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Read180 Computer Software by Gender and Ethnicity on Reading Achievement for Identified Special Education Students

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READ180 COMPUTER SOFTWARE BY GENDER AND ETHNICITY ON READING
ACHIEVEMENT FOR IDENTIFIED SPECIAL EDUCATION STUDENTS

by

Sherrie Bayles

Dissertation

Submitted to the Faculty of

Harding University

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Educational Leadership P-20

December 2014

READ180 COMPUTER SOFTWARE BY GENDER AND ETHNICITY ON READING
ACHIEVEMENT FOR IDENTIFIED SPECIAL EDUCATION STUDENTS

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DEDICATION

I would like to dedicate this dissertation to the glory of God. One of my favorite verses, “For I know the plans I have for you,” declares the LORD, “plans to prosper you and not to harm you, plans to give you hope and a future...” (Jeremiah 29:11) has provided guidance to me during this process. I praise Him for giving me direction in my life.

ABSTRACT

by
Sherrie Bayles
Harding University
December 2014

Title: Read180 Computer Software by Gender and Ethnicity on Reading Achievement for Identified Special Education Students (Under the direction of Dr. Michael Brooks)

The purpose of this dissertation was to conduct an independent study to determine the effectiveness of the READ 180 reading intervention program when implemented with middle and junior high school students with disabilities. To address the first and third hypotheses, gender (male versus female) and change over time (fall, mid-year, and at the end of the school year) served as the independent variables for sixth/seventh and eighth/ninth grade students with disabilities, respectively. For the second and fourth hypotheses, ethnicity (White versus all non-White students) and change over time served as the independent variables for sixth/seventh and eighth/ninth grade students with disabilities, respectively. The dependent variable for all four hypotheses was literacy achievement as measured by Lexile scores identified through the Scholastic Reading Inventory. A review of the literature identified the various aspects of READ 180 program, the history of the program, and overall reading comprehension. In addition, special and regular education students, males and females, ethnic subpopulations, and the perceptions of educators and students concerning READ 180 were reviewed.

This causal-comparative study used scores from sixth, seventh, eighth, and ninth grade special education students in an urban school district in Northwest Arkansas. The researcher used a casual-comparative design because she did not manipulate the independent variables. Six schools were identified to participate in the study, and each school identified sixth, seventh, eighth, and ninth graders based on disability category and ability to meet the intervention schedule. The six targeted secondary schools in this district were similar, with three middle schools with a grade range of sixth to seventh and three junior high schools serving eighth to ninth grades.

A 2 x 3 mixed-factorial ANOVA was used to analyze the data collected for each of the four hypotheses. The results of this study showed no significant interaction effects between students who participated in READ 180 by gender or ethnicity and change over time for Hypotheses 1-4. Regarding main effects, a statistically significant within subjects main effect for change over time existed for all four hypotheses. The main effect for gender in Hypotheses 1 and 3 was not significant. In contrast, the main effect for ethnicity was significant for Hypothesis 4, but not for Hypothesis 2. When analyzing the means, White students scored significantly higher compared to the non-White students; however, there was only a medium effect size for the result.

Many of the studies reviewed produced mixed results similar to this study. Differences in gender and ethnicity were identified throughout the various studies. Intensive reading intervention programs such as READ 180 do make effective instructional tools based on the significant change over time results, regardless of gender and ethnicity. All the studies were in agreement with one idea; reading intervention programs must be implemented with fidelity.

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CHAPTER I

INTRODUCTION

With the accountability level for all educators at an all-time high, it is imperative that the education of children with disabilities be a top national priority (National Dissemination Center for Children with Disabilities, n.d.). The Individuals with Disabilities Education Act (IDEA) established high standards for achievement and provided appropriate educational services that address individual student's needs. An integral part of these high-performance standards is the ability to read. Because the ability to read is highly valued and important for social and economic advancement (National Research Council, 1998), learning to read well is especially essential for the success of children with disabilities.

On October 2, 2001, President George W. Bush ordered the creation of the President's Commission on Excellence in Special Education (President's Commission on Excellence in Special Education, 2001). As part of the President's charge to find ways to strengthen America's four decades of commitment to educating children with disabilities, the Commission held 13 hearings and meetings throughout the nation and listened to the concerns and comments from parents, teachers, principals, education officials, and the public. In his Executive Order 13227, Bush stated the following:

The education of all children, regardless of background or disability...must always be a national priority. One of the most important goals of my

Administration is to support states and local communities in creating and maintaining a system of public education where no child is left behind.

Unfortunately, among those at greatest risk of being left behind are children with disabilities. (p. 7)

President Bush and his administration committed to making the education of all children a focus for the nation. The No Child Left Behind Act (NCLB, 2002) brought educational responsibility for all students, including students with disabilities.

NCLB complemented IDEA by providing accountability measures for students with disabilities as well as requiring student participation in state and district-wide assessments (National Center of Educational Outcomes, 2003). Teachers of children who are at risk of reading difficulties and children with learning disabilities need access to the most recent research to more effectively implement instructional methodologies that are research based (President's Commission on Excellence in Special Education, 2002).

According to Schrag (2003), the NCLB Act contained four basic educational reform principles, which included (a) accountability for educational results; (b) funding flexibility for states and local systems; (c) research-based instructional strategies and techniques; and (d) influence, information, and choice for parents. The third principle of NCLB (2002) required schools to implement effective research-based practices that address learning for all students, including those with disabilities. This principle opened the door for educators to seek and implement effective researched instructional methods and materials that would positively affect the educational achievement for all students.

In a technological society, the demands for higher literacy are ever increasing, creating consequences that are grievous for those who fall short (National Research

Council, 1998). The 2007 Nation's Report Card from the National Center for Education Statistics pointed out that just one-third of public school fourth graders and less than one-third of eighth graders read at or above grade level (Lee, Grigg, & Donahue, 2007). In the National Assessment of Educational Progress (1997) report, 40% of fourth graders, 30% of eighth graders, and 25% of 12th graders were reading below level.

Statement of the Problem

The purposes of this study were four-fold. First, the purpose of this study was to determine the effects by change over time of males versus females on literacy achievement for sixth and seventh grade special education students in three northwest Arkansas schools who used the READ 180 software program. Second, the purpose of this study was to determine the effects by change over time of white versus all non-white students on literacy achievement for sixth and seventh grade special education students in three northwest Arkansas schools who used the READ 180 software program. Third, the purpose of this study was to determine the effects by change over time of males versus females on literacy achievement for eighth and ninth grade special education students in three northwest Arkansas schools who used the READ 180 software program. Fourth, the purpose of this study was to determine the effects by change over time of white versus all non-white students on literacy achievement for eighth and ninth grade special education students in three northwest Arkansas schools who used the READ 180 software program.

Background

Computer Assisted Learning Strategy Research

Not long ago, computers were associated with playing games, but educators realized that students could use computers for educational programs to reinforce

academic skills. Integrating technology can provide teachers with instant data and offer new and exciting challenges for students (Henderson, 2010). Technology can be used to provide highly success-oriented, individual solutions for children with disabilities (Wood, 2004). Research regarding computer-assisted learning strategies that affect reading achievement is limited. Although there are many benefits to using technology-based tools for monitoring students' day-to-day progress, educators should strategically choose and properly use the most appropriate tools for meeting the defined learning goals of schools (Henderson, 2010). A review by the federal What Works Clearinghouse regarding READ 180 finds that the popular computerized reading program has “potentially positive effects” on student achievement (Zehr, 2009).

It is clear is that as computer software becomes more available, the opportunities for using computers in reading instruction should expand. At the very least, as noted by the National Reading Panel (2000), computers can provide opportunities for students to interact instructionally with text for greater amounts of time than they could if only conventional instruction is provided. The Panel continued that, although there is no research that provides a general rule for determining what works, careful selection from available software can provide additional instructional assistance in classrooms. Although a publication bias seemed to exist to report only positive differences, no instructional studies are available in which the computer does not provide a significant addition to the instructional context. The Panel concluded that the current analysis finds general agreement in the experimental literature that computer technology can deliver a variety of types of reading instruction successfully.

Several studies support the use of computer technology in education. Stratham and Torell (1996) noted that, when properly implemented, the use of computer technology in education has a significant positive effect on student achievement as measured by test scores across subject areas and with all levels of students. When students take an active, participatory role in learning, the focus of teaching is placed on students. Stratham and Torrell stated that when teachers give students the opportunity to use computers efficiently, learning takes place. They stressed that benefits of computer technology are especially notable with high-risk students. In addition, they contended that some of the highest gains in achievement consistently come when at-risk students are afforded the opportunity to access computer technology. They continued that computers have not yet become a major medium for instruction, and computers in most subject-matter classes still serve primarily for enrichment activities or remediation. Nevertheless, teaching and learning with technology seems to benefit students greatly if the technology is used according to researched techniques resulting in proven success. Technology can have an extremely positive affect on student learning in classrooms and as a tool to improve teaching (Flemmer, 2007). Flemmer (2007) noted that research shows technology will improve student performance when the application directly supports the curriculum objectives that are assessed. For example, in a 1996-1997 pilot test, Project LISTEN used an automated Reading Tutor for the remediation of six third graders in an inner-city elementary school. The Reading Tutor displays stories on a computer screen, and listens to the children read aloud. High-interest stories were used while the Sphinx-II speech recognizer analyzed the students' oral reading. In the pilot test, the students started the program almost three years below grade level and used Reading Tutor under

individual supervision of classroom teachers. The students averaged two years of growth in under eight months (Schacter, 1999). Preliminary results were promising, but no conclusions could be drawn until the actual research was published in 1998. Project LISTEN director, Jack Mostow (1998), reported that over 100 children in Grades 1-5 students in 10 classrooms used Reading Tutor daily during the 4-month controlled study during the 1997-1998 school year. The students using the Reading Tutor gained significantly more in reading comprehension compared to classmates who spent the same time in more traditional regular reading activities. At this time, the Reading Tutor is not a commercial product, but a research prototype is still being tested and refined (Project LISTEN, 2014).

Another computer-based program, targeting emerging readers, is the Watch Me! Read (WM!R) developed by researchers at IBM's T. K. Watson Research Center. Although not yet commercially available (Schacter, 1999), IBM and the Houston Independent School District have gradually been phasing in WM!R since 1998 along with other supplemental reading programs. In the 2005-2006 school year, the Houston Independent School District (2006) used but did not fully implement WM!R in 97 of their schools. The designers' goals were to provide reading practice, comprehension awareness, and a sense of reading as communication. No conclusions regarding achievement data in controlled studies were published. However, observational data and teacher interviews from Houston Independent School District confirmed that WM!R students were more motivated to read while on the computer (Schacter, 1999).

Two major contenders in computerized reading incentive programs are the Electronic Bookshelf, which was repackaged as Scholastic Reading Counts, and

Accelerated Reader programs (Engvall, 1999). Students are encouraged to read materials that are appropriate for their independent reading level, which allows for greater growth and practice. The intent of these programs is to provide a way to track whether students read and comprehend their books and to encourage them to adjust their reading levels as appropriate.

Hasselbring and Bausch (2005) stated that the main focus as educators who care about youth with learning disabilities must be on providing excellent instruction.

Although assistive technologies make it possible for students with disabilities to profit from good instruction, technology is not magic; it is simply a tool of education. As with any tool, when used skillfully, it can help achieve positive results.

Development of the READ 180 Program

Originally, READ 180 was designed to be a reading intervention program for struggling readers that uses adaptive instructional software, high-interest literature, and direct instruction as the primary tools and instructional strategies (National Evaluation and Technical Assistance Center for the Education of Children and Youth Who are Neglected, Delinquent, or At-Risk, 2006). Over the past 30 years, Ted S. Hasselbring has conducted research on the use of technology for enhancing learning in students with mild disabilities and those who are at-risk of school failure (Vanderbilt University, 2010).

Hasselbring joined the faculty of the Peabody College of Vanderbilt University in 1982.

He had previously been a special education teacher in New York from 1974 to 1977 and an assistant professor at North Carolina State University from 1977 to 1982. Scholastic

joined forces with Hasselbring in 1997, and READ 180 released the program in 1999

formally. Hasselbring left Vanderbilt from 2000-2006 for the University of Kentucky but

returned in 2006. Currently, Hasselbring serves as a Research Professor in the Department of Special Education in the Peabody College of Education.

Hasselbring was the pioneer in conducting research on using technology for providing instruction in reading and mathematics (Scholastic, 2009a). Hasselbring and members of the Cognition and Technology Group at Vanderbilt University investigated methods on how technology could support struggling students who had learning disabilities or help students who lacked the basic skills that prevented them from advancing to higher-level skills. The team sought to develop innovative techniques using technology to provide assessment-driven individualized instruction.

In 1993, Hasselbring, along with Janet Allen, a reading specialist from the University of Central Florida, collaborated on the development of the Orange County Literacy Project (Scholastic, 2008). Scholastic implemented an intervention borrowed from the Peabody Literacy Lab project, which was first piloted in three middle school classrooms in 1994 due to linking student behavior problems with low reading scores (Scholastic, 2011a). This intervention project was so successful that it was used with more than 10,000 students in Orange County between 1994 and 1999. According to Hasselbring and Goin (2004), the project initially identified 63 students in the experimental group known as the Peabody Literacy Lab and 62 students who did not receive the Peabody Literacy Lab as the comparison group. The Stanford Diagnostic Reading Test was administered in the fall and spring to both groups of students. On three out of the four subtests, the Peabody Literacy Lab group, on average, significantly increased their scores from the pretest to the posttest and exceeded the means for the comparison group. The teachers of the Peabody Literacy Lab group remarked that these

gains were remarkable for these students because most had lost ground each year on standardized reading tests.

Hasselbring created an interactive software system program with a literacy-workshop model developed with Allen that when combined produced statistically significant reading results for struggling middle school students who displayed problems in discipline and truancy (Daley, 1999). The intervention program committed 90 minutes daily to uninterrupted literacy work. The goal of the program was to give students a taste of academic success and build self-esteem. With Hasselbring's initial research and program development in the Orange County Literacy Project, his intervention program expanded, and he became best known as the creator of READ 180 reading intervention program (Vanderbilt, 2010). After more than a decade of research in association with Vanderbilt University in Nashville, Tennessee and eight years in schools across the nation, READ 180 is the most thoroughly researched reading intervention program in the world (Scholastic, 2009b).

Because many students were placed in special education programs because they never learned to read, originally, READ 180 was designed for students with learning disabilities and has been effective in accelerating reading achievement for all students (Scholastic, 2009b). As a result of its effectiveness, the Council of Administrators of Special Education (2007) formally endorsed READ 180 for use with Special Education students. However, implementation alone does not make this program an effective instructional tool. READ 180 must be implemented according to the instructional model and with fidelity. The 90-minute a day instructional model begins with a 20-minute whole-group teacher-directed instruction and ends with another 10-minute whole-group

teacher-directed instruction. During the 60 minutes between, students rotate through three 20-minute small group rotations, consisting of small group direct instruction with the teacher, READ 180 computer software, and modeled and independent reading time. Scholastic's (2011b) Performance Pledge states that when implemented with fidelity, the majority of students will break the cycle of failure and show significant growth in reading, as measured by Lexiles.

READ 180 is a multi-modal program created to improve and advance students' reading abilities (Shawgo, 2005). Scholastic studies showed student success cutting across ethnic, learning abilities, English proficiency, and gender (Papalewis, 2003). The program emphasizes individual learning, student engagement and building of self-esteem. In addition, READ 180 allows for class structure and individual student flexibility (Shawgo, 2005). Although schools do not possess the unlimited financial capability to fund additional educators who could address individual student learning, READ 180 software has been determined to be affordable for whole districts (Dantinne, 2009).

Taylor (2004) noted that READ 180 serves a vital role in a school-wide literacy system by providing a research-based and validated intensive intervention for struggling students. Taylor noted that, throughout the instruction model, READ 180 directly addresses the problems of students caught in a cycle of failure by providing them with many opportunities to experience success (competence and achievement) with reading. The program, according to Taylor, also helps students discover the relevance of reading for their lives (explore interests with diverse texts) and discuss what they read with their teacher and peers, furthering their feelings of competence. To Taylor, READ 180 is an effective and comprehensive solution that provides responsive, systematic, and intensive

reading instruction to students needing focused literacy instruction outside the content-area classroom.

