by Clay and Imlach (1971) on the reading habits of second graders. They examined the vocal output of oral reading in second grade students who had received supplemental reading instruction for two and one-half years (Clay & Imlach, 1971). A single rater scored the accuracy rate, juncture, pitch, and stress of each participant's recorded reading of four stories. The accuracy rate was used to discriminate between inferior and superior readers (Clay & Imlach, 1971). Although they did not directly measure sound feature, they analyzed oral reading prosody and found that the best readers used pausing, phrasing, and intonation. Furthermore, they revealed a connection between prosodic reading and

efficient word reading or fluency. The correlation between reading rate and reading comprehension lead to the development of fluency instruction programs. Although reading rate can be an indicator of reading fluency, it is just one measure. Fast reading is not fluent reading (Rasinski, 2006; Samuels, 2007). Comprehension, the ultimate goal of reading, requires the reader to have control over the text. Having control over the text means to read effortlessly and with expression at a rate as natural as speaking. Caution is to be given to the overemphasis on reading rate as an indicator of proficient reading (Rasinski & Lenhart, 2007/2008). Effective fluency instruction includes automaticity, prosody, and an understanding of the correlation to comprehension.

Chall (1996), proposed six stages in her model of reading development. The first stage involved pre-literacy skills such as book handling and concepts of print. The second stage encompassed the beginning of formal reading instruction such as phonemic awareness, phonics, and decoding. After this stage, Chall contends that readers develop automaticity with print that leads to the construction of meaning. Once fluency was developed, reading instruction should then focus on higher-level reading skills such as vocabulary and comprehension (Chall, 1996). Oral reading studies of NAEP showed that nearly half of all fourth-grade students had not achieved expected levels of fluency for their grade level and demonstrated lower levels of reading achievement (Daane, Campbell, Griggs, Goodman, & Oranje, 2005). Given Chall's model of reading development and emphasis on acquiring fluency skills in beginning reading instruction, it is reasonable to argue that a lack of fluency instruction beyond primary grades is of concern (Samuels & Farstrup, 2011). Research suggested that instruction in reading fluency should extend beyond the primary grades.

The NRP reviewed studies related to fluency in guided oral reading and independent silent reading. Guided oral reading was defined as an approach that involved reading with guidance and receiving feedback (NICHD, 2000b; Kuhn & Stahl, 2003). Independent silent reading was defined as reading independently with minimal to no guidance or feedback (NICHD, 2000b). The NRP was unable to find sufficient research to support independent silent reading as an instructional approach to improve reading skills. Three approaches to improve fluency through guided oral reading instruction were common in the literature.

Although the definition has expanded since early conceptualization, the generally agreed upon definition of fluency includes accuracy, effortless word recognition, and prosody, or reading in meaningful phrases (Allington, 2001; Kuhn, 2005; Rasinski, 2006). Fluency was defined as the ability to accurately and rapidly read isolated and connected text (NICHD, 2000b; Rasinski, 2006; Rickenbrode & Walsh, 2013). Theorists contended that comprehension suffered when certain levels of reading automaticity were not reached (Kuhn, 2005; Rasinski & Lenhart, 2007/2008). Readers lacking fluency often read word by word or in choppy phrases that deviate from natural oral language (Dowhower, 1991). Prosody, or "reading with expression" was found to be an indicator of comprehension. In addition to recognizing words automatically, readers must be able to read with proper phrasing and appropriate expression, or else comprehension suffers (Strickland, Ganske & Monroe, 2002).

The summary of research conducted by the NRP revealed that automaticity played an important role in fluency. Further, the panel concluded that guided repeated oral reading practice had a significant and positive effect on fluency (NICHD, 2000b).

Such strategies for guided practice included (a) students reading and rereading a passage over and over until a specific level of proficiency was reached, (b) increased time for oral reading practice through the use of resources such as peer guides, computer-assisted instruction or audiotapes, and (c) providing effective feedback to improve fluency (NICHD, 2000b).

Although oral reading fluency was seen to diminish beyond the primary grades, reading fluency has been shown to remain steady in silent reading (Allington, 2001). Comprehending what is read silently still requires readers to decode words. Automaticity in word decoding, while reading silently, allows the reader to focus on meaning (Samuels & Farstrup, 2011). Although fluency is not a direct cause of comprehension, it does play a key role. Studies have shown that a significant number of students in the intermediate grades benefit from fluency instruction (Biancarosa & Snow, 2006; NICHD, 2000b; Rasinski et al., 2009; Samuels & Farstrup, 2011; Torgesen et al., 2007). A further examination of instructional approaches to teach fluency was provided.

Reading Intervention Strategies

Struggling readers in the upper elementary grades "experience a wide range of challenges that require a wide range of interventions" (Biancarosa & Snow, 2006). A problem for some struggling readers is the inability to read with enough fluency to facilitate comprehension (Biancarosa & Snow, 2006; Torgesen et al., 2007). Fortunately, adolescent struggling readers were found to benefit from participation in interventions (Edmonds et al., 2009; Pyle & Vaughn, 2012; Scammacca et al., 2007).

Scammacca et al. (2007) synthesized the findings of 31 research studies on reading instruction for adolescent struggling readers. They sought to determine the

effectiveness of interventions with older struggling readers. Participants included struggling readers in grades 4 through 12 who received interventions focused on word study, fluency, vocabulary, reading comprehension, or a combination of these. The research designs included multiple-group experimental or quasi-experimental designs. The majority of studies included in the meta-analysis used non-standardized reading-related outcome measures. A random effects model was used to analyze effect size. The overall effect size was 0.95.

Through another meta-analysis of intervention studies, Edmonds et al. (2009) examined the outcomes of comprehension, word study, vocabulary, and fluency interventions on comprehension of secondary students in grades 6 through 12. Participants were identified as having reading difficulties, meaning low achievers with unknown reading difficulties, with dyslexia, or with known reading, speech or language disabilities. The research designs of the studies included treatment-comparison, single-group, and single-subject designs. The number of intervention sessions varied from 2 to 70. All studies included in the analysis compared the effect of a reading intervention treatment with a non-treatment comparison condition. A random-effects model was used to report outcomes of the analysis. The overall results showed a large effect size ($ES =$ 0.89) for students receiving the reading intervention treatment.

In their review of literature, Pyle and Vaughn (2012) cited several research studies, which showed a strong effect size for the response of older struggling readers to intensive and targeted interventions. Effect sizes ranged from a low of .56 to a high of 1.05. Multi-component reading interventions, such as those combining explicit instruction of a key reading skill and comprehension strategies, were found to be

effective for struggling students. Although most studies included students ranging from fourth to twelfth grades, the higher effect sizes were seen with students in grades 4 to 8. According to Pyle and Vaughn (2012) these findings suggest reading interventions can support the improvement of reading in intermediate and middle school aged students.

Pyle and Vaughn (2012) conducted a 3-year study of the effect reading interventions had on secondary school students, specifically students in grades 6 to 8. They investigated the effectiveness of a reading intervention implemented daily for one year in an RTI model. Participants were considered struggling readers based on two screening measures, the Texas state reading assessment and a fluency assessment. In year one, qualifying students received a Tier 2 intervention in a group (5 students per group vs. 10-14 students per group) for 50 minutes a day in addition to Tier 1 reading instruction. Although students made small gains in decoding, reading fluency, and comprehension ($d = 0.16$), there was no statistically significant difference between the sizes of the groups. During the second year, students who had minimally responded to the intervention received an additional year of the intervention, again, for 50 minutes daily. Instruction was more intensive and was provided in a small group setting consisting of five students. Further, students were assigned to either an individualized instructional approach or a standardized instructional approach (Pyle & Vaughn, 2012). Results of year two indicated no statistical difference between the individualized treatment group and the standardized treatment group except in the domain of word attack skills. There was a marginally significant difference favoring students in the standardized treatment group. However, when the two treatment groups were combined and compared to the non-treatment group, significant differences were seen in the domain

of reading comprehension (median $d = 0.23$) for students in the treatment groups. In the final year of the study, individualized, intensive intervention was offered in groups of two to four students who continued to minimally respond after two years of the intervention and exhibited minimal performance on the state reading assessment (Pyle & Vaughn, 2012). After 3 years of intensive reading intervention in an RTI model, participants showed improvement on word identification, word reading, and reading comprehension. Statistical significance was noted in the domains of word identification (ES = 0.49) and reading comprehension (ES = 1.20). Although gains were made after 3 years of participating in individualized intensive intervention, most students did not reach grade level proficiency in reading; the achievement gap for the struggling readers did not close.

Implementing research-based interventions that are matched to students' needs is critical. Interventions designed to address fluency deficits are widely available. Two common methods to develop fluency, modeling and repeated reading, were found in the review of literature. A discussion of these methods follows.

Modeling. Modeling consists of a proficient reader modeling correct pronunciation, rate, expression,and phrasing while reading (Heckelman, 1969; Kuhn & Stahl, 2003). Examples of the modeling strategy include choral reading, echoic reading, paired or partner reading, and neurological impress method. The original study of the assisted reading technique was Heckelman's (1969) study of junior and senior high students who were at least three years behind their grade level in reading. The initial design required the student and the teacher to read simultaneously at a rapid rate. Although not all results were found to be substantial, the assisted reading strategy was

found to be successful in developing reading fluency and comprehension (Heckelman, 1969).

Hollingsworth (1970) recognized the time-consuming nature of Heckelman's assisted reading technique as it only afforded assistance to one child at a time. Hollingsworth (1970) redesigned the technique so it could be used with multiple students at the same time through tape recorded texts. Hollingsworth's study included randomly selected fourth graders reading at grade level. While the results indicated no significant differences between students who participated in Hollingsworth's tape recorded text assisted reading technique and those who did not, it should be noted that students in his study were not dysfluent, meaning prior to participation in the study students were fluent readers.