READ 180 Research

READ 180 software is in use in more than 15,000 schools nationwide (Scholastic, 2011b). Crownover (n.d.) noted that READ 180 is now implemented in all 50 states. Because READ 180 is used in schools across the country, research studies exist that investigate the program's effectiveness on reading performance. Numerous studies referenced in the Compendium of READ 180 Research, published by Scholastic (2008), examined the effectiveness of implementing READ 180 as an integrated computerized program. These evaluation studies date from 1999 to the present and report the results of schools across the United States after implementing the READ 180 software program. However, not all of the research studies in the Compendium met rigorous guidelines of research. Because Scholastic supported the READ 180 program and supported the research in the Compendium, a critical look at the studies was needed.

After a careful review, the United States Department of Education (2009) noted that only 7 of the 101 READ 180 studies met evidence standards with some reservations, and the remaining 94 studies did not meet either evidence standards or eligibility screens. In the seven studies that met its strict guidelines, however, the Department found potentially positive effects in comprehension and general literacy achievement for adolescent learners.

In one of the seven, the Ohio Department of Youth Services study spent five years investigating 1,058 students (Scholastic, 2011a). The students were randomly assigned to the treatment group with 924 randomly assigned to the business-as-usual control group

who received traditionally taught English classes. The majority of the students who were served at Ohio Department of Youth Services during the study were African American (70.3% in the READ 180 group and 68.2% in the control group), followed by Caucasian (22.9% and 25.7%, respectively). Of these students, 96.2% in each group were male. In the READ 180 group, 44.8% were classified as students with disabilities. Overall, the READ 180 group gained 841.8 Lexile, and the control group gained 784.4 Lexile. The READ 180 group outperformed the control group by an average of 59 Lexile points. Results from the study also revealed that the READ 180 program benefited the struggling readers in the group.

The Hewes, Mielke, and Johnson (2006) study from the Des Moines Independent Community School District examined the READ 180 program from 2000-2005. Findings demonstrated that more than 1,200 special education students made statistically significant improvements in their reading abilities using READ 180. Prior to implementation, special education students made an average of two to three months growth in reading per year. The average gains made during their participation in the READ 180 program, however, were significantly higher than this and exceeded the expected gains. The gains translated into 1.43 years of growth for READ 180 students and 1.02 years of growth for non-READ 180 students (Scholastic, 2009b).

Sturgeon (2005) referenced another study that originated in the Santa Rosa County School District in Florida. READ 180 was implemented during the 2001-2002 school year for middle school and high school students reading significantly below grade level. Schools successfully moved between 42% and 80% of these students out of the lowest reading category, according to the Florida Comprehensive Assessment Test scores

at the end of that year. By 2004, every school in the district using this intervention tool and a 90-minute instructional model made adequate yearly progress in reading with every population. Scholastic's (2011a) Compendium of READ 180 Research reported that during the 2001-2002 school year, high school students identified as reading significantly below grade level on the Florida Comprehensive Assessment Test were placed in the READ 180 implementation. Results from the first year showed that the READ 180 program was successful in helping students in the lowest quartile of reading achievement pass the Florida Comprehensive Assessment Test.

In another study from the Newark, New Jersey Public Schools, READ 180, over a 5-year period, showed a positive effect on the reading achievement of struggling readers (Scholastic Research and Results, 2013). From their Striving Readers data, overall, students who received two years of READ 180 instruction performed significantly better on the Reading Comprehension subtest of the Stanford Achievement Test 10 compared to the control group students. When the results were disaggregated into the subgroups of special education students, male students, and African American students, all of the subgroups made positive gains with READ 180. Students who received three years of READ 180 instruction had higher mean scores on the Stanford Achievement Test 10 subtests compared to the control group students; however, these differences did not reach statistical significance.

During the 2000-2001 school year, Scholastic (2008) collaborated with the Council of Great City Schools to recruit three districts, which included Boston, Houston, and Dallas to participate in a year-long study. The school districts provided Stanford Achievement Test 9 test scores between treatment and control groups that were

statistically significant, in favor of the students in the READ 180 classes. The difference in growth on the Stanford Achievement Test 9 between the treatment and control groups of 22.04 and 17.24, respectively, was in favor of the students in the READ 180 classes. The lowest 320 students were randomly assigned to a READ 180 treatment class or the control group, but no students with a reading grade equivalent lower than 1.5 were placed in the READ 180 classes.

In a summary of the Department of Defense Education Activity report, Goin, Hasselbring, & McAffe (2004) determined that READ 180 had a positive effect on both reading and language arts test scores when measured using the Terra Nova and the Scholastic Reading Inventory (SRI). Students were selected to participate if they scored below the 25th percentile on the Terra Nova or were one or more grade levels behind in reading. The reported Lexile score gains for both “On-Model” and Off-Model” students represented significant shifts from reading performance in the At-Risk and Basic range to reading in the Proficient and Advanced ranges, on grade level and above. “On-Model” referred to classrooms that followed the prescribed READ 180 instructional model with fidelity while “Off-Model” classrooms were implemented with some modification of the instructional model. Gender and ethnicity were not variables in the study, but 13 students were identified as students with special needs. Of those 13 students, 8 (62%) moved up at least one proficiency level, and 5 (38%) of the students scored at the proficient level on the SRI.

The READ 180 Research and Validation executive summary for the Seminole County Schools in Florida (Aguhob, 2006) compared the effects of reading intervention in high school. Based on scores on the Florida Comprehensive Assessment Test, students

showed an increase of at least one reading level for 25% of the READ 180 participants. For Level 1 students, 29% gained one reading level or more, and 13% of all students (Levels 1 and 2) reached Level 3 or above. Disaggregation of Florida Comprehensive Assessment Test performance of READ 180 students by ethnicity revealed significant difference in the Developmental Scale Score gains between groups. White students achieved greater gains than either Hispanic or African-American students. The Florida Comprehensive Assessment Test results of READ 180 students by gender confirmed that there were no significant differences in performance between male and female students.

The purpose of the 2002-2003 implementation in the Iredell-Statesville, North Carolina Schools was to increase literacy levels among students scoring at Performance Level I or II, as defined by the North Carolina's achievement levels on the North Carolina End-of-Grade test (Scholastic, 2011a). READ 180 was used with 441 fourth through eighth graders at five elementary schools and seven middle schools. Those schools with the highest Title I funding were chosen to participate in the program. Change in the North Carolina End-of-Grade Reading Comprehension Test Scale Scores by ethnic group were reported with Hispanic students showing the greatest gains of 8.5; Caucasians gained 7.3, African Americans gained 7.3, and other ethnicity groups combined for a 6.1 scale score gain.

The Scholastic Research and Evaluation (2005) team cited the achievement gap for special education students at Selbyville Middle School in the Indian River School District in Delaware. After the implementation of READ 180, the students went from 24% meeting grade-level standard on the Delaware State Testing Program in 2003 to 55% in 2004. In addition, the average reading growth for sixth through eighth grade

students was equivalent to at least two years after the READ 180 implementation. The schools credited READ 180 with significantly narrowing the performance gap in reading between general education students and special education students. Because of the positive results, other middle schools in the district also began using READ 180.

In the previous studies, the research results were consistently positive for students in upper elementary classrooms through young adult programs. In most, if not all cases, students made gains in reading comprehension after using READ 180 (Scholastic, 2008). READ 180 provided many schools with an optional intervention program that helped students experiencing difficulties in reading.

Hypotheses

A review of the literature suggested that READ 180 computer software, used as prescribed, enhanced student reading achievement. Therefore, the researcher generated the following hypotheses.

1. No statistically significant difference will exist by change over time between males and females in sixth and seventh grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement.
2. No statistically significant difference will exist by change over time between White versus all non-White students in sixth and seventh grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement.
3. No statistically significant difference will exist by change over time between males and females in eighth and ninth grade special education in three

northwest Arkansas schools who used the READ 180 software program on literacy achievement.

4. No statistically significant difference will exist by change over time between White and all non-White students in eighth and ninth grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement.

Description of Terms

Adequate yearly progress (AYP): Adequate yearly progress is a measure of year-to-year student achievement on statewide assessments (NCLB, 2002). Each state comes up with its definition on what it means to make AYP. Definitions must answer three questions. First, do an adequate percentage of students achieve at the proficient level or above when tested in reading and mathematics (yearly in Grades 3-8 and once in high school)? Second, did at least 95% of students in Grades 3-8 and once in high school participate in the assessments? Third, what other additional academic indicators (e.g., graduation rates for high schools) will be measured (ED.org, n.d.)?

Dynamic Indicators of Basic Early Literacy Skills (DIBELS). The DIBELS measures are a set of standardized, individually administered measures of early literacy development indicators. These indicators track essential early literacy skills such as phonemic awareness, alphabetic principle and phonics, accurate and fluent reading, vocabulary, and comprehension that must be mastered to become a good reader (Dynamic Measurement Group, 1998).

Individuals with Disabilities Education Act of 1990 (IDEA). Public Law 101-476 amended the Education for All Handicapped Children Act (EAHCA), Public Law

94-142. The Act ensures that all children with disabilities have available to them a free appropriate public education (FAPE) that includes special education and related services designed to meet their individual needs (United States Office of Special Education Programs, 2004).

Lexile Framework. The Lexile Framework is a research-based system for measuring students' reading levels and matching readers to text (MetaMetrics, 2009). It uses a common metric called a Lexile measure to assess both reading ability and text difficulty. There are two Lexile measures: the Lexile reader measure and the Lexile text measure.

No Child Left Behind Act (NCLB). President George W. Bush signed NCLB, Public Law 107-110, into law on January 8, 2002. The Act was the most sweeping reform of the Elementary and Secondary Education Act (ESEA) since it was enacted in 1965. This Act redefined the federal government's role in K-12 education. The four basic education reform principles of NCLB included the following: stronger accountability for results, increased flexibility and local control, expanded options for parents, and an emphasis on teaching methods that have been proven to work. The accountability for results had the potential to improve the education results demonstrated by all children with disabilities significantly (National Center on Educational Outcomes, 2003).

READ 180. READ 180 is an intensive reading intervention program designed to meet the needs of elementary through high school students whose reading achievement is below the proficient level. The program directly addresses individual needs through adaptive and instructional software, high-interest literature, and direct instruction in reading and writing skills (Scholastic, 2009c).

Scholastic Reading Inventory (SRI). SRI is a computer-adaptive test that assesses reading comprehension using the Lexile Framework. SRI consists of short passages and questions about the passages. No prior knowledge is required to understand the passages or answer the questions. SRI is designed to measure the reader's ability to comprehend narrative and expository texts of increasing difficulty. The purpose of SRI is to locate a reader's comprehension level on the Lexile Framework (Scholastic, 2009a).

Significance

Research Gaps

Independent research of the READ 180 program is scarce despite its implementation in 1999. Scholastic has sponsored and reported the majority of research concerning READ 180. Scholastic studies show student success cutting across ethnicity, learning abilities, English proficiency, and gender (Shawgo, 2005). READ 180 targets adolescent literacy and can begin in the third grade and extend through the 12th. Most research has been conducted with students in middle, junior high, and senior high schools. Students qualify to participate in READ 180 by their initial Lexile score. In some cases, students may be at a score that is too low to benefit from participating. Scholastic recommends a Lexile score of 200 or higher (Vyduna, 2007). Many elementary students in third to fifth grade may not benefit from participating in READ 180 because of their low Lexile scores. The literature supported the implementation of the READ 180 reading intervention program with secondary special education students to provide an additional instructional tool that benefits the reading experience of identified participants in middle and junior high school. However, this study provides an independent voice in examining the effectiveness of the program.

Possible Implications for Practice

Research has shown the effectiveness of READ 180 in meeting the needs of struggling reading across Adequate Yearly Progress demographic groups (Scholastic, 2005). However, few independent studies have been conducted in Arkansas. Therefore, the research findings of this study will provide insight to whether the READ 180 program should be implemented by special education educators in middle and junior high schools that need an intensive reading intervention program to address developing reading skills in struggling readers who are not proficient in reading and perform below grade level. Scholastic (2005) noted that the program does address individual needs through adaptive and instructional software, high-interest literature, and direct instruction in reading and writing skills. Educators will benefit from knowing if READ 180 is effective in the parameters of this study.

Process to Accomplish

Design

This causal-comparative study used sixth, seventh, eighth, and ninth grade special education students in an urban school district in Northwest Arkansas. A casual-comparative design was used because one of the independent variables, READ 180 program participation, was already established in the district. The independent variables for the Hypotheses 1 and 3 were gender and change over time, students were tested early fall, mid-year, and at the end of the school year, for students in Grades 6-7 and students in Grades 8-9, respectively. The independent variables for the Hypothesis 2 and 4 were race (White versus all non-White students) and change over time, students were tested early fall, mid-year, and at the end of the school year, for students in Grades 6-7 and

students in Grades 8-9, respectively. The dependent variable for the four hypotheses was literacy achievement measured by the SRI.

Sample

Six schools were identified to participate in the study. Each school identified sixth, seventh, eighth, and ninth graders based on disability category and ability to meet the intervention schedule. The six targeted secondary schools in this district were similar, with three middle schools with a grade range of sixth to seventh and three junior high schools serving eighth to ninth grades. All the schools used the READ 180 computer software program. The special education READ 180 pullout class served no more than eight identified special education students in the class at a time. The 2012–2013 demographics of the district as a whole was 67.25% free and reduced lunch status. There were approximately 40.6% White, 43.7% Hispanic, 9.6% Pacific Islanders, 1.8% Asian, 2.3% Black, 0.5% American Indian, and 1.5 % two or more races. Students with disabilities made up approximately 10% of the total population of 20,131.

All the students using READ 180 participated in the study, and the researcher stratified them by gender for Hypotheses 1 and 3 and by ethnicity for Hypotheses 2 and 4.

Scholastic (2008) suggested that time equals gain so students were required to spend 90 minutes daily in a reading rotation to participate in the study.

Instrumentation

The selected sixth, seventh, eighth, and ninth READ 180 special education participants were identified and administered the SRI three times within the 2010-2011 school year. Students took the SRI in the early fall, mid-year, and at the end of the school year. SRI is an objective, research-based assessment of students' reading comprehension

ability. The inventory assessed reading comprehension using the Lexile Framework. READ 180 is the first classroom-based reading assessment program that directly reports student-reading levels as a Lexile score. The Lexile Framework for Reading is a research-proved system for measuring students' reading levels and matching readers to text. The Lexile Framework is different because it uses a common metric, a Lexile measure to evaluate both reading ability and text difficulty. By placing both reader and text on the same scale, the Lexile Framework allows educators to forecast the level of comprehension a student will experience with a particular test, and to assess curriculum needs based on each student's ability to understand the materials (SRI, n.d.). The SRI consists of short passages and questions about the passages. No prior knowledge is required to understand the passages or answer the question. SRI is designed to measure the reader's ability to understand narrative and expository texts of increasing difficulty. The purpose of SRI is to locate a reader's comprehension level on the Lexile Framework (Scholastic, 2009d).

Based on the Lexile Framework for Reading, the SRI can be administered to any reader regardless of age and grade level. As a computer-adaptive test, SRI is designed for quick administration in an un-timed low-pressure environment (Scholastic, 2009d). The SRI identified students' appropriate level for literacy learning, a level that was either too easy or too difficult for the individual students. The computer-adaptive test adjusts in response to students' answers based on prior results to pinpoint the level of student proficiency, making text passages harder or easier. Tests take about 20-25 minutes to complete. The special education teachers administered and interpreted the SRI. After the

SRI baseline, they measured student performance by grade equivalent growth in reading on the READ 180 software.

Data Analysis

To address the first hypothesis, a 2 x 3 factorial analysis of variance (ANOVA) was conducted with gender (male versus female) and change over time (fall, mid-year, and at the end of the school year) as the independent factors and literacy achievement as measured by the SRI as the dependent variable for sixth and seventh grade special education students. Hypothesis 2, analyzed by a 2 x 3 factorial ANOVA, was conducted with ethnicity (white versus all non-white students) and change over time (fall, mid-year, and at the end of the school year) as the independent factors and literacy achievement as measured by the SRI as the dependent variable for sixth and seventh grade special education students. The third hypothesis, a 2 x 3 factorial ANOVA was conducted with gender (male versus female) and change over time (fall, mid-year, and at the end of the school year) as the independent factors and literacy achievement as measured by the SRI as the dependent variable for eighth and ninth grade special education students. Hypothesis 4, analyzed by a 2 x 3 factorial ANOVA, was conducted with ethnicity (white versus all non-white students) and change over time (fall, mid-year, and at the end of the school year) as the independent factors and literacy achievement as measured by the SRI as the dependent variable for eighth and ninth grade special education students. To test the null hypotheses, the researcher used a two-tailed test with a .05 level of significance.

CHAPTER II

REVIEW OF THE RELATED LITERATURE

The Individuals with Disabilities Education Act (IDEA) established high standards for achievement and provided appropriate educational services that addressed the individual student with disabilities needs. In addition, the 2002 United States Department of Education's No Child Left Behind Act (NCLB) complemented IDEA by providing accountability measures for students with disabilities as well as required student participation in state-wide and district-wide assessments (National Center of Educational Outcomes, 2003). However, educational accountability is not a new concept, and special education teachers have long identified strategies to address reading achievement gaps between their students with special needs and their regular education peers. With the accountability level for all educators at an all-time high, the education of all children should be a top national priority (National Dissemination Center for Children with Disabilities, n.d.). President George W. Bush (Executive Order 13227) noted:

The education of all children, regardless of background or disability...must always be a national priority. One of the most important goals of my Administration is to support states and local communities in creating and maintaining a system of public education where no child is left behind.

Unfortunately, among those at greatest risk of being left behind are children with disabilities. (para. 1)

Concerning reading alone, the 2002 President's Commission on Excellence in Special Education found that approximately 40% or 2.4 million special needs students attend special education programs only because they have not learned to read. Because reading is such an important educational goal for all students, the Bush administration endeavored to establish principles by which to measure intervention programs.

President George W. Bush's administration identified educational reform principles in NCLB significant to education in America for students with and without identified learning disabilities. According to Schrag (2003), the four basic educational reform principles included accountability for educational results; funding flexibility for states and local systems; research-based instructional strategies and techniques; and influence, information, and choice for parents. Of particular interest to this study, the third principle of NCLB requiring schools to implement effective, research-based practices that address learning for all students has implications that are significant to reading interventions. Teachers of children who are at risk of reading difficulties and children with learning disabilities need access to the most recent research to more effectively implement instructional methodologies that are scientifically based (President's Commission on Excellence in Special Education, 2002).

Special education teachers continually search for relevant instructional interventions that address reading skills necessary for success in school and the workforce for students with disabilities. Identifying effective reading interventions and strategies is imperative for all educators and a multitude of research is available for review. In *Preventing reading difficulties in young children* (National Research Council, 1998), the Council identified reading as being essential for success in society. The ability

to read is highly valued and important for social and economic advancement. Of the many conditions that appear to contribute to successful reading by schoolchildren, the Council listed four that were among the most important. They included each child's (1) intellectual and sensory capacities, (2) positive expectations about and experiences with literacy from an early age, (3) support for reading-related activities and attitudes so that he or she is prepared to benefit from early literacy experiences and subsequent formal instructional in school, and (4) instructional environments conducive to learning. Because of the increased demand of raising the reading levels of all students, a plethora of instructional interventions has surfaced claiming to meet these criteria, but not all reading interventions provide the results of which they claim.

Wood (2004) argued that Bush's third principle opened the door for educators to seek and implement effective researched instructional methods and materials that could positively influence the educational achievement for all students in the area of technology. Wood stressed that technology could be used to provide highly success-oriented, individual solutions for children with disabilities. Of the many programs used by school systems across the country, one program that claims to meet the NCLB principle is READ 180. READ 180 claims to provide research-based instructional practices that address the individualized instruction necessary for success by using software and technology to respond to each student's academic needs.

History of READ 180

Originally, READ 180 began as a project to address the reading needs of students who struggled. Over the years, READ 180 became a program that provided instructional strategies and incorporated technology that addressed students' individual literacy needs.

After more than a decade of research in association with Vanderbilt University in Nashville, Tennessee by Ted Hasselbring and eight years in schools across the nation, Scholastic (2009b) claimed that READ 180 is the most thoroughly researched reading intervention program in the world. Scholastic joined forces with Hasselbring, Orange County Florida Schools, and Vanderbilt University in 1997 to promote and market the research and best practices in a nationally published program. The project combined two main features: the Peabody Learning Lab, an interactive software system designed by Hasselbring and the literacy-workshop model developed by Janet Allen, associate professor of education at the University of Central Florida (Daley, 1999).

Scholastic's decision to purchase the rights to READ 180 in 1997 began a partnership and collaboration with the Orange County Florida Schools and Vanderbilt University to implement the best practices of their research in the published program. Scholastic's (2006) professional paper documented repeated visits to Orange County Florida Schools' classrooms where Scholastic staff observed and interacted with various students and teachers. Specifically, Scholastic enhanced the Orange County Florida Schools project by:

- Organizing all content within the Topic Software, Audiobooks, and leveled Paperback libraries, and aligning these components with curriculum themes in science and math, history and geography, and peoples and cultures, to build content literacy and to develop academic language.
- Adding a comprehensive scope and sequence of phonics/decoding skills to the program content.
- Infusing controlled text and leveled practice through content-area reading.

- Emphasizing direct instruction in reading comprehension, word analysis, phonics, spelling, and writing. (p. 11)

Scholastic launched READ 180 in 1999 after seeking to combine the research-based software and instructional model with their expertise in the development of materials based on scientific research, easily managed by teachers, and motivating for students.

Scholastic's participation in READ 180 brought the program into the national spotlight as a research-based reading intervention program. Scholastic stressed (2009c) that the implementation alone did not make the program an effective instructional tool. Scholastic noted that educators must implement READ 180 according to the instructional design and with fidelity. In organizing the intervention, Scholastic prescribed that the 90-minute a day instructional model begins with a 20-minute whole-group teacher-directed instruction and ends with another 10-minute whole-group teacher-directed instruction. During the 60 minutes between, students rotate through three 20-minute small group rotations, consisting of small group direct instruction with the teacher, READ 180 computer software, and modeled and independent reading time. Hasselbring believed the program's success lies in the combination of high-tech, interactive software; age-appropriate supporting materials; and faithful implementation by teachers. Scholastic outlined the four main components of READ 180:

1. State-of-the-art software, including interactive CD-ROMs for students and management software for teachers.
2. Audiobooks that model the habits and strategies of good readers.
3. Award-winning paperbacks for leveled, independent reading.

4. Complete teacher resources, including a reading-strategies guide, reproducibles, and on-site teacher training (Daley, 1999, p.3).

Crownover (n.d.) cautioned, however that implementation fidelity is particularly vital to the program's success.

READ 180 and Overall Reading Comprehension

Scholastic began collaboration with MetaMetrics in 1998 and chose to use the Lexile Framework to match each student to an appropriate reading level that was easy to align to measure academic progress. The Scholastic Research Update (2008b) indicated that the Lexile Framework for Reading provides a common scale for measuring text difficulty and student reading ability. Using Lexile measures, students could be matched with appropriate texts and track student-reading growth over time using a common scale. Scholastic Reading Inventory (SRI) is a research-based, computer-adaptive reading comprehension assessment, developed in partnership with MetaMetrics, Inc., creators of the Lexile Framework for Reading, the research-proven measure of reading ability and text difficulty. SRI is the first and only assessment that can be administered to individuals or to a group that directly reports student-reading levels using the native Lexile item format. The SRI software provides an assessment of overall reading comprehension and uses the Lexile Framework to assign program materials by matching student levels to text materials (Papalewis, 2004). Scholastic's SRI is not the only measurement used in the research to show program effectiveness, some studies used state and national evaluation measures.

Scholastic has supported research regarding READ 180, but other independent studies are available for review and will be addressed throughout the remainder of this

chapter. Scholastic studies showed student success cutting across ethnic, learning abilities, English proficiency, and gender (Shawgo, 2005). READ 180 has also been endorsed by The Council of Administrators of Special Education as a program that offers intensive and individualized reading instruction in 90-minute sessions through data-driven technology, teacher-directed instruction in whole and small groups, and leveled reading materials that reflect students' interests and age (2007). The United States Department of Education's What Works Clearinghouse considered seven of the 101 READ 180 studies met What Works Clearinghouse evidence standards with reservations; the remaining 94 studies did not meet either evidence standards or eligibility screens. What Works Clearinghouse found potentially positive effects in comprehension and general literacy achievement for adolescent learners (United States Department of Education, 2009). Slavin, Cheung, Groff, and Lake's (2008a) study of several adolescent reading programs placed READ 180 in a select group of four programs that showed more evidence of effectiveness than the other 121 reviewed.

A Literacy Intervention Task Force was formed in 2004 in partnership between the State Improvement Grant and the Arkansas Department of Education—Special Education Unit. The Task Force was comprised of educators across the state and after working together for two years developed the Arkansas Literacy Intervention Matrix, a resource that listed instructional materials for Grades K-12 that addressed the five essential areas of literacy (Arkansas State Personnel Development Grant, 2014). READ 180 met the Intervention Matrix selection criteria as being a comprehensive program that addressed four of the five essential areas of literacy (Internet Delivered Education for Arkansas Schools, 2014). The Literacy Intervention Matrix is a resource for educators

across the state to use when determining what reading interventions met the criteria for state approved literacy programs.

Wire (2014), with the Arkansas Democrat Gazette, reported that the United States Department of Education recently deemed Arkansas and 35 other states and territories as *needs assistance* when addressing whether special education students achieve academically. Education Secretary Arne Duncan said, “It’s not enough for a state to be compliant if students can’t read or do math at the levels necessary to graduate from high prepared for adult life (p. A1).” Starting this year, the United States Department of Education will focus on how well special education students perform on the standardized tests and whether the students graduate.

Various researchers have conducted studies regarding READ 180, and Scholastic has documented numerous summaries of reports in the Compendiums of Research publications. Additional independent studies have been conducted and will be addressed throughout this section. The majority of research concerning READ 180 has been sponsored and reported by Scholastic (Shawgo, 2005). READ 180 has been implemented in a variety of settings from third grade to post-secondary schools. Most of the studies have been conducted in middle school settings with different grade configurations ranging from 4-8 and high school settings Grades 9-12. Researchers conducted additional studies in adult learning situations using Job Corps and community colleges settings.

Scholastic’s Compendium of READ 180 Research (2008a, 2011) provided a summary of scientific research conducted in many school districts across the United States and Europe from 1999 to 2010 reporting on reading gains for various populations and subpopulations of students. Findings from the Department of Defense Education

Activity Schools study indicated an overall positive effect on the reading and language arts standardized test scores of the participating students (Goin et al., 2004). The Santa Rosa County, Florida School District implementation in 2001-2002 successfully moved between 42% and 80% of students identified as significantly below grade level out of the lowest reading category based on the Florida Comprehensive Assessment Test (Sturgeon, 2005). READ 180 10th graders in the Seminole, Florida County Public Schools made significantly higher gains compared to the gains of the control group who did not have any READ 180 interventions (Aguhob, 2006).

The Cypress-Fairbanks Independent School District, Texas data (Scholastic, 2011) found that SRI results for upper elementary, middle, and high school students showed a gain of 1.9, 1.8, and 2.5 grade levels, respectively. Findings also indicated that, on average, 76% of elementary students and 69% of middle and high school students demonstrated 1.0 or more years of reading growth on the SRI. Due to the pilot's success, the district expanded READ 180 to 31 elementary schools, 16 middle schools, and 11 high schools to boost their reading comprehension.

The effectiveness of READ 180 in the Charleston, South Carolina County school district was measured by whether the program was on-model (students using READ 180) or off-model (students not participating in the READ 180 program) based on Scholastic suggested implementation process (Charleston County School District, 2006). Of the 14 schools that implemented READ 180, 19 teachers and classrooms were identified based on the effectiveness and fidelity of program implementation. Eight of the classes were on-model, four were slightly off-model, one class was somewhat off-model, and six were totally off-model. The top implementing classrooms estimated 122 hours of READ 180

instruction, as opposed to the bottom implementing classrooms with 23 hours of READ 180 education. The top implementing classrooms were determined to have taught READ 180 on average of 92 school days based on software usage data. It was not possible to determine how frequently students in the bottom implementing classrooms had READ 180 instruction because only particular components were used which made the program usage data unreliable.

Researchers reported positive and significant gains on oral reading fluency as measured by the Dynamic Indicators of Basic Early Literacy Skills in the 2005-2006 Brockton, Massachusetts pilot (Scholastic, 2011). The Dynamic Indicators of Basic Early Literacy Skills measures are a set of standardized, individually administered measures of early literacy development indicators of the essential early literacy skills of Phonemic Awareness, Alphabetic Principle and Phonics, Accurate and Fluent Reading, Vocabulary, and Comprehension that must be mastered to become a good reader (Dynamic Measurement Group, 1998). Kaminski and Good's (2007) position paper deemed Dynamic Indicators of Basic Early Literacy Skills appropriate for all students for whom the goal is learning to read in English with a few exceptions of students who are deaf; students who have fluency-based speech disabilities; students learning to read in a language other than English; and students with severe disabilities.

In the Scholastic Research and Results (2013) Research Update regarding the Newark, New Jersey Public Schools, READ 180 analyses from five years revealed a positive effect on the reading achievement of struggling readers. Overall, students who received two years of READ 180 instruction performed significantly better on the Reading Comprehension subtest of the standardized Stanford Achievement Test 10

compared to the control group of students. The findings for the subpopulation of special education students, male students, and African American students deemed READ 180 effective for each group.

READ 180 with Special and Regular Education Students

Originally, READ 180 was designed to be a reading intervention program for struggling readers using adaptive instructional software, high-interest literature, and direct instruction as the primary tools and instructional strategies (National Evaluation and Technical Assistance Center for the Education of Children and Youth Who are Neglected, Delinquent, or At-Risk, 2006). The following research comparing reading performance between regular and special education students provides further educational results that would help administrators and educators when seeking effective intervention programs that address student achievement.

A Traverse City, Michigan Area Public Schools 2006-2007 report cited a mean increase of 173 Lexiles or 140% of expected growth for elementary students. Approximately 42% of the 121 students were identified as special education. These special education students achieved a mean increase of 180 Lexiles, and the general education students achieved a mean gain of 167 Lexiles (Scholastic, 2008a). Further, in the Hewes et al. (2006) research, the Des Moines, Iowa Independent Community School District implemented READ 180 during a five-year period from 2001 through 2005. Over 1,200 special education students participated in this study. Middle and high school students showed gains that demonstrated growth every year. Each additional year of participation was reflected with gains of approximately six scale-score points on the

Stanford Diagnostic Reading Test Comprehension, which was beyond the expected annual growth.

In the same vein, the Scholastic Research and Evaluation (2005) publication cited the comprehension gap for special education students at Selbyville Middle School in the Delaware Indian River School District narrowed from 24% meeting grade-level standard on the Delaware State Testing Program in 2003 to 55% in 2004. In addition, the average reading growth for sixth and eighth grade students was equivalent to at least two years after the READ 180 implementation. In this study, researchers credited READ 180 with the significant narrowing of the performance gap in reading between general education students and special education students. Because of this successful implementation, other middle schools in the district began using READ 180.

In the Compendium of READ 180 Research (Scholastic, 2011), the five-year study of the Ohio Department of Youth Services identified the majority of the students who were served as African American (70.3% in the READ 180 group and 68.2% in the control group) followed by Caucasian (22.9% in the READ 180 group and 25.7% in the control group). Of these students, 96.2% in each group were male. In the READ 180 group, 44.8% were classified as students with disabilities. Overall, the READ 180 group gained 841.8 Lexile, and the control group gained 784.4 Lexile.

The Scholastic (2008a) study from the Des Moines Independent Community School District demonstrated that more than 1,200 special education students made significant improvements in the reading abilities using READ 180. Prior to implementation, special education students made an average of two to three months growth in reading per year. Prior research in the district indicated that the program

accelerated the learning of special education middle school students compared to the rate at which the students had been learning prior to enrolling in READ 180.

Sturgeon (2005) referenced a study originating in Florida's Santa Rosa County School District implemented during the 2001-2002 school year for middle school and high school students reading significantly below grade level. Schools had successfully moved between 42% and 80% of these students out of the lowest reading category, according to the Florida Comprehensive Assessment Test scores at the end of that year. Results from the first year showed that the READ 180 program was successful in helping students in the lowest quartile of reading achievement pass the Florida Comprehensive Assessment Test.

A summary of the Department of Defense Education Activity implementation (Goin et al., 2004) determined that READ 180 had a positive effect on both reading and language arts test scores when measured using the Terra Nova and SRI. The study's purpose was to determine if differential effects existed on student achievement because of this instructional model; therefore, a comparison was made between the on-model and off-model classes. On-model referred to students using READ 180, and off-model referred to students not participating in the READ 180 program. The study reported gains made in Lexile scores for both on-model and off-model students represented significant shifts from reading performance in the At-Risk and Basic range to reading in the Proficient and Advanced ranges, on grade level and above. In this small study with 13 students, eight (62%) moved up at least one proficiency level and five (38%) of the students scored at the proficient level on the SRI.