Hollingsworth (1978) replicated his original study, but used a different population. For the second study Hollingsworth (1978) selected remedial readers in grades 4 through 6. He found that there was a significant effect on the treatment group when, using a standardized comprehension test, compared to the control group. The results of Hollingsworth's study lent credit to using assisted readings to promote fluency and comprehension (Kuhn & Stahl, 2000).

Repeated reading. The repeated reading strategy involves orally reading a short passage several times until a specified reading rate is achieved (LaBerge & Samuels, 1974; Rasinski, 1990). The repeated reading strategy was developed to help the student recognize and master words and increase fluency. The student should then be able to transfer the knowledge and mastery of those words to subsequent text. LaBerge and Samuels (1974) found that repeated reading of the same text improved fluency. Further,

the results of Samuels' (1979) research provided evidence that speed, word recognition, and comprehension improved when a passage was re-read. Herman (1985) found that repeated reading of familiar text transferred from one story to another. The study focused on the performance of eight intermediate grade (4-6) students enrolled in remedial reading. Texts common to remedial reading classrooms were selected. Each text contained about 80 stories varying in length between 100 and 175 words. Readability of the texts ranged from a grade level equivalence of second grade, second month to fifth grade, eighth month. Baseline data was collected using the Total Reading Score from the Woodcock Reading Mastery Test. The goal was for students to achieve 85 words per minute (WPM) per story before choosing another story to read. Upon reaching the 85 WPM goal over five separate stories, students exited the treatment. A Time X Treatment, within-subjects design was used (Herman, 1985). Results of the study indicated rate significantly increased within practiced stories and between the first and last stories ($p < .001$). According to Herman (1985), the increased rate "between the first and last story suggests the practice effect carried over from one story to the next" (p. 559).

Dowhower (1987) examined the effect of repeated readings on second grade students. The study was to determine the effectiveness of repeated reading and reading-while-listening procedures on fluency as measured by rate, accuracy, comprehension, and prosody (Kuhn & Stahl, 2000). Additionally, Dowhower wanted to determine if there was a difference in these measures when the text was practiced versus unpracticed, otherwise known as a hot read and cold read. Six stories were selected from a basal reader; each story contained 400 words and had a readability of 2.0 grade level. Participants were assigned to either the assisted group or the unassisted group. Students

in the unassisted group independently reread and rehearsed each story and received assistance with word identification upon request. Students in the assisted group first listened to a tape-recorded passage until the passage could be "read simultaneously with the fluent reader" (Dowhower, 1987, p. 395). A time-series experimental design was used. Reading rate and accuracy were used to measure fluency. Students in both the assisted and unassisted groups showed gains in reading rate, accuracy, and comprehension from the initial to the final test ($p < .05$). Thus, Dowhower (1987) concluded that repeated readings had measurable effect.

Rasinski (1990) followed the work of Dowhower to compare the effectiveness of repeated reading and reading-while-listening on rate and accuracy. Similar to Dowhower (1987), Rasinski (1990) found there was no significant difference between these strategies. Further, Rasinski suggested that because both were found to be equally effective, the reading-while-listening technique was easier to implement and therefore, more efficient in fluency development instruction.

The importance of repeated oral reading practice was established through the work of the NRP (NICHD, 2000a). Repeated reading was the most prevalent fluency intervention found in the literature; however, findings on its effect on reading achievement in upper elementary students were limited. Although fluency is generally thought to be of concern in the primary grades, fluency can be an issue for older students (Rasinski, Rilkli, & Johnston, 2009). Overall, one aspect of the research on adolescent reading interventions was consistent with the research findings at the primary grade levels; the earlier the better.

Computer assisted instruction (CAI). As part of its charge, the NRP (NICHD, 2000a) examined the feasibility of computer technology to deliver instruction effectively. After an examination of 21 experimental studies representing a spectrum of computer technology and reading instruction, the NRP concluded that reading instruction could possibly be delivered through computer technology (NICHD, 2000a). Six of the studies involved text to speech features, where the computer served as a personal reader, indicated promising results for using technology in reading instruction (NICHD, 2000a). All six of the studies reported positive results for using computer technology for reading instruction. Additionally, of specific interest to the NRP were studies of assistive technology. Although the findings of the panel reported success in the use of computer technology for reading instruction, very few specific instructional applications, such as the incorporation of web-based programs or instructional games, were included in the research. At the time of its analysis, few studies focused on the use of computers in reading instruction therefore few conclusions could be made. The NRP concluded that while the use of computer technology may show great promise in literacy instruction, additional research is needed (NICHD, 2000a).

Technology was identified as a tool that could help teachers provide needed supports for struggling readers (Biancarosa & Snow, 2006). A computer-based intervention provides an alternate method to deliver instruction. Studies have shown a positive difference in implementation integrity between a computer-based intervention and one delivered by a teacher because of the standardized nature of computerized programs (Biancarosa & Snow, 2006). A computer can deliver instruction the same way each time it is used whereas there is a margin of human error when delivered by a

teacher. A benefit of using a computer to deliver an instructional intervention is that it does not require one-to-one instruction from the teacher.

Barley et al. (2002) conducted a meta-analysis of 118 studies on classroom strategies designed to assist low-achieving students. Classroom strategies included: general instruction in a whole-group setting, cognitively oriented instruction, grouping structures, tutoring, peer tutoring, and computer assisted instruction. Low-achieving students were defined as those performing low on academic assessments and those at-risk for low performance based on factors such as poverty (Barley et al., 2002). Of specific interest was the effectiveness of CAI. Barley et al. (2002) examined 17 studies for the effects of CAI in the subject areas of math and literacy. Most studies included pre-test and post-test designs. The participants were students ranging from first through twelfth grades. Grade levels were coded as lower elementary, upper elementary, middle school, and high school. Findings suggest that CAI has a positive effect (.31) on the achievement of at-risk learners in the upper elementary grades (3^{rd} – 5^{th}). Despite the knowledge surrounding the use of computer-assisted instruction, further examination of programs could show empirical evidence of their effect on reading. Read Naturally was one such computer-based reading intervention.

Read Naturally. Ihnot (1991) developed Read Naturally as a supplement to core reading instruction that combined teacher modeling and repeated reading. The original study was conducted with special education and Title 1 students. At the end of a seven-week period, Ihnot (1991) noted special education students improved their reading fluency by an average of 2.35 words per week. After 13 weeks of participation in the Read Naturally strategy, Title 1 students gained an average of 2.15 words per week.

Read Naturally is designed to be used as a Tier 2 intervention in grades 2 through 5 to improve reading fluency. The program can be administered one-on-one or in a small group setting. Read Naturally was designed to allow students to work at their instructional level and progress through the program at their own pace. The Read Naturally program is available as audio CDs with hard copy reading materials, computer software, or web-based (Pearson Education, 2012b).

Denton et al. (2006), in a study of 27 students in first through third grades, found that Read Naturally had a small to moderate effect size on students' reading fluency as measured by the Test of Word Reading Efficiency (TOWRE), Sight Word Fluency, and Gray Oral Reading Test, fourth edition (GORT-4) Fluency assessments. Participants included first grade students repeating that grade and second and third graders who demonstrated low oral fluency on the Woodcock-Johnson, third edition (WJ-III). On average, students identified for the study performed at the 13th percentile on the Basic Reading Skills composite of the WJ-III (Denton et al. 2006). Students in the study received Read Naturally for an hour per day for 8 weeks. Denton et al. (2006) suggested "repeatedly practicing oral reading of instructional level text is supportive of oral reading fluency, especially when provided with a model and feedback" (p. 462) as presented in Read Naturally. Further, Denton et al. (2006) proposed students participating in Read Naturally made significant gains in their fluent reading of isolated words and connected text, which has been found important because of the relationship between fluency and comprehension.

Researchers at The What Works Clearinghouse (2013) reviewed 4 of 56 studies that had investigated the effect of Read Naturally on the literacy skills of adolescent

readers. The studies included student outcomes in the domains of alphabetics, reading fluency, comprehension, and general literacy achievement (What Works Clearinghouse, 2013). Of the four studies, a single study conducted by Heistad (2008) met evidence standards with reservations. It was a quasi-experimental study on the effect Read Naturally had on 156 students in grades 3 through 5. Participants were selected based on parent and teacher recommendations as well as being considered not on track for proficiency on the state assessment (Heistad, 2008). Read Naturally was implemented as a supplemental reading intervention program. The impact of Read Naturally, as cited in the What Works Clearinghouse (2013), on general literacy achievement showed a statistically significant positive effect (ES = 0.24). There was no significant effect of Read Naturally on the other three domains: alphabetics, reading fluency, and comprehension.

Summary

Within this chapter a historical perspective of educational policies was presented. Additionally, an examination of research on reading instruction, including the five essential components of literacy, was included. Lastly, research regarding the effectiveness of computer-based reading intervention was reviewed. Chapter three focuses on the study's design, population, sample, and sampling procedures including the instrumentation and measurement tools. In addition, an articulation of the study's data collection procedures is provided as well as a description of the study's data analysis, hypothesis tests, and limitations.

Chapter Three

Methods

The literacy rate in America has been a national focus for decades. Accountability for student achievement has caused school districts to seek effective instructional methods to improve student performance, especially in the area of reading. When a student does not respond to core reading instruction, an intervention is needed to address the skill deficit. Research-based commercial reading intervention programs are widely available, but vary in cost and ease of implementation, as well as effectiveness. The purpose of this study was to investigate the effect of the Read Naturally intervention program on the oral fluency rate, as measured by AIMSweb, on identified at-risk readers in fourth, fifth, and sixth grades. In addition, this study was designed to investigate whether the effect of the Read Naturally intervention program on the oral fluency rate of at-risk students in fourth, fifth, and sixth grades was influenced by membership in the super sub-group.

Chapter three describes the methodology utilized in this study. This chapter is divided into sections that outline the design of the research, the population, and the sample used for this study. Sampling procedures, instrumentation, and measurement are defined. The analysis and hypothesis testing is presented in depth as it applies to the research questions. The limitations of this study are also discussed.