The Holyoke Public Schools piloted READ 180 in one middle school and an alternative program during the 2002-2003 school year (Scholastic, 2008a). Eighth grade students who began the program in 2002 as sixth graders who were reading at a beginning fourth-grade level exited the program in eighth grade at a beginning eighth grade level. This equated to four reading levels in two years. Due to the demonstrated success of the students during the pilot program, READ 180 was expanded to all of Holyoke's middle schools and to a high school during the 2004-05 school year.

READ 180 with Males and Females

Educators have sought research throughout the years to target the difference between males and females in all of the academic areas to determine what, if any, specific interventions address any learning difficulties between the genders. Robelen (2010) referred to a new study on gender differences in academic achievement, noting positive results for girls and negative results for boys. Robelen revealed that, overall, male students in every state where data were available lagged behind females in reading. He based his findings on an analysis of recent state test results. With its state-by-state analysis, the report identified states that appear to struggle the most with gender gaps in reading. In Arkansas, the gap was 13 percentage points at the elementary level and 14 percentage points at both middle and high school in 2008. The report offered some encouragement for boys in reading. The report suggested that, as a group, males made some gains over time, and the gender gap has narrowed in many states.

READ 180 studies that referenced gender differences reported overall positive results for males using READ 180; yet, results were mixed. Aguhob's (2006) summary of the Seminole County Schools READ 180 implementation stated that the Florida

Comprehensive Assessment Test results confirmed that no significant differences existed in the performance between male and female students. In the Peoria, Illinois Public Schools District 150 2006-2007 implementation, the total male participants gained 111 in Lexiles, and the female participants gained 103 Lexiles; however, although the males made higher gains, they began the study performing lower than the females. In the same way, Papalewis (2003) identified the demographic information in the Clark County School District impact study of 275 middle schools students. The Lexile gains based on the SRI scores demonstrated that 169 males made an 116.28 gain, and the 106 females gained 114.11 Lexiles.

READ 180 with Ethnic Subpopulations

Targeting instructional programs and practices that provide an equitable access for different subpopulations to succeed academically is a major focus for educators across the nation. Again, although Scholastic studies showed student success cutting across ethnic differences (Shawgo, 2005), results are still mixed.

READ 180's Research and Validation executive summary for Florida's Seminole County Schools (Aguhob, 2006) compared the effects of reading intervention in a high school setting. Based on the Florida Comprehensive Assessment Test scores, students showed an increase of at least one reading level for 25% of the READ 180 participants. Disaggregation of Florida Comprehensive Assessment Test performance of READ 180 students by ethnicity revealed significant difference in the Developmental Scale Score gains between groups. White students achieved greater gains than either Hispanic or African-American students. Although similar, differences between ethnic groups were also seen in the ethnic analysis for the 2005-2006 Phoenix, Arizona Union High School

District study. Results revealed that African-American students averaged a Lexile gain of 11.9, Hispanics averaged a gain of 9.4, and other participants averaged 9.6 gains (Scholastic, 2011).

On the other hand, the Scholastic (2007) Working in California Schools effectiveness report noted that, in the Merced Unified school district, ethnicity groups of African-American and Hispanic students achieved the largest average Lexile gains (164 and 135, respectively). Additional disaggregation of this data indicated that the READ 180 students with learning disabilities made statistically significant gains in performance. The 2002-2003 implementation in the Iredell-Statesville, North Carolina School's growth by ethnic groups were reported with Hispanic students showing the greatest Lexile gain of 8.5. Caucasians gained 7.3, African Americans gained 7.3, and other ethnicity groups combined for a 6.1 scale score gain on the North Carolina End-of-Grade Reading Comprehension Test Scale Score. Similarly, the Martin County, Florida Public Schools (Scholastic, 2011) chose READ 180 to gain a better understanding of student comprehension and analyzed results based on the 2005-2006 Adequate Yearly Progress ethnicity subgroup data. The report identified African-American students as making the largest percentage growth in reading proficiency with 68%. In addition, Hispanic students made 53% growth, and Caucasians made 66% growth.

The following three studies, however, emphasize the mixed results between different ethnic groups. First, Papalewis (2003) identified ethnic demographic information for the Clark County School District. Papalewis reported that 86 Caucasians students made a 123.57 Lexile gain, 58 African Americans made a 136.02 gain, 6 Asian students made a 319.50 gain, and 119 Hispanics reported an 84.64 Lexile gain on the

SRI. Second, data generated during the 2006-2007 Peoria, Illinois Public Schools District 150 implementation noted all ethnic groups exceeded the expected growth on the SRI with Caucasian students gaining 151 Lexiles, African-American males gaining 116, and Hispanic students gaining 72 (Scholastic, 2011). Third, in their 2010-2011 implementation, the Albuquerque Public Schools (2012) compared the Lexile gains across ethnic groups. Results revealed that African-America students made the greatest gains with 149, Asians gained 101, Hispanics gained 78, and American Indian students gained 75. The Caucasian students in the study showed the lowest increase with a 58 Lexile gain.

READ 180 and Perceptions of Educators and Students

In all educational initiatives and inventions, teacher support can decide whether a program is successful or not. Teachers need to be invested in the implementation of any new educational strategy. Papalewis (2003) stated that an important component for the success of any program implementation is teachers' buy-in. From formal and informal interview data, READ 180 teachers' responses were positive in nature about the program (Scholastic, 2011a). Most of the teachers believed in the program's possibilities for success with students and wanted to teach it. During interviews by Scholastic (2011a), teachers pointed out many of the specific positive components included in READ 180. Primarily, the teachers noted that READ 180 offers the resources teachers needed to implement the program successfully. Teachers were given direction and guidance, and the program provided enough structure for a wide variability of teacher knowledge. Comments from teachers showed that students were more confident and willing to

participate in class after participation in READ 180 compared to before READ 180 participation.

Teacher retention was also at the highest level during the READ 180 implementation phase (Aguhob, 2006). Based on the evaluation of Milwaukee Public Schools' intervention (Lander et al., 2009), the majority of READ 180 teachers were positive about the program. In California's Merced Unified School District's effectiveness report, district officials mentioned that the students' overall reading improvement is directly connected to READ 180's high-interest content (Scholastic, 2007). A fifth grade teacher stated, "For the first time, students feel successful, and they're accountable. It appeals to various modalities, and there is direct instruction. This generates results" (p. 19). Similarly, Albuquerque Public Schools' (2012) implementation of READ 180 provided teachers with an on-line survey to gather their experiences, perceptions, and thoughts about the program during the 2010-2011 school year. Many of the respondents praised the professional development and other assistance from the resource teachers and the overall district support during the school year. Teachers expressed confidence in the potential of READ 180 to help the students.

Student motivation was also identified as an essential component to the success of any reading initiative. Michael Kamil summarized, "If students are not motivated to read, research shows that they will simply not benefit from reading instruction" (Fleishman, 2007, p. 6). Middle school students who were part of the initial 1997 Orange County, Florida and Peabody College of Vanderbilt University project reported that the literacy program gave them the opportunity to improve their skills in a risk-free environment (Hasselbring, Goin, Taylor, Bottge, & Daley, 1997). Papalewis (2003) pointed out that

schools that had previous difficulties accommodating struggling readers are now achieving dramatic improvements in student test scores and attitudes. Students using READ 180 have shown significant increases in motivation resulting from their experiences of success and enjoyment of reading (Scholastic, 2008a).

READ 180 claims to provide a variety of genres and topics that are high-interest texts for students. In the Department of Defense Education Activity Schools study, Goin et al. (2004) noted that attitudes toward reading and self-esteem as a reader improved. Of the participants, 88% of students indicated a negative response toward reading or self at the start of the school year. At the end of the year, the number of negative responses dropped to 8%. After READ 180 implementation, students attending the Indian River School District in Selbyville, Delaware acknowledged an increase in positive attitudes toward reading in general (Scholastic Research and Evaluation, 2005). The results were so effective that additional schools in the district implemented READ 180. Des Moines, Iowa educator Dave Sweet noted that the computer lessons appeal to students and contended that one of the significant benefits is that the students can visualize what they are reading (Boone, 2004). In addition, educators at Brockton, Massachusetts public schools argued that READ 180 had a positive effect on student attendance and program retention during the after-school pilot program (Scholastic, 2011).

Post-secondary students have also benefited from the READ 180 strategies and interventions based on the Phoenix, Arizona Community College study. The Yepes-Baraya and Thompson's (2007) study cited implementation of a 2-year pilot program for students with developmental reading and English in the Second Language classes at the Phoenix Community College. Results showed a significant growth on the College

Preparatory Reading Test. On average, READ 180 students gained 6.3 points when compared to an average gain of only one point in the non-READ 180 control group. During the two 5-week summer sessions, student pre- and post-surveys indicated that students felt READ 180 had positively influenced their reading skills. Over 80% of the students agreed or strongly agreed that READ 180 had helped them read faster and understand better what they read. In addition, 93% of the students agreed or strongly agreed that what they learned in READ 180 will continue to support them throughout their college courses.

Conclusion

The READ 180 reading intervention program has been researched in school districts across the nation and with various subpopulations of students. Scholastic joined forces with program developer Ted Hasselbring in 1997 and officially launched the READ 180 program in 1999 as a nationally recognized research-based reading intervention program. The majority of READ 180 research has been sponsored and reported by Scholastic (Shawgo, 2005). Additionally, researchers conducted independent studies and identified READ 180 as an effective reading intervention program that documented student growth in reading comprehension.

The National Evaluation and Technical Assistance Center for the Education of Children and Youth Who are Neglected, Delinquent, or At-Risk (2006) acknowledged that READ 180 was originally designed to be a reading intervention program for struggling readers that uses adaptive instructional software, high-interest literature, and direct instruction as the primary tools and instructional strategies. Research revealed that the READ 180 program narrowed the performance gap between participating special

education students when compared with regular education peers by providing effective reading instructional strategies.

Papalewis (2003) referenced Scholastic studies that showed student success cutting across ethnic, learning abilities, English proficiency, and gender. Research based on gender performance revealed males participating in READ 180 had an overall positive result, but some studies provided mixed outcomes. Aguhob's (2006) summary reported no significant differences between males and females. However, additional studies cited smaller disparities between the two groups with males continuing to outperform females when comparing READ 180 reading performance.

Results between ethnic groups who participated in READ 180 programs across the nation produced mixed results throughout the various studies. The main three ethnic groups that varied in performance throughout the studies were African-American, Caucasian, and Hispanic subpopulations. Depending on which study, differences between ethnic groups ranged from single digits to double or triple digit growth gains.

As with all educational initiatives, a teacher's commitment can determine the success of the program. Papalewis (2003) stated that an important component for the success of any program implementation is teachers' buy-in. Teachers who reportedly participated in a comprehensive staff development and continued support during the implementation shared confidence that the program was a viable reading intervention when properly executed. Another essential component in READ 180 implementation is student motivation. Students' attitudes and perceptions toward an educational intervention could predict their success as well as the program's success. When once struggling readers have experienced reading success, their academic performance and

self-esteem are positively reinforced, and they are motivated to continue on that pathway of educational achievement.

This research project was intended to add to the independent studies available regarding the effectiveness of the READ 180 reading intervention program between students with disabilities within gender and ethnicity subpopulations in the middle and junior high school settings. Hasselbring and Bausch (2005) pointed out that the focus for educators who teach students with learning disabilities must be on providing excellent instruction. Although assistive technologies make it possible for students with disabilities to profit from good education, technology is not magic; it is only a tool of education. As with many technological tools, when used skillfully, they could result in positive results.

CHAPTER III

METHODOLOGY

The 2000 National Reading Panel report noted that computers could provide opportunities for students to interact with text for greater amounts of time than they could if only conventional instruction is provided. Although current research does not provide a rule for determining what works, careful selection from available software could provide additional instructional assistance in classrooms. The READ 180 reading intervention program was developed by Ted Hasselbring and his colleagues for struggling readers and uses adaptive instructional software, high-interest literature, and direct instruction as the primary tools and instructional strategies (National Evaluation and Technical Assistance Center for the Education of Children and Youth Who are Neglected, Delinquent, or At-Risk, 2006). Because many students are placed in special education programs because they have difficulty learning to read, originally, READ 180 was designed for students with learning disabilities and has been effective in accelerating reading achievement for all students (Scholastic, 2009b).

In 1997, Scholastic decided to purchase the rights to READ 180 and began its partnership with Hasselbring to market the program as a research-based reading intervention. Today, READ 180 software is in use in more than 15,000 schools nationwide (Scholastic, 2011b). Independent research of the READ 180 program is scarce despite its implementation in 1999. Scholastic has sponsored and reported the

majority of research concerning READ 180. Scholastic studies have shown student success across ethnicity, learning abilities, English proficiency, and gender (Shawgo, 2005).

Therefore, the research findings of this study determined whether the READ 180 program, when implemented, makes a difference in the performance between male versus female and white versus nonwhite sixth through ninth grade special education students who are not proficient in reading and perform below grade level. The hypotheses were as follows:

1. No statistically significant difference will exist by change over time between males and females in sixth and seventh grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement.
2. No statistically significant difference will exist by change over time between White versus all non-White students in sixth and seventh grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement.
3. No statistically significant difference will exist by change over time between males and females in eighth and ninth grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement.
4. No statistically significant difference will exist by change over time between White and all non-White students in eighth and ninth grade special education

in three northwest Arkansas schools who used the READ 180 software program on literacy achievement.

This chapter will discuss the research design, the process of obtaining a sample, and a description of the sample population. An instrument used to measure student achievement will be discussed. In addition, procedures for data collection will be discussed along with the statistical analytical process used. Limitations to this study will also be described.

Research Design

This causal-comparative study used sixth, seventh, eighth, and ninth grade special education students in an urban school district in Northwest Arkansas. A casual-comparative design was used because the researcher did not manipulate the independent variables. The independent variables for the Hypotheses 1 and 3 were gender and change over time (students tested early fall, mid-year, and at the end of the school year) for students in Grades 6-7 and students in Grades 8-9, respectively. The independent variables for the Hypotheses 2 and 4 were race (White versus non-White students) and change over time (students tested early fall, mid-year, and at the end of the school year) for students in Grades 6-7 and students in Grades 8-9, respectively. The dependent variable for all four hypotheses was literacy achievement measured by the SRI.

Sample

Students from six schools in a Northwest Arkansas school district were identified to participate in this study. The 2012–2013 demographics of the district as a whole were 67.25% free and reduced lunch status. There were approximately 43.7% Hispanic, 40.6% White, 9.6% Pacific Islanders, 2.3% Black, 1.8% Asian, 0.5% American Indian, and

1.5% two or more races. Students with disabilities made up approximately 10% of the total population of approximately 20,000. Each school identified sixth, seventh, eighth, and ninth graders based on special education disability identification and the ability to meet the READ 180 intervention schedule. The six secondary schools targeted in this district were similar, with three middle schools (grade level range of sixth to seventh) and three junior high schools (grade level range of eighth to ninth grades). All the schools were in the initial implementation of the READ 180 computer software program.

No more than eight identified special education students participated during the scheduled special education READ 180 pullout class. In the Grades 6 and 7 sample, 41 students were male, 14 students were female. Concerning race, 23 students were White, and 30 students were non-White. The total number of participants in the Grades 6 and 7 sample was 55. In the Grades 8 and 9 sample, 39 students were male, and 15 were female. Concerning race, 23 students were White, and 31 students were non-White. The total number of participants in the Grades 8 and 9 sample was 54. In both grade levels, males outnumbered girls chosen to participate in READ 180, and more non-White students were placed in READ 180 classes. Students who were identified by special education teachers as not participating in all three SRI assessments were eliminated from the study. Others eliminated included students initially chosen for participation by teachers, but who encountered scheduling conflicts or student mobility.

Instrumentation

An instrument used to measure student achievement was the Scholastic Reading Inventory (SRI). The superintendent of the district granted permission to obtain the data generated by the identified students who participated in the READ 180 program to

determine the effect of the intervention by gender, race, and change over time. The district was already administering the SRI three times per year to its students.

SRI is a research-based, computer-adaptive reading comprehension assessment developed in partnership with MetaMetrics, Inc., creators of the Lexile Framework for Reading. The Lexile Framework for Reading is known to be a research-tested measure of reading ability and text difficulty. SRI was the first and only assessment that could be administered to individuals or to a group that directly reports student-reading levels using the Lexile item format. The SRI software provides an assessment of overall reading comprehension and uses the Lexile Framework to assign program materials by matching student levels to text materials (Papalewis, 2004). The Lexile Framework for Reading measures students' reading levels and matches readers to text. The Lexile Framework is different because it uses a common metric, a Lexile measure, to evaluate both reading ability and text difficulty. By placing both reader and text on the same scale, the Lexile Framework allows educators to forecast the level of comprehension a student will experience with a particular test and to assess curriculum needs based on each student's ability to understand the materials (SRI, n.d.). The SRI consists of short passages and questions about the passages. No prior knowledge is required to understand the passages or answer the question. SRI is designed to measure the reader's ability to understand narrative and expository texts of increasing difficulty (Scholastic, 2009d).

As a computer-adaptive test, SRI was designed for quick administration in an untimed, low-pressure environment (Scholastic, 2009d). SRI adjusts in response to the students' answers based on prior results to pinpoint the level of student proficiency, making text passages harder or easier. Tests take about 20-25 minutes to complete. For

this study, special education teachers administered the SRI in the classroom setting. After establishing the SRI baseline, student performance was measured another two times throughout the year by administering the SRI to collect each student's progress in the READ 180 program.

Data Collection Procedures

Following Institutional Review Board approval, the researcher obtained existing electronic data from the district Scholastic Achievement Manager's database for each of the identified students participating in the READ 180 program. Data were coded, and no personal identifications were used. The researcher created Excel spreadsheets for each school and coded individual students first by the initials of the school then assigned a random number based on their sequence on the classroom student roster. The spreadsheets also included gender, grade level, race, and the Lexile scores obtained from the fall, mid-year, and end of the year SRI assessment. Only students who participated in all three SRI assessments were included in the database. Excel spreadsheets were password protected and stored on the researcher's personal computer as well as kept on a USB jump drive. The jump drive and any hard copies of the data were stored in a locked storage area when not being used.

Analytical Methods

To address Hypothesis 1, a 2 x 3 mixed factorial analysis of variance (ANOVA) was conducted with gender (male versus female) and change over time (fall, mid-year, and at the end of the school year) as the independent factors and literacy achievement as measured by the SRI as the dependent variable for sixth and seventh grade special education students. Hypothesis 2, analyzed by a 2 x 3 mixed factorial ANOVA, was

conducted with ethnicity (White versus all non-White students) and change over time (fall, mid-year, and at the end of the school year) as the independent factors and literacy achievement as measured by the SRI as the dependent variable for sixth and seventh grade special education students. For the third hypothesis, a 2 x 3 mixed factorial ANOVA was conducted with gender (male versus female) and change over time (fall, mid-year, and at the end of the school year) as the independent factors and literacy achievement as measured by the SRI as the dependent variable for eighth and ninth grade special education students. Hypothesis 4, analyzed by a 2 x 3 mixed factorial ANOVA, was conducted with ethnicity (White versus all non-White students) and change over time (fall, mid-year, and at the end of the school year) as the independent factors and literacy achievement as measured by the SRI as the dependent variable for eighth and ninth grade special education students. To test the hypotheses, the researcher used a two-tailed test with a .05 level of significance.

Limitations

Identifying the limitations for this study is important so that the reader can determine how to generalize the results. The following limitations were related with this study. First, Scholastic conducted most of the READ 180 research reviewed in the study. Once Scholastic purchased the rights for READ 180, the company sponsored most of the research and managed the research data. Scholastic published the studies in the Compendiums of Research, research foundation papers, effectiveness reports, impact studies, professional papers, research updates, and case studies. Independent research since the development of READ 180 program is scarce.

Second, the small number of participants available for the study was a limitation. Since the students were chosen due to placement in the READ 180 program based on class schedules and special education programming, it was necessary for the researcher to have a priori power analysis run using G-power software to determine the minimum sample size for the study. The results indicated that an acceptable power level of .95 for the interaction hypothesis and the two main effects would require at least 53 participants in each group. Based on the power analysis, limited power to reject the null hypotheses was noted. In addition, some of the students who were at first identified by the special education teachers to participate in the study were eliminated for various reasons (i.e. did not take all three SRI assessments, etc.).

Third, no guarantee could be made that the READ 180 program was implemented with fidelity. Although administrators and teachers of special education were given staff development regarding the implementation, other instructional strategies and techniques might have been used with the identified students other than the READ 180 program. In addition, depending on each teacher's experience as well as each teacher's reaction to reducing the instructional delivery program from the recommended 90-minute sessions to a modified 45-minute schedule, implementation of the program could have varied. Teachers who were chosen for teaching the READ 180 classes were not formally trained to teach reading to middle or junior high students. However, teachers were given professional development and monthly coaching sessions during the implementation phase so they could follow the READ 180 instructional model.

Fourth, the research design for this study was non-experimental, which constituted a limitation in itself. The researcher was unable to manipulate the independent

variables or randomly assign participants, which produced less conclusive evidence. However, this and the other limitations did not seem to exceed the typical circumstances encountered in using schools for research purposes.

Finally, because students were administered the SRI three times throughout the year, the internal validity threat of testing was a possible limitation. The validity threat of testing occurs when there is a carryover effect from multiple testing of the same participants. During subsequent testing, participants tend to remember some of the items from previous tests. SRI is like other assessments, which do possess some inherent measurement error related to how the test items were developed and calibrated and the number of questions asked. Students as the test takers also introduce a degree of measurement error due to prior knowledge, health, and/or motivation (Scholastic Reading Inventory, n.d.). However, students are presented with different reading passages and comprehension questions during each SRI. Even if the test administration has to be stopped and resumed at another time, the student will have different questions regarding the passage to answer but previous answers were stored. SRI's algorithm selects items based on the student's response to the previous item. If a student correctly answers the question, then the next questions are harder. If a student answers the item incorrectly, then an easier item is selected. SRI is constantly adjusting between more and less difficult items during the test administration. With each subsequent administration, SRI starts at the level where the student's previous test left off. With repeated SRI administration, the measurement error associated with the score gets smaller and smaller, resulting in much greater accuracy when measuring a student's reading level. As a student takes the SRI

multiple times, more information is gathered about the student's true reading ability and stored within the program reports (Scholastic Reading Inventory, n.d.).

CHAPTER IV

RESULTS

The purpose of this quantitative research study was to determine the effects of gender and ethnicity on reading comprehension for sixth through ninth grade READ 180 students in special education. The students were from selected middle and junior high schools in northwest Arkansas. The independent variables consisted of gender (male versus female), ethnicity (White versus Non-White), and change over time (when tested: early fall, mid-year and end of the school year). The dependent variable for all the hypotheses was reading comprehension as measured by the Scholastic Reading Inventory (SRI). Using IBM Statistical Packages for the Social Sciences Version 22 (2013), a mixed factorial analysis of variance (ANOVA) was run for each of the four null hypotheses. Prior to running the statistical analysis, assumptions of normality and homogeneity of variances were checked. The results of these analyses are in this chapter.

Demographics

Students identified with disabilities in three middle schools and three junior high schools in a northwest Arkansas district were participants in this study. Student data were disaggregated by gender (male and female) and ethnicity (White and Non-White).

Samples used in this study are recorded in Table 1.

Table 1

Demographics for Sixth/Seventh and Eighth/Ninth Grade Students in READ 180

	Sixth/Seventh	Eighth/Ninth
Students	<i>N</i>	<i>N</i>
Gender		
Female	14	15
Male	41	39
Ethnicity		
White	25	23
Non-White	30	31

Statistical Assumptions

All analyses in this study were conducted using IBM Statistical Packages for the Social Sciences Version 22 (2013). The statistical assumptions of independence of observations, normality, homogeneity of variances, as well as sphericity were checked prior to running the mixed factorial ANOVA. An examination of each box and whisker plots for each set of literacy achievement scores revealed one outlier within the sample. This one outlier was deleted.

Hypothesis 1

The first hypothesis stated that no statistically significant difference will exist by change over time between males and females in sixth and seventh grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement. One outlier was revealed within the sample and was deleted. Because the study was designed so that participants were exclusively in only one of two

gender categories (male or female), the assumption of independence, which specifically applied to this variable, was met. Table 2 displays the group means and standard deviations for gender over time for sixth and seventh grade students' literacy achievement.

Table 2

Descriptive Statistics for Gender over Time for Sixth and Seventh Grade Students' Literacy Achievement

Time	Gender	<i>M</i>	<i>SD (SE)</i>	<i>N</i>
Fall	Male	358.19	199.74	37
	Female	384.40	165.92	10
	Total	363.77	191.65	47
Mid-Year	Male	406.32	171.21	37
	Female	409.80	225.65	10
	Total	407.06	181.39	47
End-of-Year	Male	459.43	177.44	37
	Female	503.80	257.36	10
	Total	468.87	194.77	47
Total	Male	407.98	(29.19)	37
	Female	432.67	(56.14)	10

An examination of box and whisker plots for each set of literacy achievement scores revealed one outlier within the sample. This outlier was deleted. Furthermore, because the study was designed so that participants were exclusively in only one of two gender categories (males or female), the assumption of independence (that specifically applied to this variable) was met.

To test the assumption of normality, histograms, as well as Kolmogorov-Smirnov (KS) statistics, were examined for each group across the three sets of literacy achievement scores. The shape of the histograms for each group appeared normal. Results of the *KS* tests revealed no significant deviation from a normal distribution for the fall scores of males $D(37) = 0.068, p > .05$, as well as those of females $D(10) = 0.120, p > .05$. Similarly, the midterm literacy scores for both males $D(37) = 0.109, p > .05$, and females $D(10) = 0.167, p > .05$ were not significantly different from normal. Finally, the assumption of normality was also met for the end of term literacy scores for males $D(37) = 0.116, p > .05$, and females $D(10) = 0.142, p > .05$. Furthermore, Box's test revealed no violation of homogeneity of variances among the groups $F(6, 1579.485) = 1.357, p = .229$. Results of Mauchly's test however revealed that the assumption of sphericity was violated $\chi(2) = 11.208, p = .004$, with a value of epsilon greater than .75. As a result, the Huynh-Feldt epsilon correction was interpreted for the between subjects and the interaction effects, respectively (Leech, Barrett & Morgan, 2011). Results of the mixed ANOVA analysis are displayed in Table 3.

Table 3

Results of Mixed Factorial ANOVA for Literacy Achievement of Sixth and Seventh Grade Students by Gender over Time

Source	SS	df	MS	F	p	ES
Between Groups						
Gender	14390.646	1	14390.65	0.15	.698	0.003
Error	4254932.631	45	94554.06			
Within Subjects						
Time	198728.449	1.72	115305.79	13.30	.000	0.228
Time*Gender	6609.357	1.72	3834.87	0.44	.615	0.010
Error	672191.834	77.56	8667.06			

Results of the mixed ANOVA analysis indicated no significant interaction between gender and time $F(2, 1.72) = 0.442, p = .615$. Similarly, there was not a statistically significant main effect for gender $F(1, 45) = 0.152, p = .695$. The mean score of male students over time were not significantly different ($M = 407.98, SE = 29.19$) from the mean score of females over time ($M = 432.67, SE = 56.14$) (see Figure 1).

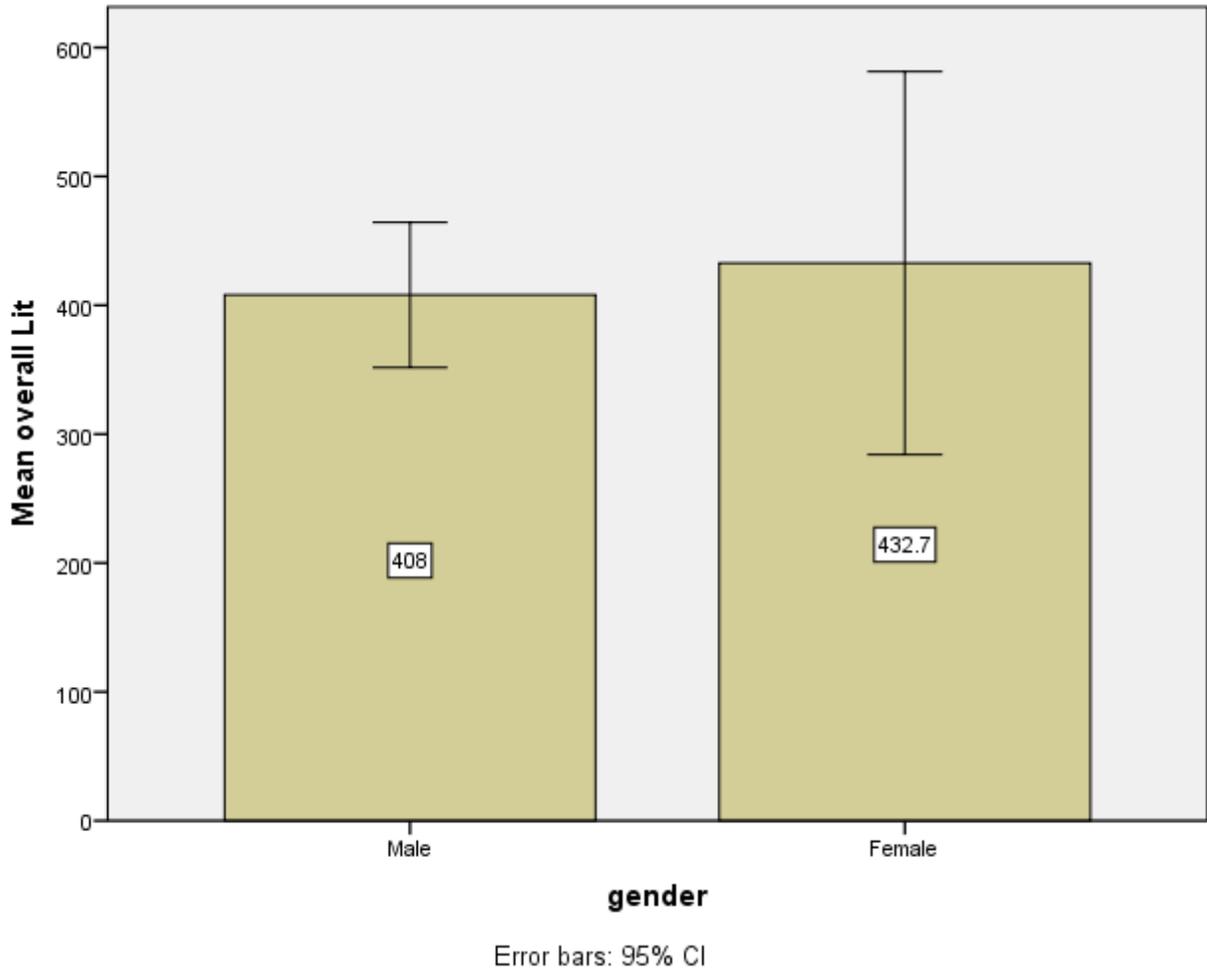


Figure 1. Mean literacy achievement for gender main effect.

On the other hand, there was a statistically significant main effect for time $F(1.72, 90) = 13.30, p < .001, \eta^2 = 0.23$. As a followup test to this significant main effect, polynomial contrasts were conducted (see Figure 2).