Research Design

The research design for this study was quantitative. Creswell (2009) classified quantitative research design as one that identifies factors or variables that influence an outcome. The researcher used a non-experimental, pre-test and post-test design. For the

purpose of this study, the super-subgroup, as defined by the state of Missouri and accepted by the researcher, included Black students, Hispanic students, students with disabilities, English Language Learners, and low income students. The dependent variable, growth in oral reading fluency, was measured by AIMSweb between each of the three testing periods (fall to winter, winter to spring, and fall to spring). The independent variables in the study were fourth, fifth and sixth grade and membership in the super sub-group.

Population and Sample

According to Lunenburg and Irby (2008), the target population of a study is the group of interest to the research, the group to which the results of the study can be generalized. The population of interest in this study included students in the intermediate grades in an elementary school setting in Lee's Summit, a suburban city in the state of Missouri. Sample participants included twenty-seven students in fourth grade (n = 13), fifth grade (n = 7), and sixth grade (n = 7) from a public elementary school. The demographics of the participating students are reported in Table 2.

Table 2

Demographics of Study Participants; Fourth through Sixth Graders

	Grade Level			
	Grade 4	Grade 5	Grade 6	Total
Gender				
Male	9	3	4	16
Female	4	4	3	11
Total	13	7	7	27
SS Status				
SS	5	3	6	14
Non-SS	8	4	1	13
Total	13	10	7	27

Note. SS = Super-Subgroup. Data adapted from Powerschool Basics by Pearson Education, 2014.

Sampling Procedures

In the current study, purposive sampling was used to select participants. According to Lunenburg and Irby (2008), "purposive sampling involves selecting a sample based on the researcher's experience or knowledge of the group to be sampled" (p. 175). The group of interest to the researcher was students in grades 4, 5, and 6 participating in the reading intervention program, Read Naturally. Students in grades 4, 5, and 6 scoring below the 25th percentile on the R-CBM of AIMSweb, but not participating in Read Naturally, were excluded from this study. The student participants were chosen from the sample based on the following criteria: (a) students were in grades 4, 5, or 6; (b) students were in the 25th percentile or lower based on the fall 2013 AIMSweb R-CBM scores; (c) students were not identified as having a learning disability in the area of reading; and (d) students were not receiving supplemental instruction in addition to Read Naturally.

Instrumentation

The instrument used in this study to measure oral reading fluency in grades 4 through 6 was the AIMSweb assessment. Shinn, Shinn, and Langell (2010) described the AIMSweb assessment as a "scientifically-based, formative assessment system that informs the teaching and learning process" (p. 8). Specifically, it was designed to benchmark and monitor academic progress in reading, mathematics, spelling, and written expression. Most commonly measured are reading and mathematics.

AIMSweb was derived from Deno's Curriculum-Based Measurement (CBM) system for evaluating basic skills growth (Shinn et al., 2010). The AIMSweb CBM provides "brief, reliable, and valid measures of basic skills in reading, language arts, and mathematics" (Howe & Shinn, 2002). The standardized assessments in AIMSweb are written to represent general curriculum (Shinn et al., 2010). There are two types of CBMs designed to assess reading – the Reading-CBM (R-CBM) and the CBM-Maze. The passages of the R-CBM probes were written to be compatible to each grade level (Shinn et al., 2010). The first three probes for each grade level's R-CBM are used exclusively for the benchmark assessments. Three reading probes are administered and the middle score is reported. The passages are narrative fiction and curriculum independent (Shinn & Shinn, 2002). The passages are typically 250-300 words long. All passages are in the same size and font, and do not include potential distracters such as pictures or numbers.

In addition to the R-CBM oral fluency assessment, AIMSweb includes a maze reading measure. CBM-Maze is a multiple-choice, cloze reading comprehension task. Cloze reading is a strategy in which the reader uses the context to figure out the missing

word to fill in a blank systematically left in the text (Shinn & Shinn, 2002). MAZE passages consist of grade-level reading passages. Every seventh word in the passage has been replaced by three alternatives from which students select. Students complete the MAZE passage while reading silently for 3 minutes and selecting the correct word. Local and national norms and rates of improvement are provided by AIMSweb for each CBM.

According to a study prepared for Pearson by MetaMetrics (2011), AIMSweb "is based on general outcomes measurement principles so it can be efficiently and accurately used to evaluate student progress relative to a year-end target regardless of the curriculum or intervention" (p. 21). The data collected from AIMSweb can be used to identify students who are at-risk of reading failure and in need of supplemental instruction. AIMSweb provides continuous student performance data and informs classroom instruction.

During the AIMSweb assessment, students read aloud for one minute while the examiner followed along recording errors. Very specific directions are followed to ensure fidelity of administration. To be scored as correct, words need to be pronounced correctly within the context of the passage. Incorrect words must be self-corrected by the student within three seconds to be counted as correct (Shinn et al., 2010). An error is counted when a word is mispronounced, omitted, substituted, or unknown within the three seconds (Shinn et al., 2010).

AIMSweb benchmark reading assessments were given three times during the 2013-2014 school year to all students in grades 4 through 6 in the LSR-7 School District. Specifically, two different assessments of reading are given. The first is the R-CBM

which assesses fluency. The other is the MAZE that is used to assess comprehension. The first benchmark assessment is conducted in September and provided baseline data, the second benchmark assessment occurs in January, and the third in May. After each assessment interval, individual student performance results are compared to AIMSweb national benchmark norms (J. Caldwell, personal communication).

The norms for oral reading fluency within AIMSweb originated from the extensive research completed by Hasbrouck and Tindal (1992) who compiled nine years of research on oral reading performance. The study included between 7,000 and 9,000 students in second through fifth grades in five western and Midwestern states (Hasbrouck & Tindal, 1992). Data were collected using the standardized R-CBM procedure. According to Hasbrouck and Tindal (1992), the norms compiled in their study can be "considered stable benchmarks for oral reading fluency" (p. 44). These norms provided both an expected rate of learning and year-end targets. Fluency goals for students were determined based on student benchmark results and the year-end, or spring, target.

Measurement. In this study AIMSweb was used to measure oral reading fluency**.** The R-CBM measured two essential components of oral reading fluency, automaticity and accuracy. Automaticity was determined by calculating the total number of words read correctly and accuracy was calculated by dividing the number of words read correctly by the total number of words read. For example, a student read 147 words correctly and made three errors. The total number of words read was 150, with 147 being accurate, therefore resulting in a 147 / 150 = 98% accuracy. The web-based AIMSweb program automatically calculates the automaticity and accuracy for the three, one-minute timed assessments and records the median score for each. For the current study, only the

automaticity scores were used. The fall automaticity score was used to establish a baseline of oral reading fluency for each study participant. The winter and spring automaticity scores were then used to measure growth in oral reading fluency between the three testing periods (fall to winter, winter to spring, and fall to spring).

Validity and reliability. Lunenburg and Irby (2008) identified validity as the "degree to which an instrument measures what it claims to measure" (p. 181). The validity of AIMSweb was defined by the accuracy of inferences able to be made from the scores of the assessment (Pearson Education, 2012b). The validity of AIMSweb scores were based on two factors, content validity and criterion validity. Content validity refers to the degree to which the test scores measure the knowledge/skill domain at a particular grade level. Criterion validity describes the relationship between the test scores and a criterion such as another test or an educational program (Pearson Education, 2012b).

According to the National Center on Intensive Intervention (2013), AIMSweb Oral Reading Fluency (R-CBM) has been found, with convincing evidence, to be a valid tool for universal screenings, benchmark testing, and progress monitoring. Benchmark and progress monitoring probes were developed using a variety of readability formulas and the measure of Lexile. A Lexile measure refers to the complexity of text; including word count, mean sentence length, and word frequency (MetaMetrics, 2011). This ensures that all probes at a given grade level are equivalent in difficulty and produce similar results (Pearson Education, 2012b). To illustrate the equivalency of difficulty for the three universal screening probes in grades 4 through 6, Table 3 presents the mean words read correct (WRC), standard deviation (SD), and Lexile (L). Content validity is supported by the use a variety of readability formulas and the measure of Lexile.

Table 3

Average Words Read Correctly per Minute and Lexile Measure of each R-CBM Probe in Grades Four through Six

	Grade 4			Grade 5			Grade 6		
	M	*SD*	*L*	*M*	*SD*	*L*	*M*	*SD*	*L*
Probe 1	121.5	20.1	770	133	29.1	810	141.1	27.5	1050
Probe 2	121.8	27.2	650	131.8	29.7	780	153.7	21.4	970
Probe 3	122.8	24.5	670	136.3	29.3	770	154	22	1000

Note: Adapted from AIMSweb Technical Manual by Pearson Education, 2012b, p. 5-6.

Reliability refers to the repeatability or consistency of scores (Pearson, 2012). Evidence for the reliability of AIMSweb included two forms: (a) alternate-form reliability that demonstrated an agreement between scores on alternate probes when administered relatively close together in time and (b) inter-rater reliability which supported similarity in scores when read by independent raters. Using correlation coefficient, the reliability of the AIMSweb screening probes was established in field-tests involving 1000 students in grades 1 through 6 (Howe & Shinn, 2002). Table 4 illustrates the reliability for the universal screening probes. The between-season correlations in Table 4 provide evidence for strong reliability of the AIMSweb probes.

Table 4

Between Season Stability of R-CBM Screening Scores for Grades Four through Six

Grade	Fall-Winter	Winter-Spring
4	.94	.95
5	.95	.95
6	.95	.95

Note: Adapted from AIMSweb Technical Manual by Pearson Education, 2012b, p. 9.