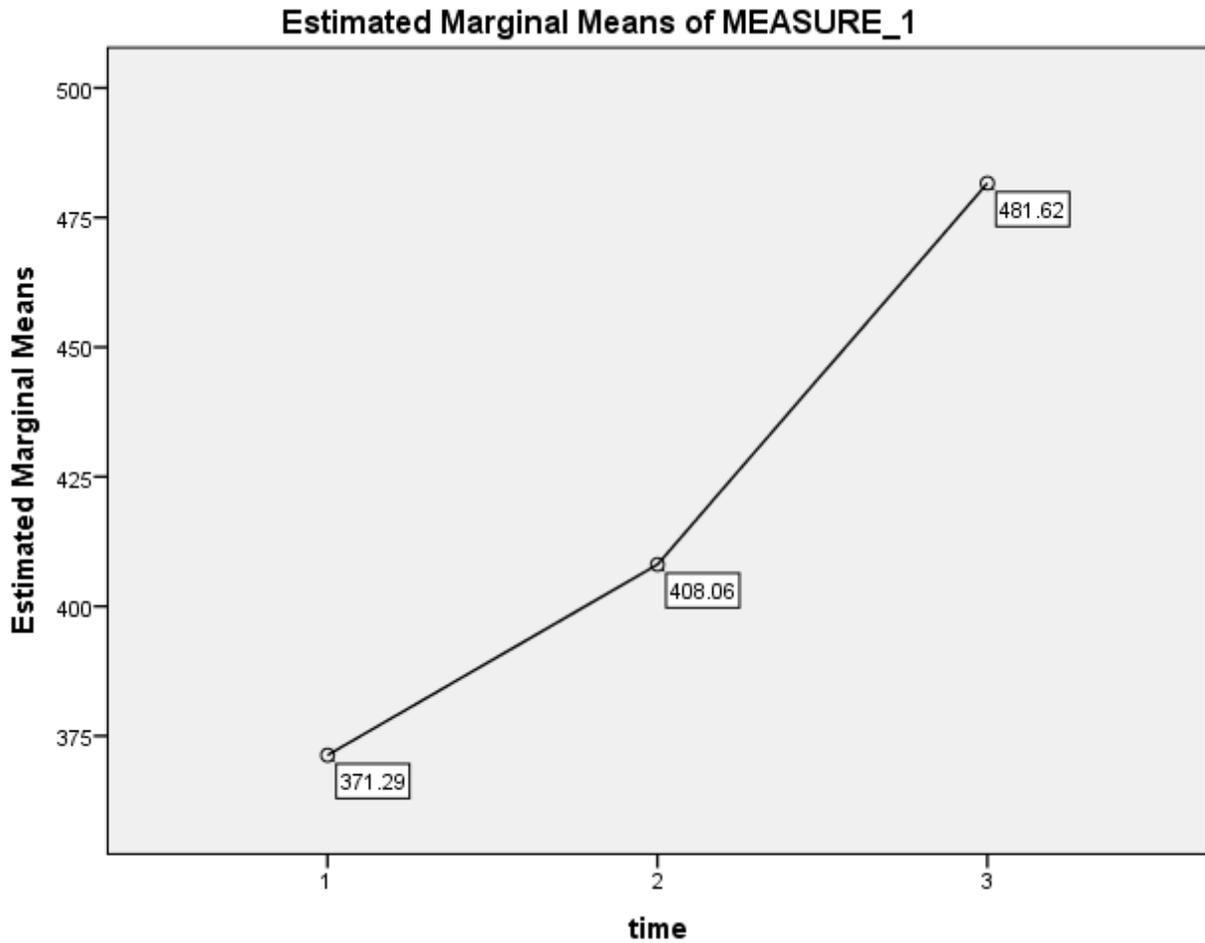


Figure 2. Linear literacy achievement for the main effect of time.

Polynomial contrasts revealed a significant linear literacy achievement trend over time $F(1, 45) = 18.84, p < .001, \eta^2 = .30$ regardless of gender but not a statistically significant quadratic trend $F(1, 45) = 1.49, p = .23, \eta^2 = 0.03$.

Hypothesis 2

The second hypothesis stated that no statistically significant difference will exist by change over time between White versus all non-White students in sixth and seventh grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement. This dataset excluded one case, which was

identified as a significant outlier. In addition to this, the assumptions of independence of observations, normality, homogeneity of variances, as well as sphericity, were examined concerning the variables included in Hypothesis 1. Because this study was designed such that participants were exclusively in only one of two ethnicity categories (White or Non-White), the assumption of independence (which specifically applied to this variable) was met. Table 4 displays the group means and standard deviations for ethnicity over time for sixth and seventh grade students' literacy achievement.

Table 4

Descriptive Statistics for Ethnicity over Time for Sixth and Seventh Grade Students' Literacy Achievement

Time	Ethnicity	<i>M</i>	<i>SD (SE)</i>	<i>N</i>
Fall	White	386.05	235.84	22
	Non-White	344.16	144.47	25
	Total	363.77	191.65	47
Mid-Year	White	422.09	220.06	22
	Non-White	393.84	142.49	25
	Total	407.06	181.39	47
End-of-Year	White	466.91	241.07	22
	Non-White	470.60	147.84	25
	Total	468.87	194.77	47
Total	White	425.02	(37.84)	22
	Non-White	402.87	(35.50)	25

To test the assumption of normality, histograms, as well as Kolmogorov-Smirnov (KS) statistics, were examined for each group across the three sets of literacy achievement scores. The shape of the histograms for each group appeared normal. Results of the KS tests revealed no significant deviation from a normal distribution for the fall scores of White students $D(22) = 0.116, p > .05$, as well as those of Other students $D(25) = 0.099, p > .05$. Similarly, the midterm literacy scores for both White students $D(22) = 0.102, p > .05$, and Other students $D(25) = 0.168, p > .05$ were not significantly different from normal. Finally, the assumption of normality was also met for the end of term literacy scores for White students $D(22) = 0.100, p > .05$, and Other students $D(25)$

= 0.114, $p > .05$. Furthermore, Box's test revealed no violation of homogeneity of variances among the groups $F(6, 13999.90) = 1.928, p = .072$. Results of Mauchly's test however revealed that the assumption of sphericity was violated $\chi(2) = 10.537, p = .005$, with the values of epsilon greater than .75. As a result, the Huynh-Feldt epsilon correction was interpreted for the between subjects and the interaction effects, respectively (Leech, Barrett & Morgan, 2011). Results of the mixed ANOVA analysis are displayed in Table 5.

Table 5

Results of Mixed Factorial ANOVA for Literacy Achievement of Sixth and Seventh Grade Students by Ethnicity over Time

Source	SS	df	MS	F	p	ES
Between Groups						
Ethnicity	17221.63	1	17221.63	0.18	.671	0.004
Error	4252101.65	45	94491.15			
Within Subjects						
Time	253955.31	1.74	145823.91	17.16	.000	0.276
Time*Ethnicity	12807.53	1.74	7354.23	0.87	.411	0.019
Error	665993.66	78.37	8498.24			

Results of the mixed ANOVA analysis indicated no significant interaction between gender and time $F(2, 90) = 0.865, p = .411$. Similarly, there was not a statistically significant main effect for ethnicity $F(1, 45) = 0.182, p > .671$. The mean

score of White students over time were not significantly different ($M = 425.01$, $SE = 37.84$) from the mean score of Other students over time ($M = 402.87$, $SE = 35.50$) (see figure 3).

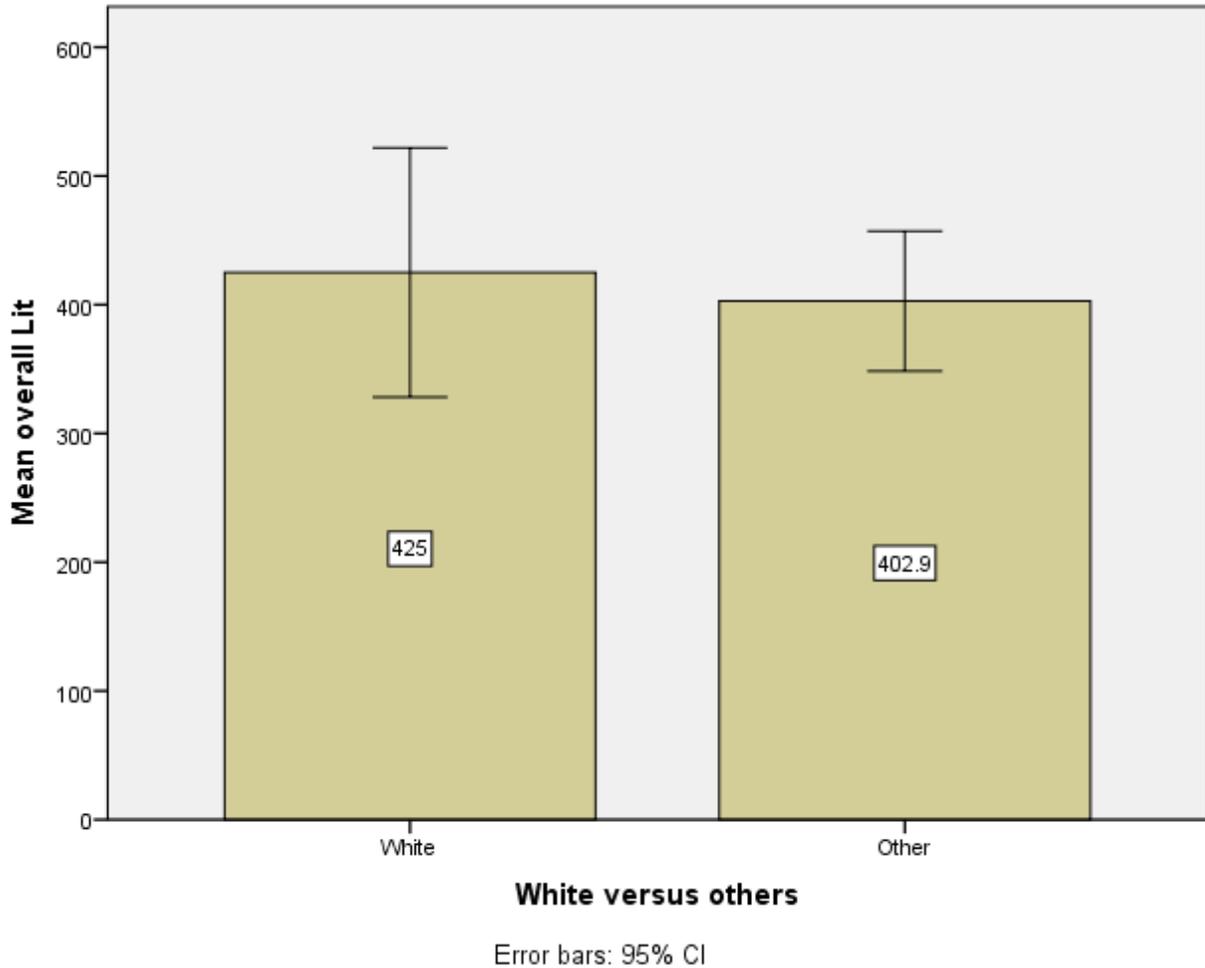


Figure 3. Mean literacy achievement for gender main effect.

On the other hand, there was a statistically significant main effect for time $F(2, 90) = 17.159$, $p < .001$. As a follow up test to this significant main effect, polynomial contrasts were run (see figure 4).

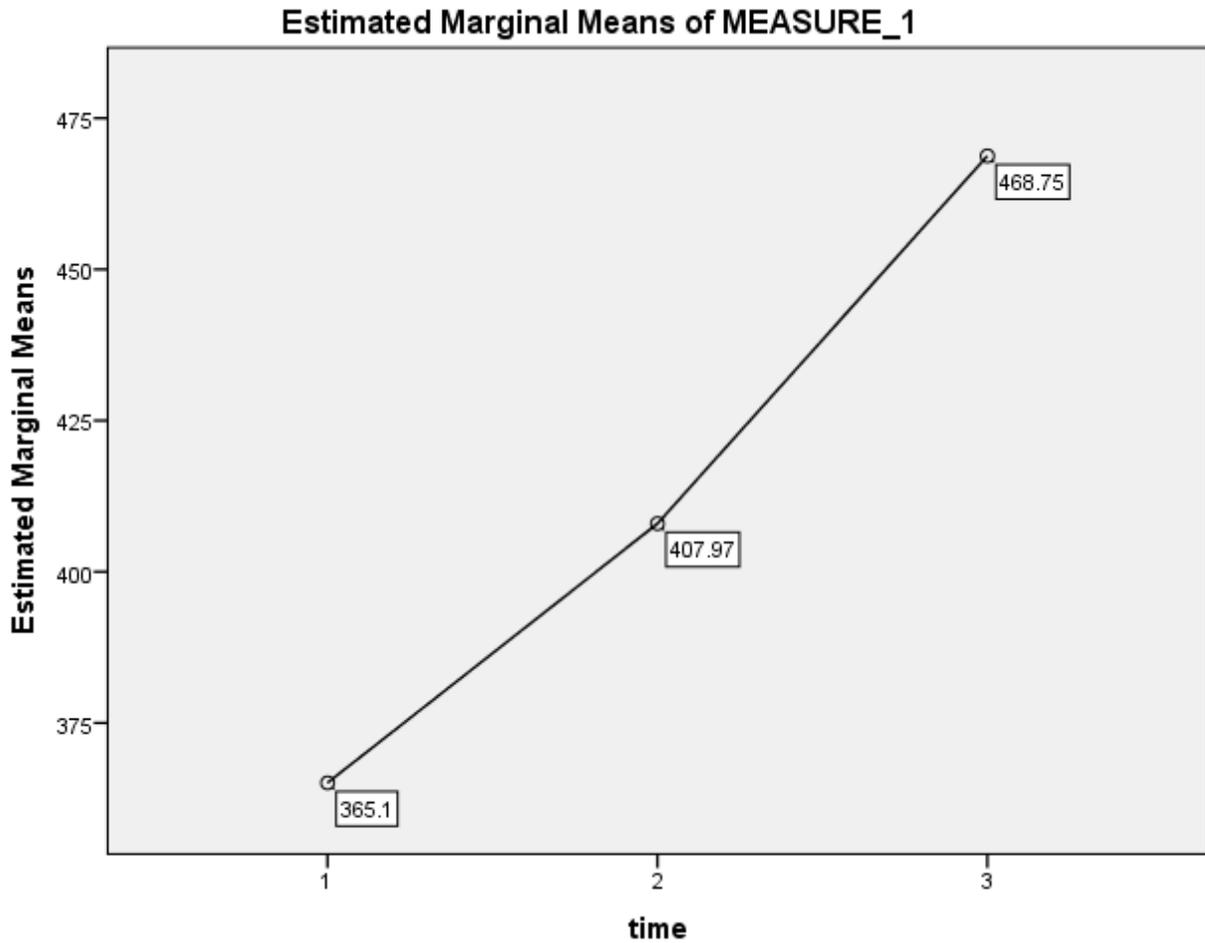


Figure 4. Linear literacy achievement for the main effect of time.

Polynomial contrasts revealed a significant linear literacy achievement trend over time $F(1,45) = 25.32, p < .001$ regardless of gender, but not a statistically significant quadratic trend $F(1,45) = 0.515, p = .477$.

Hypothesis 3

The third hypothesis stated that no statistically significant difference will exist by change over time between males and females in eighth and ninth grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement. The data were screened for outliers and examined for the

assumptions of independence of observations, normality, homogeneity of variances, as well as sphericity. An examination of box and whisker plots for each set of literacy achievement scores revealed no significant outliers. There was no need to directly examine the assumption of independence because the study was designed so that participants were exclusively in only one of two gender categories (males or female), which meets the assumption of independence. Table 6 displays the group means and standard deviations for gender over time for eighth and ninth grade students' literacy achievement.

Table 6

Descriptive Statistics for Gender over Time for Eighth and Ninth Grade Students' Literacy Achievement

Time	Gender	<i>M</i>	<i>SD (SE)</i>	<i>N</i>
Fall	Male	533.85	220.02	34
	Female	508.50	265.55	14
	Total	526.46	231.58	48
Mid-Year	Male	582.18	211.88	34
	Female	565.93	259.23	14
	Total	577.44	223.97	48
End-of-Year	Male	654.06	226.12	34
	Female	656.21	219.09	14
	Total	656.21	221.76	48
Total	Male	590.03	(37.91)	34
	Female	576.88	(59.07)	14

To test the assumption of normality, histograms, as well as Kolmogorov-Smirnov (KS) statistics, were examined for each group across the three sets of literacy achievement scores. The shape of the histograms for each group appeared normal. Results of the *KS* tests revealed no significant deviation from a normal distribution for the fall scores of males $D(34) = 0.125, p > .05$, as well as those of females $D(14) = 0.089, p > .05$. Similarly, the midterm literacy scores for both males $D(34) = 0.118, p > .05$, and females $D(14) = 0.176, p > .05$ were not significantly different from normal. Finally, the assumption of normality was also met for the end of term literacy scores for males $D(34) = 0.146, p > .05$, and females $D(14) = 0.148, p > .05$. Furthermore, Box's test revealed no violation of homogeneity of variances among the groups $F(6, 3944.85) = 1.266, p = .270$. Results of Mauchly's test however revealed that the assumption of sphericity was violated $\chi(2) = 15.02, p = .001$, with a value of epsilon greater than .75. As a result, the Huynh-Feldt epsilon correction was interpreted for the between subjects and the interaction effects, respectively (Leech, Barrett & Morgan, 2011). Results of the mixed ANOVA analysis are displayed in Table 7.

Table 7

Results of Mixed Factorial ANOVA for Literacy Achievement of Eighth and Ninth Grade Students by Gender over Time

Source	SS	df	MS	F	p	ES
Between Groups						
Gender	5143.24	1	5143.24	0.04	.852	0.001
Error	6742011.98	46	146565.48			
Within Subjects						
Time	361175.60	1.64	220563.71	37.89	.000	0.452
Time*Gender	3894.93	1.64	2378.57	0.41	.625	0.009
Error	438523.89	75.33	5821.72			

Results of the mixed ANOVA analysis indicated no significant interaction between gender and time $F(1.638, 92) = 0.409, p = .625, \eta^2 = 0.009$. Similarly, there was not a statistically significant main effect for gender $F(1, 46) = 0.035, p = .852, \eta^2 = 0.001$. The mean score of male students over time were not significantly different ($M = 590.03, SE = 37.91$) from the mean score of females over time ($M = 576.88, SE = 59.07$) (see figure 5).

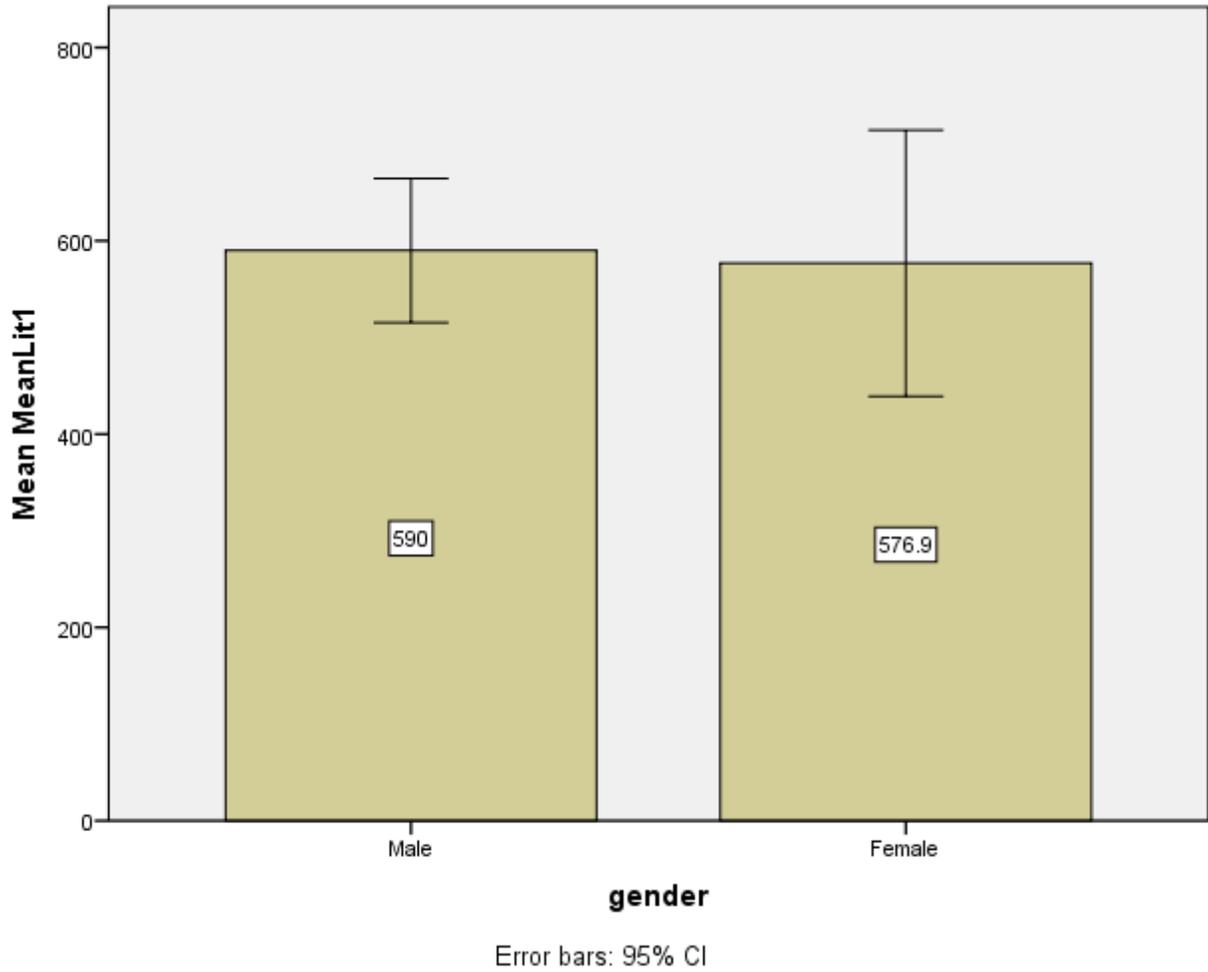


Figure 5. Mean literacy achievement for gender main effect.

On the other hand, there was a statistically significant main effect for time $F(1.638, 92) = 37.89, p < .001, \eta^2 = 0.45$. As a follow up test to this significant main effect, polynomial contrasts were run (see figure 6).

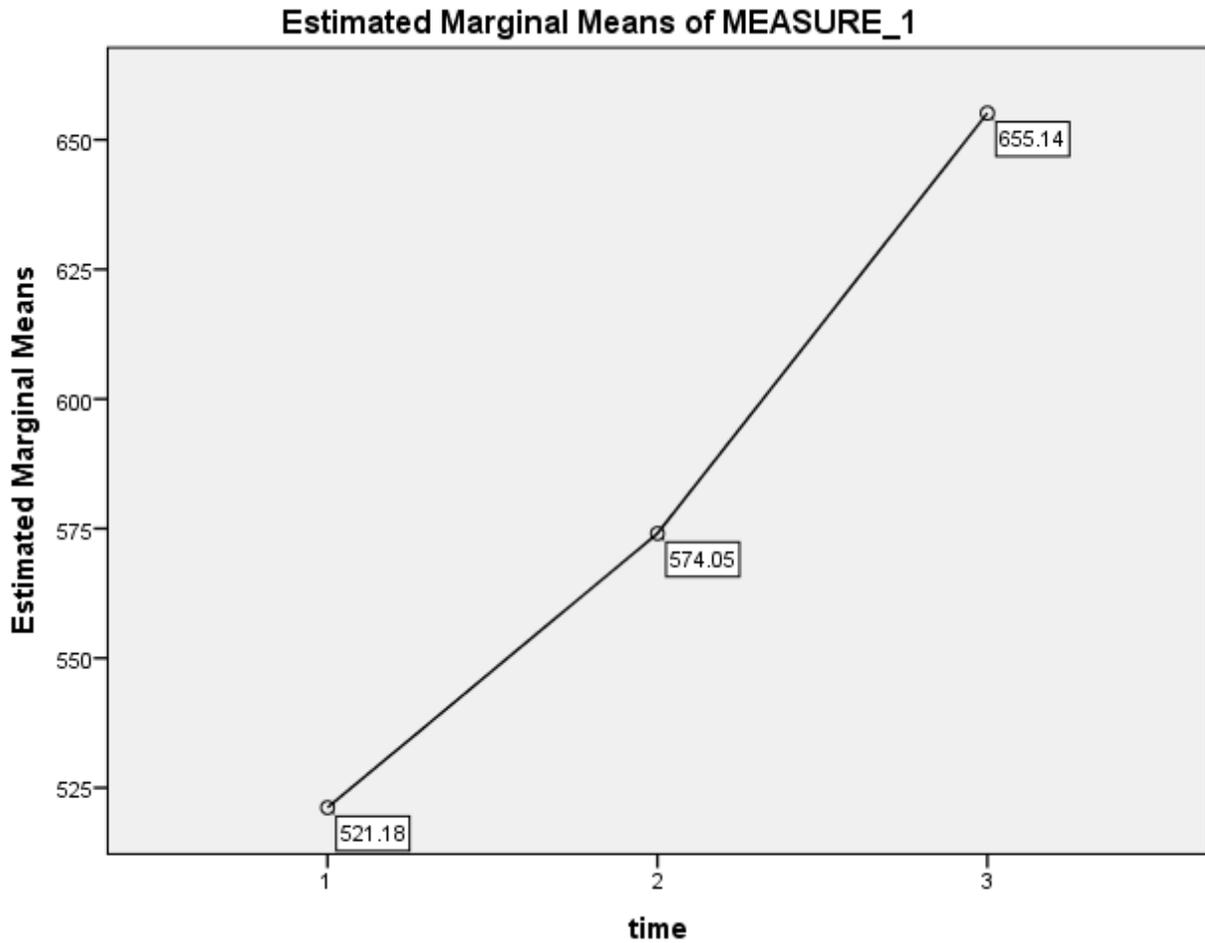


Figure 6. Linear trend of literacy achievement for the main effect of time.

Polynomial contrasts revealed a significant linear literacy achievement trend over time $F(1, 46) = 49.19, p < .001, \eta^2 = 0.52$ regardless of gender, but not a statistically significant quadratic trend $F(1, 46) = 2.29, p = .14, \eta^2 = 0.05$.

Hypothesis 4

The fourth hypothesis stated no statistically significant difference will exist by change over time between White and all non-White students in eighth and ninth grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement. Before conducting the mixed factorial ANOVA, the

data were screened for outliers and examined for the assumptions of independence of observations, normality, homogeneity of variances, as well as sphericity. An examination of box and whisker plots for each set of literacy achievement scores revealed no significant outlier within the samples. Because the study was designed so that participants were exclusively in only one of two race categories (White or Other), the assumption of independence (that specifically applied to this variable) was met. Table 8 displays the group means and standard deviations for ethnicity over time for eighth and ninth grade students' literacy achievement.

Table 8

Descriptive Statistics for Ethnicity over Time for Eighth and Ninth Grade Students' Literacy Achievement

Time	Ethnicity	<i>M</i>	<i>SD (SE)</i>	<i>N</i>
Fall	White	595.91	236.39	23
	Non-White	462.56	211.96	25
	Total	526.46	231.58	48
Mid-Year	White	645.91	229.41	23
	Non-White	514.44	203.39	25
	Total	577.44	223.97	48
End-of-Year	White	739.04	219.99	23
	Non-White	577.08	197.10	25
	Total	654.69	221.76	48
Total	White	660.29	(43.55)	23
	Non-White	518.03	(41.77)	25

To test the assumption of normality, histograms, as well as Kolmogorov-Smirnov (KS) statistics, were examined for each group across the three sets of literacy achievement scores. The shape of the histograms for each group appeared normal. Results of the KS tests revealed no significant deviation from a normal distribution for the fall scores of White students $D(23) = 0.123, p > .05$, as well as those of Other students $D(25) = 0.111, p > .05$. Similarly, the midterm literacy scores for both White students $D(23) = 0.152, p > .05$, and Other students $D(25) = 0.120, p > .05$ were not significantly different from normal. Finally, the assumption of normality was also met for the end of term literacy scores for White students $D(23) = 0.141, p > .05$, and Other students $D(25)$

= 0.139, $p > .05$. Furthermore, Box's test revealed no violation of homogeneity of variances among the groups $F(6, 15025.65) = 1.592, p = .145$. Results of Mauchly's test however revealed that the assumption of sphericity was violated $\chi(2) = 15.229, p < .001$, with a value of epsilon greater than .75. As a result, the Huynh-Feldt epsilon correction was interpreted for the between subjects and the interaction effects, respectively (Leech, Barrett & Morgan, 2011). Results of the mixed ANOVA analysis are displayed in Table 9.

Table 9

Results of Mixed Factorial ANOVA for Literacy Achievement of Eighth and Ninth Grade Students by Ethnicity over Time

Source	SS	df	MS	F	p	ES
Between Groups						
Ethnicity	727332.41	1	727332.41	5.56	.023	0.108
Error	6019822.82	46	130865.71			
Within Subjects						
Time	403409.26	1.63	247017.80	42.62	.000	0.481
Time*Ethnicity	6994.87	1.63	4283.14	0.74	.455	0.016
Error	435423.95	75.12	5796.11			

Results of the mixed ANOVA analysis indicated no significant interaction between ethnicity and time $F(1.633, 92) = 0.739, p = .455$. However, there was a statistically significant main effect for ethnicity $F(1, 46) = 5.56, p = .023, \eta^2 = 0.11$. The mean score of White students over time was significantly different ($M = 660.29, SE =$

43.55) from the mean score of other students over time ($M = 518.03$, $SE = 41.77$) (see figure 7).

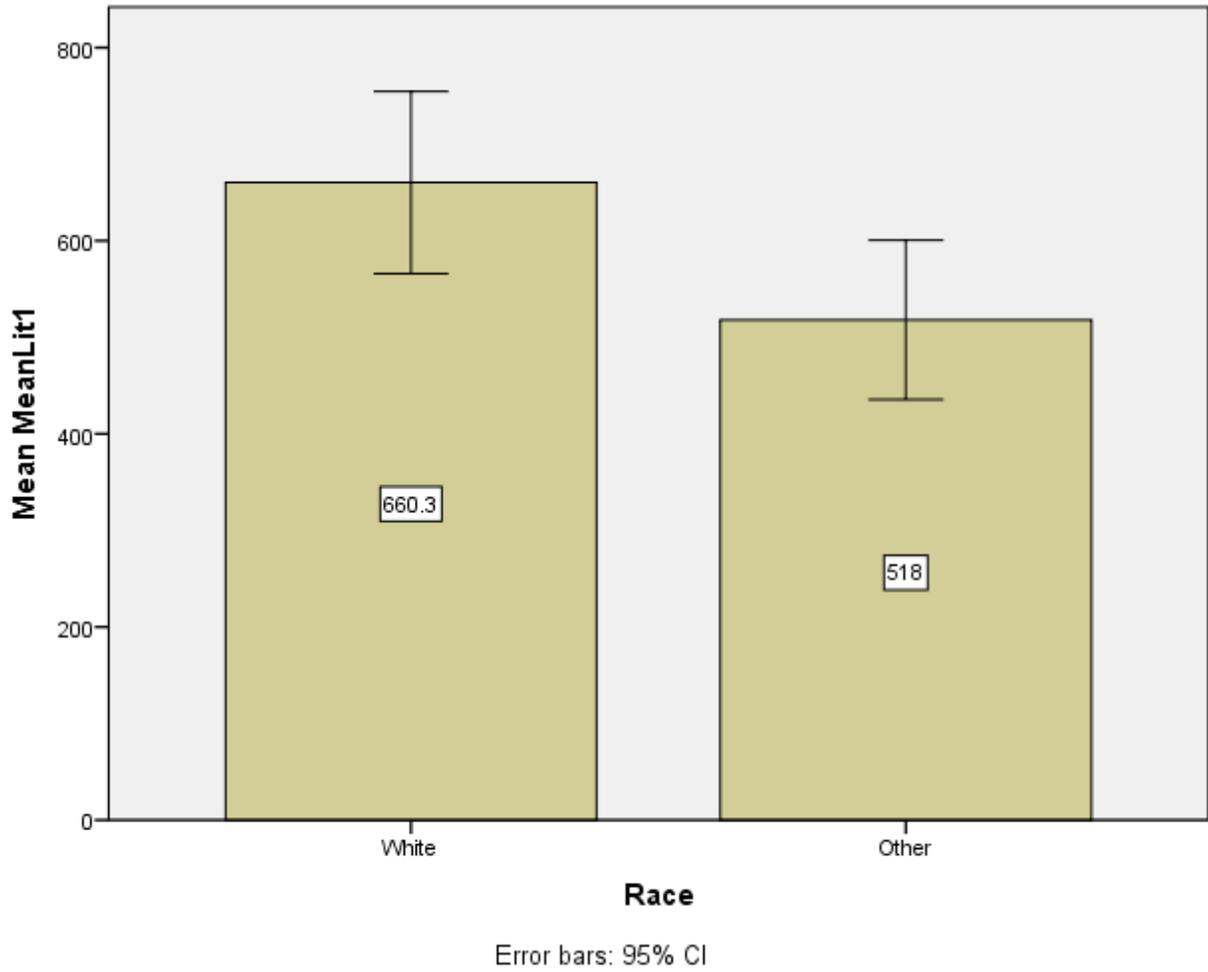


Figure 7. Mean literacy achievement for ethnicity main effect.

Similarly, there was a statistically significant main effect for time $F(1.63, 92) = 42.618$, $p < .001$. As a follow up test to this significant main effect, polynomial contrasts were run (see figure 8).