In addition to equivalency, reliability, and validity, technical properties, such as the standard error of measure (*SEM*) of a student's rate of improvement (ROI) is important to consider (Pearson Education, 2012b). The *SEM* was described as a "function of the number and variability of a student's scores and their time span" (Pearson Education, 2012b, p. 2). ROI within AIMSweb was defined as a numerical index reflective of how rapidly raw scores, such as words read correct (WRC), increase during a given school year (Pearson Education, 2012b). In short, ROI is the amount of change over time. The ROI growth norms were developed for each grade level (K-8) and time interval within a school year (fall to winter, winter to spring, and fall to spring). A student's ROI can differ depending on their initial, or fall benchmark score. For example, students whose initial scores were very high (91st to 99th percentiles) tended to have lower ROIs than students having an initial score in the average range (26th to 75th percentiles) or the low range (11th to 25th percentiles). Further, students whose intial scores were very low (1st to 10th percentiles) tended to have lower ROIs (Pearson Education, 2012a).

Data Collection Procedures

Prior to data collection for this research study, the researcher requested consent of the LSR-7 School District through verbal submission of a request to the Assistant Superintendent of Elementary Instruction and written submission of a form, Request for Permission to Conduct Research/Gather Data, to the Associate Superintendent of Instruction and School Leadership (see Appendix A). Verbal and written permissions were received (see Appendix B). The researcher also applied to the Baker University Institutional Review Board for permission to conduct the study (see Appendix C). Approval was granted on May 12, 2015 and data collection began (see Appendix D).

Upon request, the researcher received the archived AIMSweb data from the LSR-7 School District's Director of Assessment and Data Analysis. Further, Read Naturally data was provided by the reading specialist at Meadow Lane Elementary. The data were downloaded from the AIMSweb and Read Naturally databases. Data were then manually entered into an Excel spreadsheet. On the spreadsheet students remained anonymous. A student identification number was utilized in place of a name. Grade level and race/ethnicity, gender, socio-economic status, and enrollment in special programs were imported from Powerschool, a web-based student information system. Three AIMSweb scores were entered after each student's number. These included the students' fall to winter scores, winter to spring scores, and fall to spring scores. All data were uploaded into the IBM SPSS Statistics Faculty Pack 22 for Windows.

Data Analysis and Hypothesis Testing

Hypotheses were developed to address each of the research questions in the study. Each research question is listed below followed by the hypothesis and the analysis used.

RQ1. To what extent do fourth grade students participating in Read Naturally show growth from fall to winter in oral reading fluency, as measured by AIMSweb?

H1. Fourth grade students participating in Read Naturally show growth from fall to winter in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ1. The sample mean was tested against a null value of 0. The level of significance was set at .05.

RQ2. To what extent do fourth grade students participating in Read Naturally show growth from winter to spring in oral reading fluency, as measured by AIMSweb?

H2. Fourth grade students participating in Read Naturally show growth from winter to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ2. The sample mean was tested against a null value of 0. The level of significance was set at .05.

RQ3. To what extent do fourth grade students participating in Read Naturally show growth from fall to spring in oral reading fluency, as measured by AIMSweb?

H3. Fourth grade students participating in Read Naturally show growth from fall to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ3. The sample mean was tested against a null value of 0. The level of significance was set at .05.

RQ4. To what extent is the fall to winter growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally affected by membership in the super-subgroup?

H4. The fall to winter growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ4. The average growth in reading fluency for the fourth grade students in the super-subgroup was compared to the average growth in reading fluency for the fourth grade students in the non super-subgroup. The level of significance was set at .05.

RQ5. To what extent is the winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally affected by membership in the super-subgroup?

H5. The winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ5. The average growth in reading fluency for the fourth grade students in the super-subgroup was compared to the average growth in reading fluency for the fourth grade students in the non super-subgroup. The level of significance was set at .05.

RQ6. To what extent is the fall to spring growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally affected by membership in the super-subgroup?

H6. The fall to spring growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ6. The average growth in reading fluency for the fourth grade students in the super-subgroup was compared to the average growth in reading fluency for the fourth grade students in the non super-subgroup. The level of significance was set at .05.

RQ7. To what extent do fifth grade students participating in Read Naturally, show growth from fall to winter in oral reading fluency, as measured by AIMSweb?

H7. Fifth grade students participating in Read Naturally show growth from fall to winter in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ7. The sample mean was tested against a null value of 0. The level of significance was set at .05.

RQ8. To what extent do fifth grade students participating in Read Naturally, show growth from winter to spring in oral reading fluency, as measured by AIMSweb?

H8. Fifth grade students participating in Read Naturally show growth from winter to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ8. The sample mean was tested against a null value of 0. The level of significance was set at .05.

RQ9. To what extent do fifth grade students participating in Read Naturally, show growth from fall to spring in oral reading fluency, as measured by AIMSweb?

H9. Fifth grade students participating in Read Naturally show growth from fall to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ9. The sample mean was tested against a null value of 0. The level of significance was set at .05.

RQ10. To what extent is the fall to winter growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally affected by membership in the super-subgroup?

H10. The fall to winter growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ10. The average growth in reading fluency for the fifth grade students in the super-subgroup was compared to the average growth in reading fluency for the fifth grade students in the non super-subgroup. The level of significance was set at .05.

RQ11. To what extent is the winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally affected by membership in the super-subgroup?

H11. The winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ11. The average growth in reading fluency for the fifth grade students in the super-subgroup was compared to the average growth in reading fluency for the fifth grade students in the non super-subgroup. The level of significance was set at .05.

RQ12. To what extent is the fall to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally affected by membership in the super-subgroup?

H12. The fall to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ12. The average growth in reading fluency for the fifth grade students in the super-subgroup was compared to the average growth in reading fluency for the fifth grade students in the non super-subgroup. The level of significance was set at .05.

RQ13. To what extent do sixth grade students participating in Read Naturally, show growth from fall to winter in oral reading fluency, as measured by AIMSweb?

H13. Sixth grade students participating in Read Naturally show growth from fall to winter in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ13. The sample mean was tested against a null value of 0. The level of significance was set at .05.

RQ14. To what extent do sixth grade students participating in Read Naturally, show growth from winter to spring in oral reading fluency, as measured by AIMSweb?

H14. Sixth grade students participating in Read Naturally show growth from winter to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ14. The sample mean was tested against a null value of 0. The level of significance was set at .05.

RQ15. To what extent do sixth grade students participating in Read Naturally, show growth from fall to spring in oral reading fluency, as measured by AIMSweb?

H15. Sixth grade students participating in Read Naturally show growth from fall to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ15. The sample mean was tested against a null value of 0. The level of significance was set at .05.

RQ16. To what extent is the fall to winter growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally affected by membership in the super-subgroup?

H16. The fall to winter growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ16. The average growth in reading fluency for the sixth grade students in the super-subgroup was compared to the average growth in reading fluency for the sixth grade students in the non super-subgroup. The level of significance was set at .05.

RQ17. To what extent is the winter to spring growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally affected by membership in the super-subgroup?

H17. The winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ17. The average growth in reading fluency for the sixth grade students in the super-subgroup was compared to the average growth in reading fluency for the sixth grade students in the non super-subgroup. The level of significance was set at .05.

RQ18. To what extent is the fall to spring growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally affected by membership in the super-subgroup?

H18. The fall to spring growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ18. The average growth in reading fluency for the sixth grade students in the super-subgroup was compared to the average growth in reading fluency for the sixth grade students in the non super-subgroup. The level of significance was set at .05.

Limitations

Limitations are factors outside the control of the researcher that may affect the results of a study or the generalizability of the results (Lunenburg & Irby, 2008). The limitations of this study included:

1. The students may have participated in a secondary intervention or reading practice occurring outside of school.
2. The students took the AIMSweb assessment in an empty classroom set up with reading stations. There was potential for students to hear passages being read repeatedly by other students.

Summary

Chapter three provided an overview of the quantitative research study. The research design was detailed, and the population and sample studied were fully described. The data collection process was described with full details of the AIMSweb assessment.

The research questions were presented along with the hypotheses and data analysis. The chapter concluded with the limitations of the study. In chapter four, the results of the hypothesis testing are presented to determine the effect of Read Naturally on the oral reading fluency of students in grades 4, 5, and 6.

Chapter Four

Results

The purpose of this study was to investigate the effectiveness of the Read Naturally intervention program on the oral fluency rate, as measured by AIMSweb, on identified at-risk readers in fourth, fifth, and sixth grades. In addition, this study investigated whether the effect of Read Naturally on the oral fluency rate of at-risk fourth, fifth, and sixth grade students was influenced by membership in the super-subgroup. In this study, the super-subgroup was comprised of Black students, Hispanic students, students with disabilities, English Language Learners, and low income students. This chapter presents the findings of the study including the descriptive statistics and results of the hypotheses testing.

Descriptive Statistics

The population for this study was elementary students in grades 4 through 6 scoring below the 25th percentile on the fall R-CBM of AIMSweb and participating in the reading intervention program, Read Naturally. The sample included twenty-seven students in fourth grade (n = 13), fifth grade (n = 7), and sixth grade (n = 7) from a suburban, public elementary school. Of the twenty-seven participants, 11 were female and 16 were male; one student was an English Language Learner; and two of the students received special education services although not in the content area of reading. Sixteen students received free or reduced priced meals and sixteen students were in the super-subgroup.

Hypothesis Testing

This section includes the results of the hypothesis testing. Each research question is followed by the hypothesis, the analysis method, and the results.

RQ1. To what extent do fourth grade students participating in Read Naturally show growth from fall to winter in oral reading fluency, as measured by AIMSweb?

H1. Fourth grade students participating in Read Naturally show growth from fall to winter in oral reading fluency, as measured by AIMSweb.

A one -sample *t* test was conducted to address RQ1. The sample mean was tested against a null value of 0. The level of significance was set at .05. The results of the one-sample *t* test indicated a statistically significant difference between the average fall to winter growth in oral reading fluency and the null value of 0, $t = 6.926$, $df = 10$, $p = .000$. The average fall to winter reading growth ($M = 19.18$, $SD = 9.18$) was higher than the null value of 0.

RQ2. To what extent do fourth grade students participating in Read Naturally show growth from winter to spring in oral reading fluency, as measured by AIMSweb?

H2. Fourth grade students participating in Read Naturally show growth from winter to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ2. The sample mean was tested against a null value of 0. The level of significance was set at .05. The results of the one-sample *t* test indicated a statistically significant difference between the average winter to spring growth in oral reading fluency and the null value of 0, $t = 3.234$, $df = 10$, $p = .009$. The average winter to spring reading growth ($M = 7.73$, $SD = 7.93$) was higher than the null value of 0.

RQ3. To what extent do fourth grade students participating in Read Naturally show growth from fall to spring in oral reading fluency, as measured by AIMSweb?

H3. Fourth grade students participating in Read Naturally show growth from fall to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ3. The sample mean was tested against a null value of 0. The level of significance was set at .05. The results of the one-sample *t* test indicated a statistically significant difference between the average fall to spring growth in oral reading fluency and the null value of 0, $t = 6.963$, $df = 10$, $p = .000$. The average fall to spring reading growth ($M = 26.91$, $SD = 12.82$) was higher than the null value of 0.

RQ4. To what extent is the fall to winter growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally affected by membership in the super-subgroup?

H4. The fall to winter growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ4. The average growth in reading fluency for the fourth grade students in the super-subgroup was compared to the average growth in reading fluency for the fourth grade students in the non super-subgroup. The level of significance was set at .05. The results of the two-sample *t* test indicated no difference between the two values, $t = -1.287$, $df = 9$, $p = .230$. The sample mean for fourth grade students in the super-subgroup ($M = 16.57$, $SD = 9.07$) was not

different from the sample mean for fourth grade students in the non super-subgroup (M = 23.75, SD = 8.54).

RQ5. To what extent is the winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally affected by membership in the super-subgroup?

H5. The winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample t test was conducted to address RQ5. The average growth in reading fluency for the fourth grade students in the super-subgroup was compared to the average growth in reading fluency for the fourth grade students in the non super-subgroup. The level of significance was set at .05. The results of the two-sample t test indicated no difference between the two values, $t = 0.526$, $df = 9$, $p = .611$. The sample mean for fourth grade students in the super-subgroup (M = 8.71, SD = 9.27) was not different from the sample mean for fourth grade students in the non super-subgroup (M = 6.00, SD = 5.60).

RQ6. To what extent is the fall to spring growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally affected by membership in the super-subgroup?

H6. The fall to spring growth in oral reading fluency, as measured by AIMSweb, of the fourth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ6. The average growth in reading fluency for the fourth grade students in the super-subgroup was compared to the average growth in reading fluency for the fourth grade students in the non super-subgroup. The level of significance was set at .05. The results of the two-sample *t* test indicated no difference between the two values, $t = -0.536$, $df = 9$, $p = .605$. The sample mean for fourth grade students in the super-subgroup ($M = 25.29$, $SD = 14.40$) was not different from the sample mean for fourth grade students in the non super-subgroup ($M = 29.75$, $SD = 10.78$).

RQ7. To what extent do fifth grade students participating in Read Naturally, show growth from fall to winter in oral reading fluency, as measured by AIMSweb?

H7. Fifth grade students participating in Read Naturally show growth from fall to winter in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ7. The sample mean was tested against a null value of 0. The level of significance was set at .05. The results of the one-sample *t* test indicated a statistically significant difference between the average fall to winter growth in oral reading fluency and the null value of 0, $t = 3.398$, $df = 6$, $p = .015$. The average fall to winter reading growth ($M = 14.71$, $SD = 11.46$) was higher than the null value of 0.

RQ8. To what extent do fifth grade students participating in Read Naturally, show growth from winter to spring in oral reading fluency, as measured by AIMSweb?

H8. Fifth grade students participating in Read Naturally show growth from fall to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ8. The sample mean was tested against a null value of 0. The level of significance was set at .05. The results of the one-sample *t* test indicated a statistically significant difference between the average winter to spring growth in oral reading fluency and the null value of 0, $t = 3.727$, $df = 5$, $p = .014$. The average winter to spring reading growth ($M = 12.50$, $SD = 8.22$) was higher than the null value of 0.

RQ9. To what extent do fifth grade students participating in Read Naturally, show growth from fall to spring in oral reading fluency, as measured by AIMSweb?

H9. Fifth grade students participating in Read Naturally show growth from fall to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ9. The sample mean was tested against a null value of 0. The level of significance was set at .05. The results of the one-sample *t* test indicated a statistically significant difference between the average fall to spring growth in oral reading fluency and the null value of 0, $t = 7.194$, $df = 5$, $p = .001$. The average fall to spring reading growth ($M = 25.83$, $SD = 8.80$) was higher than the null value of 0.

RQ10. To what extent is the fall to winter growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally affected by membership in the super-subgroup?

H10. The fall to winter growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ10. The average growth in reading fluency for the fifth grade students in the super-subgroup was compared to the average growth in reading fluency for the fifth grade students in the non super-subgroup. The level of significance was set at .05. The results of the two-sample *t* test indicated no difference between the two values, $t = 1.337$, $df = 5$, $p = .239$. The sample mean for fifth grade students in the super-subgroup ($M = 21.00$, $SD = 13.23$) was not different from the sample mean for fifth grade students in the non super-subgroup ($M = 10.00$, $SD = 8.76$).

RQ11. To what extent is the winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally affected by membership in the super-subgroup?

H11. The winter to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ11. The average growth in reading fluency for the fifth grade students in the super-subgroup was compared to the average growth in reading fluency for the fifth grade students in the non super-subgroup. The level of significance was set at .05. The results of the two-sample *t* test indicated a statistically significant difference between the two values, $t = -2.889$, $df = 4$, $p = .045$. The sample mean for fifth grade students in the super-subgroup ($M = 6.33$, $SD = 4.16$) was lower than the sample mean for fifth grade students in the non super-subgroup ($M = 18.67$, $SD = 6.11$).

RQ12. To what extent is the fall to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally affected by membership in the super-subgroup?

H12. The fall to spring growth in oral reading fluency, as measured by AIMSweb, of the fifth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ12. The average growth in reading fluency for the fifth grade students in the super-subgroup was compared to the average growth in reading fluency for the fifth grade students in the non super-subgroup. The level of significance was set at .05. The results of the two-sample *t* test indicated no difference between the two values, $t = 0.380$, $df = 4$, $p = .723$. The sample mean for fifth grade students in the super-subgroup ($M = 27.33$, $SD = 11.51$) was not different from the sample mean for fifth grade students in the non super-subgroup ($M = 24.33$, $SD = 7.37$).

RQ13. To what extent do sixth grade students participating in Read Naturally, show growth from fall to winter in oral reading fluency, as measured by AIMSweb?

H13. Sixth grade students participating in Read Naturally show growth from fall to winter in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ13. The sample mean was tested against a null value of 0. The level of significance was set at .05. The results of the one-sample *t* test indicated a marginally significant difference between the average fall to winter growth in oral reading fluency and the null value of 0, $t = 2.28$, $df = 6$, $p = .063$. The average fall to winter reading growth ($M = 13.71$, $SD = 15.91$) tended to be higher than the null value of 0.

RQ14. To what extent do sixth grade students participating in Read Naturally, show growth from winter to spring in oral reading fluency, as measured by AIMSweb?

H14. Sixth grade students participating in Read Naturally show growth from winter to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ14. The sample mean was tested against a null value of 0. The level of significance was set at .05. The results of the one- sample *t* test indicated a statistically significant difference between the average winter to spring growth in oral reading fluency and the null value of 0, $t = 3.125$, $df = 5$, $p = .026$. The average winter to spring reading growth ($M = 16.17$, $SD = 12.67$) was higher than the null value of 0.

RQ15. To what extent do sixth grade students participating in Read Naturally, show growth from fall to spring in oral reading fluency, as measured by AIMSweb?

H15. Sixth grade students participating in Read Naturally show growth from fall to spring in oral reading fluency, as measured by AIMSweb.

A one-sample *t* test was conducted to address RQ15. The sample mean was tested against a null value of 0. The level of significance was set at .05. The results of the one-sample *t* test indicated a statistically significant difference between the average fall to spring growth in oral reading fluency and the null value of 0, $t = 9.916$, $df = 5$, $p = .000$. The average fall to spring reading growth ($M = 29.50$, $SD = 7.29$) was higher than the null value of 0.

RQ16. To what extent is the fall to winter growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally affected by membership in the super-subgroup?

H16. The fall to winter growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ16. The average growth in reading fluency for the sixth grade students in the super-subgroup was compared to the average growth in reading fluency for the sixth grade students in the non super-subgroup. The level of significance was set at .05. The results of the two-sample *t* test indicated no difference between the two values, $t = 1.077$, $df = 5$, $p = .331$. The sample mean for sixth grade students in the super-subgroup ($M = 19.25$, $SD = 19.05$) was not different from the sample mean for sixth grade students in the non super-subgroup ($M = 6.33$, $SD = 8.50$).

RQ17. To what extent is the winter to spring growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally affected by membership in the super-subgroup?

H17. The winter to spring growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample *t* test was conducted to address RQ17. The average growth in reading fluency for the sixth grade students in the super-subgroup was compared to the average growth in reading fluency for the sixth grade students in the non super-subgroup. The level of significance was set at .05. The results of the two-sample *t* test indicated a marginally significant difference between the two values, $t = -2.530$, $df = 4$, $p = .065$. The sample mean for sixth grade students in the super-subgroup ($M = 9.75$, $SD = 10.11$)

tended to be lower than the sample mean for sixth grade students in the non super-subgroup (M = 29.00, SD = 1.41).

RQ18. To what extent is the fall to spring growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally affected by membership in the super-subgroup?

H18. The fall to spring growth in oral reading fluency, as measured by AIMSweb, of the sixth grade students participating in Read Naturally is affected by membership in the super-subgroup.

A two-sample t test was conducted to address RQ18. The average growth in reading fluency for the sixth grade students in the super-subgroup was compared to the average growth in reading fluency for the sixth grade students in the non super-subgroup. The level of significance was set at .05. The results of the two-sample t test indicated no difference between the two values, t = -0.214, df = 4, p = .841. The sample mean for sixth grade students in the super-subgroup (M = 29.00, SD = 9.13) was not different from the sample mean for sixth grade students in the non super-subgroup (M = 30.50, SD = 3.54).

Summary

This chapter included the descriptive statistics and results of the hypothesis testing. One-sample t tests were conducted to determine growth in oral reading fluency. The data analyses indicated statistically significant oral reading fluency growth for fourth and fifth graders participating in Read Naturally at each of the three testing periods. The oral fluency growth for sixth graders participating in Read Naturally ranged from marginally significant from the fall to winter testing period to statistically significant

from the winter to spring and the fall to spring testing periods. Two-sample *t* tests were conducted to address the effect membership in the super-subgroup had on oral reading fluency. There was no statically significant difference between the oral reading fluency growth of fourth grade students in the super-subgroup and in the non super-subgroup. There was a statistically significant difference in oral reading fluency growth between fifth graders in the super-subgroup and in the non super-subgroup during the winter to spring testing period. The results indicated oral fluency growth for fifth graders in the super-subgroup was lower than the oral fluency growth for fifth graders in the non super-subgroup. There was a marginally significant difference between sixth graders in the super-subgroup and sixth graders in the non super-subgroup during the winter to spring testing period. The growth in oral reading fluency tended to be lower for sixth grade members in the super-subgroup compared to sixth grade students in the non super-subgroup. Chapter five includes an overview of the study, major findings, findings related to the review of literature, implications, recommendations for future study, and concluding remarks.

Chapter Five

Interpretation and Recommendations

The journey to be a competent reader begins in the early years of school and continues to develop over time and with experience (Chall, 1996; Palumbo & Sanacore, 2009). Continued development in reading is necessary to keep pace with the increasing demands of academic content and fulfilling life potential (Alexander, 2012; Lyon & Chhabra, 2004). Although most children learn to read in the primary grades, not all children are proficient readers by the end of third grade. Commercial intervention programs are readily available for use by students who are not yet proficient readers.

Study Summary

The purpose of this study was to investigate the effect of Read Naturally, a reading intervention program**,** on the reading growth of students in grades 4, 5, and 6. The students of interest in this study were considered at-risk readers by scoring below the 25th percentile on the fall R-CBM of AIMSweb. This study was conducted to investigate the effect of the Read Naturally intervention program on the oral fluency rate, as measured by AIMSweb, on identified at-risk readers in fourth, fifth, and sixth grades. This study also was designed to investigate whether the effect of Read Naturally on the oral fluency rate of at-risk fourth, fifth, and sixth grade students was influenced by membership in the super-subgroup. The super sub-group was comprised of Black students, Hispanic students, low-income students, students with disabilities, and English Language Learners. Within this section, an overview of the problem, purpose statement, and research questions, review of the methodology, major findings, and findings related to the literature are discussed.

Overview of the problem. A citizen of the 21st century must be able to think critically, communicate, collaborate, and demonstrate creativity. Each of these is grounded in literacy. More than ever before, literacy is critical to a student's future success in school and beyond (Torgesen et al., 2007). Legislation and reform efforts have focused heavily on early literacy as a means to improve outcomes for students. However, there is growing interest in reading instruction beyond the primary grades.

A common goal of education is to ensure that all students are equipped with the literacy skills needed to be college and career ready, able to compete in the global economy and be productive citizens (Carnegie Council on Advancing Adolescent Literacy, 2010). Children with reading difficulties not only encounter challenges in school, but throughout life (Compton et al., 2014; Fiester, 2013; Lesnick et al., 2010). Children who do not learn to read well are more likely to be retained a grade, drop out of school, commit crime, and depend on welfare later in life (Buffum, Mattos, & Weber, 2010; Compton et al., 2014; Lesnick et al., 2010). The price of failing to close the reading achievement gap is costly.

Accountability for the academic achievement of all students, including minority, disabled, and economically disadvantaged, has resulted in the need for scientifically based reading programs, high-quality reading instruction, and ongoing assessment to ensure that all children learn to read by the end of third grade. When a student enters the fourth grade as an at-risk reader, their limitations impede their learning. Evidence suggests that academic outcomes for older students with reading difficulties can improve with targeted intervention (Rasinski & Hoffman, 2003; Torgesen, et al., 2007). Throughout the history of the United States legislation and reform efforts have focused

heavily on early literacy as a means to improve outcomes for students. However, a growing interest in reading instruction beyond the primary grades has surfaced. The problem of upper elementary students not reading on grade level was addressed within this study by determining the effect of Read Naturally, a computer-based reading intervention program used within a RTI service delivery model.

Purpose statement and research questions. The purpose of this study was to investigate the effect of Read Naturally on the oral reading fluency growth of students in fourth, fifth, and sixth grades. In addition, this study was designed to investigate whether the effect of Read Naturally on the oral reading fluency growth of students in fourth, fifth, and sixth grades was influenced by membership in the super-subgroup. Eighteen research questions were written to address the purpose of this study, which was to investigate the effect of Read Naturally on the oral reading fluency growth of students in fourth, fifth, and sixth grades.

Review of the methodology. A quantitative, non-experimental research design was used to conduct this study. An analysis of the dependent variable, oral reading fluency growth, as measured by AIMSweb, was determined by investigating the effect of Read Naturally. The independent variables were grade level and membership in the super-subgroup. Purposive sampling was used to select participants. The group of interest to the researcher was students in grades 4, 5, and 6 scoring below the 25th percentile on the fall R-CBM of AIMSweb. The statistical analyses used for the hypothesis testing were *t* tests. One-sample *t* tests were conducted to determine the effect of Read Naturally on the oral reading fluency growth of each grade level between each of the three testing periods (fall to winter, winter to spring, and fall to spring). Two-sample

t tests were conducted to determine the difference in effect of Read Naturally on the oral reading fluency growth between grade level members of the super-subgroup and grade level members of the non super-subgroup between each of the three testing periods (fall to winter, winter to spring, and fall to spring).

Major findings. Detailed findings from the testing of the eighteen hypotheses were provided in chapter four. One-sample *t* tests were conducted to determine growth in oral reading fluency. The data analyses indicated statistical significance in the oral reading fluency growth for fourth and fifth graders participating in Read Naturally at each of the three testing periods. The oral fluency growth for sixth graders participating in Read Naturally ranged from marginally significant from the fall to winter testing period to statistically significant from the winter to spring as well as from the fall to spring testing periods. Two-sample *t* tests were conducted to address the effect membership in the super-subgroup had on oral reading fluency. There was no statically significant difference between the oral reading fluency growth of fourth grade students in the super-subgroup and in the non super-subgroup. There was a statistically significant difference between fifth graders in the super-subgroup and in the non super-subgroup during the winter to spring testing period. The results indicated oral fluency growth for fifth graders in the super-subgroup was lower than for fifth graders in the non super-subgroup. There was a marginally significant difference between sixth graders in the super-subgroup and sixth graders in the non super-subgroup during the winter to spring testing period. The growth in oral reading fluency tended to be lower for sixth grade members in the super-subgroup compared to sixth grade students in the non super-subgroup.

Findings Related to the Literature

In recent decades, reading fluency has remained a continued topic of interest (Rasinski, 2006). Efforts to address deficits in reading and the accountability for the academic achievement of all students have resulted in the requirement of scientifically based reading programs. Previous research has contributed to the ongoing knowledge base and implementation of RTI as an effective service delivery model (Buffum, Mattos, & Weber, 2010; Fuchs & Fuchs, 2006). The current study was conducted to not only reinforce the positive findings of previous research in regards to RTI and reading interventions, but to specifically contribute to the knowledge base of the effect of intervention programs on the reading growth of struggling students in the upper elementary grades. Chapter two provided a review of the literature relevant to this study. This section presents the findings of this study as related to previous research.

Similar to the current study, other studies have focused on essential components of effective reading instruction, specifically in the area of fluency (NICHD, 2000a; Rasinski, & Hoffman, 2003; Rasinski, Rilkli, & Johnston, 2009). Fluency was found to be one of the key components of reading because of its relation to comprehension (NICHD, 2000a). Fluency was noted to be dependent on word recognition skills and required the ability to efficiently read in order to make meaning of the text (NICHD, 2000b). In its examination of reading fluency studies, the NRP found positive evidence to support teaching fluency in order to improve reading outcomes (NICHD, 2000b; Shanahan, 2005). Further, it was found that fluency instruction improved reading achievement no matter how it was measured, and positive findings were evident for

struggling readers as well as readers defined as average (NICHD, 2000b; Shanahan, 2005).

Fluent readers have been described as being able to read accurately, automatically, and with expression. A student who reads fluently is equipped with the ability to comprehend what is read. According to Allington (2001), students become fluent readers through practice and feedback. Poor fluency has been described as a self-perpetuating problem, meaning that slow, laborious readers often remain poor readers without repeated practice. Research supports modeling and repeated reading as effective strategies to improve fluency (Denton et al., 2006; Ihnot, 1991; Kuhn & Stahl, 2000, 2003). Modeling consists of a proficient reader modeling correct pronunciation, rate, expression, and phrasing while reading (Heckelman, 1969, Hollingsworth, 1970; Kuhn & Stahl, 2000, 2003). The repeated reading strategy involves orally reading text until a specific rate of reading is achieved (Dowhower, 1987; LaBerge & Samuels, 1974; NICHD, 2000a; Rasinski, 1990). Read Naturally combines the research-proven strategies of modeling and repeated reading (Ihnot, 1991; Shinn, Shinn, & Langell 2010).

Similar to the current study, Denton et al. (2006) conducted a study focused on the gains in oral reading fluency of students participating in Read Naturally. Both studies reported positive effects on increased oral reading fluency. The results of Denton et al. (2006) revealed statistically significant effects on growth in oral reading fluency. However, the current study revealed a statistically significant difference between the average fall to winter, winter to spring, and fall to spring growth in oral reading fluency for struggling readers in grades 4 and 5. On the contrary, the oral fluency growth for sixth graders participating in Read Naturally ranged from marginally significant from the

fall to winter testing period to statistically significant from the winter to spring as well as from the fall to spring testing periods. Furthermore, there was no statically significant difference between the oral reading fluency growth of fourth grade students in the super-subgroup and in the non super-subgroup. There was a statistically significant difference between fifth graders in the super-subgroup and in the non super-subgroup during the winter to spring testing period. The results indicated oral fluency growth for fifth graders in the super-subgroup was lower than for fifth graders in the non super-subgroup. There was a marginally significant difference between sixth graders in the super-subgroup and sixth graders in the non super-subgroup during the winter to spring testing period. The growth in oral reading fluency tended to be lower for sixth grade members in the super-subgroup compared to sixth grade students in the non super-subgroup.

The use of an oral fluency assessment, such as AIMSweb, can help determine which students, when compared to national norms, are reading on grade level and which students may benefit from receiving an intervention. The current research findings add to the body of literature related to RTI, growth in oral reading fluency, and the reading intervention program, Read Naturally. The overall findings of the current study were consistent with findings from the literature, which revealed that adolescent struggling readers were found to benefit from participation in interventions (Edmonds et al, 2009; Pyle & Vaughn, 2012; Scammacca et al., 2007). In the current study each participant demonstrated positive growth in oral reading fluency when compared against a null value of 0. Specifically, the results of the study provided evidence that students receiving the Read Naturally intervention program experienced growth as measured by AIMSweb.

The significance of the present study lies within the problem of upper elementary students not reading on grade level. The problem of students not reading on grade level was addressed within this study by determining the effect of Read Naturally, a computer-based reading intervention program used within a Response to Intervention (RTI) service delivery model. Specifically, the present study could suggest an effective intervention program to use with struggling readers in grades 4 through 6 as well as with students whose demographics are similar to those of the super-subgroup.

Conclusions

The ability to read provides the needed foundation for all future learning. The focus of this study included an investigation of the effect of Read Naturally on growth in oral reading fluency. The effect of membership in the super-subgroup was also analyzed. Implications for actions and recommendation for future research are included in this section based on the findings of this study.

Implications for action. Instructional time is a scarce resource. Teaching children to read can be a challenging endeavor. Struggling readers in the upper elementary grades "experience a wide range of challenges that require a wide range of interventions" (Biancarosa & Snow, 2006, p. 8). A problem for some struggling readers is the inability to read with enough fluency to facilitate comprehension (Biancarosa & Snow, 2006; Torgesen et al., 2007). The current study was conducted to provide research-based evidence of using an intervention program to increase the oral reading fluency of at-risk readers in the upper grades of elementary school. Specifically, it was the goal of the researcher to use a sample of students representing the super-subgroup. The results of this study could provide guidance to teachers and administrators as they

examine the needs of students in the area of reading achievement, make decisions on reading interventions, and seek to allocate resources accordingly. The implications of this study could also suggest an effective intervention program to use with struggling readers in grades 4 through 6 as well as with students whose demographics are similar to those of the super-subgroup. In addition, this study supported growth in oral reading fluency as claimed by Pearson Education, the vendor of Read Naturally; however, the small sample size somewhat limits the generalizability of the research.

Recommendations for future research. Findings from this study expand the available literature on reading intervention programs used with upper elementary students. Specifically, the current study was conducted to investigate the effect of Read Naturally on the oral reading fluency growth of fourth, fifth, and sixth grade students. The following are recommendations for future research.

The first recommendation is to replicate the current study by expanding the sample size. The current study included data from 27 participants at one elementary school. It would be of benefit to increase the sample size to see if the results change. This may produce results that were more conclusive and would strengthen the confidence interval.

The second recommendation is to replicate the current study by creating an experimental design study. The current study used a non-experimental, pre-test and post-test design and involved the use of a purposive sample of students in grades 4 through 6. To obtain true effects of the Read Naturally intervention program, it is recommended to have both a treatment group and a control group. By having both groups, the researcher

has more control over possible factors, not related to the intervention, which could influence the results.

A final recommendation is to extend the present study by examining a cohort of students over time. A longitudinal study would allow the researcher to detect changes in reading growth of both individual students and the group of students. Further, examining a cohort over time can suggest cause and effect relationships and long-term effects of the intervention on student achievement.

Replication studies can refine the current work and provide further confirmation of the effect of an oral reading fluency intervention delivered to upper elementary students in a RTI service delivery model. While reading intervention programs are readily available for purchase, educators and administrators need to know which intervention programs are most effective to increase students' reading achievement.

Concluding remarks. The focus of reading instruction changes from the primary to intermediate grades. In order for students to be proficient readers they must continue to learn and acquire the skills necessary to read on grade level. Findings from the current study suggest that struggling readers in the upper elementary grades do benefit from interventions.

In closing, it is the belief of this researcher that explicit reading instruction must continue after the primary grades, especially for those at risk of reading failure. As students progress through the grade levels their purpose for reading changes. Students face increasingly complex text, and therefore, must have the ability to read skillfully and fluently in order to comprehend. Schools must adopt sound instructional practices to help all students achieve.

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Appendices

Appendix A: Lee' Summit R-7 Request to Conduct Research

Document Provided to Intended Researcher by:

Signature_____ Date: 7.28.14
(Building Principal for District Employee
or SLC Staff for Out-of-district Researchers)

INSTRUCTIONAL OPERATIONS TEAM
Lee's Summit R-7 School District
301 NE Tudor Rd.
Lee's Summit, Missouri 64086

REQUEST FOR PERMISSION TO CONDUCT RESEARCH/GATHER DATA
IN THE LEE'S SUMMIT R-7 SCHOOLS
TO MEET A COURSE REQUIREMENT

DIRECTIONS: The applicant should complete this form, obtain the necessary approval and signatures, and return to:

Associate Superintendent of Instruction & School Leadership
Lee's Summit R-7 School District
301 NE Tudor Rd.
Lee's Summit, Missouri 64086

It may take up to three weeks for requests to be processed; please plan accordingly in order to meet course deadlines.

1. Please describe concisely the basic concepts and goals of your proposed project, and include an explanation of how the project meets a course requirement within the field of education.

During the 2012-2013 and 2013-2014 school years, Meadow Lane Elementary implemented Read Naturally as an intervention to improve reading fluency for identified struggling readers in fourth, fifth, and sixth grades. Read Naturally, a program designed to improve reading fluency, combines teacher modeling, repeated reading, and progress monitoring. It was selected because of its cost, ease of implementation, and positive results based on findings at the Florida Center for Reading Research. The problem identified in this study was that after two years of using Read Naturally, no in-depth

study had been done to determine the effect of Read Naturally on student fluency achievement. The purpose of this study was to investigate the effect of the Read Naturally intervention program on the reading fluency, as measured by AIMSweb, of identified students in fourth, fifth, and sixth grades. The second purpose of this study was to investigate whether the effect of Read Naturally on the reading achievement of fourth, fifth, and sixth grade students was influenced by membership in the super sub-group, comprised of black students, Hispanic students, low-income students, and students with disabilities.

The significance of this study lies in its relation to the local problem of students not reading on grade level by the end of the third grade. The problem of students not reading at grade level is addressed within this study by determining the effectiveness of Read Naturally, a reading intervention, within a Response to Instruction (RtI) service delivery model. The outcomes of this study not only contribute to the on-going body of knowledge of oral reading fluency interventions, but this study could provide guidance to individual schools and the LSR-7 school district when making decisions on which reading interventions to purchase and use.

Results of this study could be shared with elementary administrators and district officials as they examine the needs of students, especially in the area of reading achievement, and available resources. Other benefits of the research may include some type of professional development related to reading instruction in the area of fluency or an explanation to the school community to raise their awareness about effective ways to improve student reading achievement.

This independent research study also meets the partial requirement for a Doctorate Degree in Educational Leadership at Baker University.

2. List the names of all data collection instruments you intend to use and enclose a copy of each with this application. Also, enclose a copy of each parent/student consent form. Please describe in detail the distribution, implementation, and collection methods you intend to use in your data collection.

   Data will be collected from the following instruments:
   - AIMSweb
   - Power School (student attendance & demographic information)
   - Fidelity check lists (completed by MLE staff members as part of the RTI process)

   No parent consent form will be given. Passive permission will be used. (Parents were informed of their child's participation via Tier 2 parent letters, and/or during a parent-teacher conference.)

   The goal of collecting the data is to be non-intrusive. Permission is sought to access, obtain, and share information from computer-based instruments, such as AIMSweb and Read Naturally. I wish to print hardcopies of reports from AIMSweb and Read Naturally in order to analyze and summarize the information. Informal dialogue will occur with MLE staff, but no formal interviews will be conducted.

3. Give the names of the Lee's Summit R-7 School District public school(s), you intend to involve to meet the project requirements. Are there certain demographics required for the project (ie: grade level, gender, etc.)

   The school involved in the research study is Meadow Lane Elementary. Collected data will be summarized by demographic categories such as grade level and

membership in the super sub-group, comprised of black students, Hispanic students, low-income students, and students with disabilities.

4. What amount of time would be required of staff or students in the R-7 schools in order to meet project requirements?

   No additional time would be required of instructional staff or students. Assistance may be sought from the Assistant Superintendent of Elementary Instruction, or the Director of Nutrition Services. The exact time requirement from these individuals is to be determined, but not excessive in expectation.

5. Are there any other school records you would require (for example, achievement test scores or attendance?). If so, please provide a detailed explanation of your process to code such records to ensure confidentiality.

   Student attendance records may be used for purposes of verification that student attended/participated in Read Naturally on the day he/she was scheduled to do so. This will support the implementation fidelity of the intervention. Student performance reports from AIMSweb will be used. Desired data is from the benchmarking periods only; fall, winter, and spring. Although a specific process to code student records has not yet been determined, provisions for confidentiality will be assured. Student records will be properly stored and secured. Participant information will be non-identifying. Results of the research study will be exclusive of personal identification of the Read Naturally participants.

6. Give the name of each person who will enter the schools. For nondistrict employees, please provide existing background checks for individuals or a plan to ensure background checks are in place prior to entry in schools.

   Joy L. Brigman

7. What is the date you wish to begin? 03-01-2014.

8. By what date do you anticipate being finished? 04-15-2015.

9. Please obtain the signature of your instructor responsible for this assignment and attach a copy of the assignment guidelines.

   Signature: Venida Edwards

   Position: Associate Professor

   University/College/School/Department/Division:
   Baker University, Graduate School of Education

10. Name of applicant (please print)

    Joy L. Brigman

    Joy L Brigman
    Signature

    Address
    2812 SW 10th Street
    Lee's Summit, MO 64081

    Primary Researcher
    Position/Status

    7.27.14
    Date

    Phone Number
    (816) 966-1297

    LSR-7 x2305

Approved 2008

Appendix B: Lee's Summit R-7 IRB Approval Letter

Lee's Summit R-7 School District
301 NE Tudor Rd
Lee's Summit, MO 64086-5702
(816) 986-1027 Fax (816) 986-1060

Office of Instruction and Leadership

August 6, 2014

Joy Brigman
Prairie View Elementary

Dear Joy,

Thank you for submitting your research proposal. I am pleased to inform you that your proposal was approved by the Instructional Operations Team on Monday, August 4, 2014.

Remember you must maintain the confidentiality of all student information.

Sincerely,

Dr. Kevin Daniel
Associate Superintendent Instruction & Leadership

xc: Dr. Katie Collier, Assistant Superintendent of Elementary Instruction

ar

Appendix C: Baker University IRB Request

BAKER UNIVERSITY

SCHOOL OF EDUCATION
GRADUATE DEPARTMENT

Date: May 5, 2015
IRB PROTOCOL NUMBER _____
(IRB USE ONLY)

IRB REQUEST
Proposal for Research
Submitted to the Baker University Institutional Review Board

I. Research Investigator(s) (Students must list faculty sponsor first)

Department(s) **School of Education Graduate Department**

	Name	Signature	
1.	Dr. Verneda Edwards	V. Edwards	Major Advisor
2.	Margaret Waterman	Margaret Waterman	Research Analyst
3.	Dr. Sharon Zoellner	_____	University Committee Member
4.	Dr. Katie Collier	_____	External Committee Member

Principal Investigator: Joy L. Brigman
Phone: 816-365-3401
Email: joy.brigman@lsr7.net
Mailing address: 2812 SW 10th Street
Lee's Summit, MO 64081

Faculty sponsor: Dr. Verneda Edwards
Phone: 913-344-1227
Email: vedwards@bakeru.edu
Expected Category of Review: _X___Exempt ____Expedited ____Full

II: Protocol Title
The Effect of Read Naturally on Reading Achievement of Upper Elementary Students

Summary
The following summary must accompany the proposal. Be specific about exactly what participants will experience, and about the protections that have been included to safeguard participants from harm. Careful attention to the following may help facilitate the review process:

In a sentence or two, please describe the background and purpose of the research.

The purpose of this study is to investigate the effect of the Read Naturally intervention program on the oral fluency rate, as measured by AIMSweb, on identified at-risk readers in the

fourth, fifth, and sixth grades. Specifically, this study was to investigate whether the effect of the Read Naturally intervention program on the oral fluency rate of at-risk students in fourth, fifth, and sixth grades was influenced by membership in the super sub-group which is comprised of black students, Hispanic students, low-income students, and students with disabilities.

Briefly describe each condition or manipulation to be included within the study.

There will be no condition or manipulation included in this study. This study will investigate the effect of a reading intervention program on identified at-risk readers in grades fourth through sixth. Furthermore, it will examine the influence of membership in the super sub-group on reading growth.

What measures or observations will be taken in the study? If any questionnaire or other instruments are used, provide a brief description and attach a copy.

The independent variables included in this study are Read Naturally, a computerized intervention program, grade level and membership in the super sub-group. The dependent variable is growth in oral reading fluency as measured by AIMSweb. No questionnaires or other instruments will be used for the purpose of this study. Student data for this study is archived and will be obtained through the student information management system, AIMSweb database, and Read Naturally reports.

Will the subjects encounter the risk of psychological, social, physical, or legal risk? If so, please describe the nature of the risk and any measures designed to mitigate that risk.

No. The subjects will not encounter psychological, social, or legal risks.

Will any stress to subjects be involved? If so, please describe.

No. The subjects will not encounter any stress.

Will the subjects be deceived or misled in any way? If so, include an outline or script of the debriefing.

No. The subjects in this study will not be misled in anyway.

Will there be a request for information that subjects might consider to be personal or sensitive? If so, please include a description.

No. Subjects will not be asked to volunteer any sensitive or personal information.

Will the subjects be presented with materials that might be considered to be offensive, threatening, or degrading? If so, please describe.

No. The subjects will not be presented with any such materials which might be considered offensive, threatening or degrading.

Document Provided to Intended Researcher by:

Signature_____ Date: 7.28.14
(Building Principal for District Employee
or SLC Staff for Out-of-district Researchers)

INSTRUCTIONAL OPERATIONS TEAM
Lee's Summit R-7 School District
301 NE Tudor Rd.
Lee's Summit, Missouri 64086

Approximately how much time will be demanded of each subject?

The study will not ask for any time beyond the regular school day from the subjects.

Who will be the subjects in this study? How will they be solicited or contacted? Provide an outline or script of the information which will be provided to subjects prior to their volunteering to participate. Include a copy of any written solicitation as well as an outline of any oral solicitation.

The subjects in this study are students in grades four, five, and sixth who were identified as at-risk. All data and information for this study will be archival. Therefore, no subjects will be solicited or contacted for this study.

What steps will be taken to ensure that each subject's participation is voluntary? What if any inducements will be offered to the subjects for their participation?

Archival data will be collected. All subjects will be referred to by an identification number code. No inducements will be offered.

How will you ensure that the subjects give their consent prior to participating? Will a written consent form be used? If so, include the form. If not, explain why not.

No consent is required for this study. All data is archival. No inducements will be offered.

Will any aspect of the data be made a part of any permanent record that can be identified with the subject? If so, please explain the necessity.

No. Data from this study will not be made part of any permanent record that could be identified with the subjects.

Will the fact that a subject did or did not participate in a specific experiment or study be made part of any permanent record available to a supervisor, teacher or employer? If so, explain.

No. Data from this study will not be made part of any permanent record that could be identified for future purposes.

What steps will be taken to ensure the confidentiality of the data?

The researcher submitted application and received permission to conduct research and to obtain archival data from the Lee's Summit R-7 School District. Data generated for this study will not be used for any other purposes. No names or other identifications will be available to identify the subjects in the study. The data will be stored on a secure site. The data will be stored for three years, and afterwards, the data will be destroyed.

If there are any risks involved in the study, are there any offsetting benefits that might accrue to either the subjects or society?

No. There is no a risk to the subjects or society involved in this study.

Will any data from files or archival data be used? If so, please describe.

Archival data will be provided by the school district in the study. Archival data will include AIMSweb data and Read Naturally data from 2013-2014 for each subject participant. Student names will be replaced with an identification number.

Appendix D: Baker University IRB Approval Letter

BAKER UNIVERSITY
Class Conference

May 11, 2015

Dear Joy L. Brigman and Dr. Edwards,

The Baker University IRB has reviewed your research project application and approved this project under Exempt Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.

Please inform this Committee or myself when this project is terminated or completed. As noted above, you must also provide IRB with an annual status report and receive approval for maintaining your status. If you have any questions, please contact me at CTodden@BakerU.edu or 785.594.8440.

Sincerely,

Chris Todden EdD
Chair, Baker University IRB

Baker University IRB Committee
Verneda Edwards EdD
Sara Crump PhD
Erin Morris PhD
Scott Crenshaw

Appendix E: Personal Communication, T. Ihnot

LSR7

Joy Brigman <joy.brigman@lsr7.net>

FW: Question about author of user's guide & manual
1 message

info@readnaturally.com <Info@readnaturally.com> Tue, Apr 14, 2015 at 9:58 AM
To: "joy.brigman@lsr7.net" <joy.brigman@lsr7.net>

Joy,

The writing was a combined effort of the Read Naturally Curriculum Department. You can credit Read Naturally Curriculum Department.

I am interested in more details on your study. How many participants? The length of the study? Which Read Naturally format are you using? How are the students performing?

You can contact me by email or phone. (651-286-8721)

Thank you,

Tom Ihnot

CEO

Read Naturally, Inc.

www.readnaturally.com

New Address: 1284 Corporate Center Drive | Suite 600 | St. Paul, MN 55121

phone: 1.800.788.4085 x8711 | fax: 651.452.9204

Are you trained in the Read Naturally strategy? Attend one of our seminars nationwide. Click here for more information.

From: Joy Brigman [mailto:joy.brigman@lsr7.net]
Sent: Monday, April 13, 2015 8:22 PM
To: Customer Service
Subject: Question about author of user's guide & manual

Greetings!

I am a doctoral student at Baker University in Baldwin, KS. My research study is focused on the effect of Read Naturally on at-risk readers in grades 4-6 in an elementary school setting. I have been unable to locate the author of the following resources. I would like to give proper credit to the author(s) and include a proper citation within my study,

Read Live User Guide

Read Naturally ME Teacher's Manual

Read Naturally SE v2.1 Teacher's Guide

I appreciate your assistance in helping me identify the proper author(s) of these resources.

Sincerely,

Joy

Joy L. Brigman
Assistant Principal
Prairie View Elementary
501 SE Todd George Parkway | Lee's Summit, MO 64063
tel (816) 986-2280 | fax (816) 986-2326
Twitter:@_joyb14
Please note my new email address: joy.brigman@lsr7.net