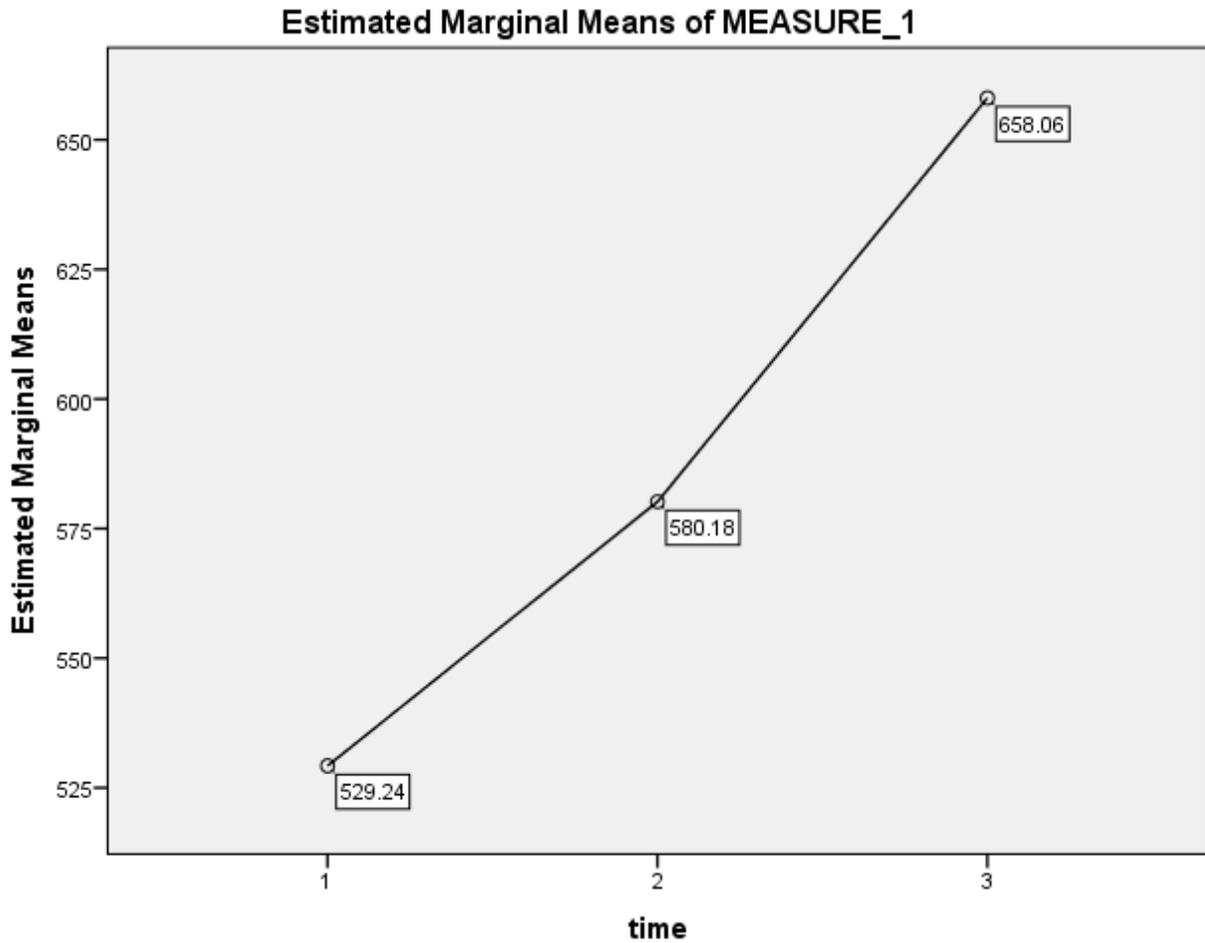


Figure 8. Literacy achievement for the main effect of time.

Polynomial contrasts revealed a significant linear literacy achievement trend over time

$F(1, 46) = 55.14, p < .001, \eta^2 = 0.55$ regardless of gender, but not a statistically

significant quadratic trend $F(1, 46) = 2.57, p = .12, \eta^2 = 0.02$.

CHAPTER V

DISCUSSION

The ability to read is highly valued and important for social and economic advancement for all students (National Research Council, 1998). Furthermore, learning to read well is especially essential for the success of children with disabilities. Hasselbring found that many students are placed in special education programs because they have never learned to read (Vanderbilt University, 2010). Because reading is such an important skill, many different kinds of reading programs have been developed that claim to promote student comprehension and reading fluency; some of these programs involve the use of technology. Various studies have been conducted on the use of technology for enhancing learning in students, and Hasselbring, in particular, has investigated the use of technology in teaching reading to students with mild disabilities and those who are at-risk of school failure (Vanderbilt University, 2010). Among the programs being studied for their effectiveness in teaching reading to students with disabilities is READ 180.

READ 180 was designed for students with learning disabilities, but Scholastic (2009b) continues to claim that the program has been effective in accelerating reading achievement for all students. However, the implementation of READ 180 alone does not make this program an effective instructional tool. Scholastic argues that teachers and students must use the strategies presented to enhance reading instruction and development. Because READ 180 is a multi-modal program, the claim is that the

program helps to improve and advance the reading abilities of various populations of students (Shawgo, 2005). Papalewis (2003) asserted that the Scholastic studies showed student success cutting across ethnic, learning abilities, English proficiency, and gender. Shawgo (2005) concluded that some of the strengths of READ 180 include individual learning, student engagement, and building of self-esteem. In addition, Shawgo contended that READ 180 allows for class structure and individual student flexibility, which is needed to improve reading skills on different levels. Although schools do not possess the unlimited financial capability to fund additional educators who could address individual student learning, READ 180 software has been determined to be affordable for whole districts (Dantinne, 2009).

The purpose of this study was not to examine the effectiveness of the READ 180 program, in general, or to investigate its effectiveness for all students. In this study, the researcher collected and examined data for the targeted subgroups to determine whether the READ 180 program had a significant effect on reading comprehension based on gender, ethnicity, and change over time (fall, mid-year, and at the end of the school year). Scores for sixth through ninth grade students in special education were gathered from selected middle schools and junior high schools in northwest Arkansas.

In this chapter, the researcher's conclusions of the findings are presented. Next, the implications of the study are discussed and interpreted from the context of the literature review. Subsequently, in the recommendations, potential practices and policies are outlined, and considerations for future research are addressed.

Conclusions

After analyzing the data and testing the assumptions, four 2 x 3 mixed factorial ANOVAs were conducted for the four hypotheses. To test the hypotheses, the researcher used a two-tailed test with a .05 level of significance. Interaction and main effects were examined in each of the hypotheses, and conclusions were drawn.

Hypothesis 1

Hypothesis 1 stated that no significant difference will exist by change over time between males and females in sixth and seventh grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement. Based on the results of the mixed factorial ANOVA analysis, there was no significant interaction between gender and time. Together, gender and time did not combine to affect how sixth and seventh grade special education individuals scored on the SRI in reading comprehension. Based on these results, there was not enough evidence to reject the null hypothesis for the interaction effect. For the main effect of gender, evidence was not substantial to reject the null hypothesis. When analyzing the means, male students over time were not significantly different from the females. However, there was a significant main effect for time that revealed a significant linear literacy achievement trend regardless of gender. After the initial testing in the fall, scores, regardless of gender, increased significantly over the next two administrations.

Hypothesis 2

Hypothesis 2 stated that no statistically significant difference will exist by change over time between ethnicity (White versus non-White students) in sixth and seventh grade special education in three northwest Arkansas schools who used the READ 180

software program on literacy achievement. Results of the mixed factorial ANOVA analysis indicated no significant interaction between ethnicity and time. Together, ethnicity and time did not combine to affect how sixth and seventh grade special education individuals scored on the SRI in reading comprehension. Based on these results, there was not enough evidence to reject the null hypothesis for the interaction effect. For the main effect of ethnicity, evidence was not significant. When analyzing the means, White students over time were not significantly different from non-White students over time. However, there was a significant main effect for time that revealed a significant linear literacy achievement trend regardless of ethnicity. After the initial testing in the fall, scores, regardless of ethnicity, increased significantly over the next two administrations.

Hypothesis 3

Hypothesis 3 stated that no statistically significant difference will exist by change over time between males and females in eighth and ninth grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement. Results of the mixed ANOVA analysis indicated no significant interaction between gender and time. Together, gender and time did not combine to affect how eighth and ninth grade special education individuals scored on the SRI in reading comprehension. Based on these results, there was not enough evidence to reject the null hypothesis for the interaction effect. For the main effect of gender, no significant difference was found; therefore, no evidence existed to reject the null hypothesis. When analyzing the means, male students over time were not significantly different from the females. However, there was a significant main effect for time that revealed a significant

linear literacy achievement trend over time regardless of gender. After the initial testing in the fall, scores, regardless of gender, increased significantly over the next two administrations.

Hypothesis 4

Hypothesis 4 stated that no statistically significant difference will exist by change over time between ethnicity (White and non-White students) in eighth and ninth grade special education in three northwest Arkansas schools who used the READ 180 software program on literacy achievement. Results of the mixed ANOVA analysis indicated no significant interaction between ethnicity and time. Together, ethnicity and time did not combine to affect how eighth and ninth grade special education individuals scored on the SRI in reading comprehension. Based on these results, there was not enough evidence to reject the null hypothesis for the interaction effect. However, there was a statistically significant main effect for ethnicity. When analyzing the means, White students scored significantly higher compared to the non-White students. Similarly, a statistically significant main effect for time existed that revealed a significant linear literacy achievement trend over time regardless of ethnicity. Evidence warrants an acceptance of the hypothesis for ethnicity. After the initial testing in the fall, scores, regardless of ethnicity, increased significantly over the next two administrations. Therefore, the researcher found enough evidence for both main effects to reject the null hypothesis for the main effect of ethnicity and change over time.

In summary, results for all four hypotheses showed no significant interaction effect. On the other hand, all four hypotheses for the change over time main effect were rejected. In all four cases, after the initial testing in the fall, scores, regardless of gender

or ethnicity, increased significantly over the next two administrations of the SRI. In addition, Hypothesis 4 revealed a significant main effect for ethnicity, with Whites scoring higher compared to non-White students in the eighth and ninth grades on literacy achievement.

Implications

Interpretation of these results requires a comparison to the review of related literature. The majority of research concerning READ 180 has been sponsored and reported by Scholastic (Shawgo, 2005). READ 180 has been implemented in a variety of settings from third grade to post-secondary schools. Most of the studies have been conducted in middle school settings with different grade configurations ranging from 4-8 and high school settings Grades 9-12. In this study, the decision to implement READ 180 with middle school and junior high school special education students was made because the students had already been identified with deficit areas in reading fluency and reading comprehension.

Research results indicated that neither the sixth/seventh nor the eighth/ninth grade students performed significantly different when comparing the mean scores between males and females. These results do agree with many of the other gender studies (Aguhob, 2006). Papalewis (2003) referenced Scholastic studies that showed student success cutting across learning abilities and gender. Research based on gender performance revealed males participating in READ 180 had an overall positive result, but some studies provided mixed outcomes. Aguhob's (2006) summary reported no significant differences between males and females. However, additional studies cited smaller disparities between the two groups with males continuing to outperform females

when comparing READ 180 reading performance. For years, educators have sought research that targeted the difference between males and females in all of the academic areas to determine what, if any, specific interventions address any learning difficulties between the genders. Robelen (2010) referred to a newer study on gender differences in academic achievement, noting positive results for girls and negative results for boys. Robelen revealed that, overall, male students in every state where data were available lagged behind females in reading. The report suggested that, as a group, males made some gains over time, and the gender gap has narrowed in many states. The results in this study were mixed but not significant. For Hypothesis 1, females in Grades 6 and 7 outperformed the males; however, for Hypothesis 3, males in Grades 8 and 9 outperformed the females.

Studies between ethnic groups who participated in READ 180 programs across the nation produced mixed results throughout the various studies. The main three ethnic groups that varied in performance throughout the studies were African American, Caucasian, and Hispanic subpopulations. Results from the studies reviewed varied greatly; differences between ethnic groups ranged from single digits to double or triple digit growth gains. Aguhob's (2006) study revealed significant differences with White students achieving greater gains compared to Hispanic or African American students. Additionally, studies from Arizona Union High School District (Scholastic, 2011) and Merced, California Unified school district (Scholastic, 2007) noted that the ethnic groups of African American and Hispanic students achieved at larger average Lexile gains. The Martin County, Florida Public Schools study (Scholastic, 2011) identified African American students with the largest percentage growth in reading proficiency with 68%;

White students showed a 66% growth, and Hispanic students made a 53% growth. Other studies continued to highlight the variety of results between different ethnic groups.

Papalewis (2003) reported that the Clark County School District identified Caucasians students with a 123.57 Lexile gain, African Americans with a 136.02 gain, Asian students achieving a 319.50 gain, and Hispanic student with a 84.64 Lexile gain on the SRI.

Peoria, Illinois Public Schools District 150 noted all ethnic groups exceeded the expected growth on the SRI with Caucasian students gaining 151 Lexiles, African American males gaining 116, and Hispanic students gaining 72 (Scholastic, 2011). Finally, the

Albuquerque Public Schools (2012) study revealed that African America students made the greatest gains with 149, Asians gained 101, Hispanics gained 78, and American Indian students gained 75. The Caucasian students in the study showed the lowest increase with a 58 Lexile gain.

Similarly, the research findings between the ethnicity groups of White and non-White in this study produced mixed results between the two grade-level groups. On the one hand, the results for the sixth/seventh grade White and non-White reported that there was not a significant achievement gap for ethnicity; however, the White students did outperform the non-White students. On the other hand, results for the eighth/ninth grades identified that the mean score for the White students was significantly higher compared to the mean score for the non-White students. Further study would be necessary to determine what other factors may have contributed to this difference between the two ethnic groups. Again, although Scholastic studies showed student success cutting across ethnic differences (Shawgo, 2005), results in this study were mixed.

The four results revealing significant increases in test scores over time demonstrates the importance of implementing READ 180 with fidelity. Because the program was monitored for quality control, students made significant gains in their performance throughout the school year on reading comprehension. Crownover (n.d.) concluded that, with implementation, fidelity is particularly vital to the program's success. Research by Hewes et al. (2006) noted gains that were beyond the expected annual growth. In regard to READ 180, or any other reading program, educators should commit to comprehensive staff development and continued support during implementation; this process will help develop a shared confidence that the program is a viable reading intervention when properly executed (Papalewis (2003).

Recommendations

Potential for Practice/Policy

This study was designed to obtain information on the effectiveness of implementation of the READ 180 program as an intensive reading intervention program for specific populations of struggling readers. This study was conducted in an urban northwest Arkansas school district and was limited to sixth through ninth students identified with disabilities. The study compared the reading comprehension of students in schools that implemented the READ 180 program. The findings of the study have direct implications on educational practices and policies in districts in northwest Arkansas, as well as throughout Arkansas, that are searching for reading intervention programs that can address the needs of struggling readers in at least five different ways.

First, districts should develop a systematic approach that address the reading comprehension needs of students identified with disabilities. Overall, research for READ

180 confirmed its use as a reading intervention program for struggling readers using adaptive instructional software, high-interest literature, and direct instruction as the primary tools and instructional strategies (National Evaluation and Technical Assistance Center for the Education of Children and Youth Who are Neglected, Delinquent, or At-Risk, 2006). READ 180 has become a program that provides instructional strategies and incorporated technology that addresses students' individual literacy needs.

Second, districts should purposefully address the needs of both males and females students in reading comprehension instruction. Results of this study indicated no significant differences between the means of males and females in READ 180, which could be seen as a positive advantage to the program. READ 180 might have contributed to the lack of differences between males and females. Because some other studies indicate that females perform at a higher level compared to males in reading programs, it is important that educators strategically address reading achievement for male students. Robelen's (2010) research offered some encouragement for boys in reading. The report suggested that, as a group, males made some gains over time, and the gender gap has narrowed in many states.

Third, districts should purposefully address the needs of White and non-White students who struggle with reading and reading comprehension. It is important to note that non-White students might have a language barrier, as well as a lack of appropriate language development opportunities and models, which could negatively affect reading comprehension skills. The READ 180 program systematically presents reading instructional strategies and incorporates technology that addresses students' individual literacy needs, regardless of ethnicity (Shawgo, 2005).

Fourth, districts should purposefully consider addressing reading instruction for students in secondary schools. Traditionally, students from Grade 5 and up are not required to participate in comprehensive reading instruction classes. Formal reading instruction diminishes when students enter middle schools. This lack of any formal reading courses continues throughout junior high and high school grades. The 2007 Nation's Report Card from the National Center for Education Statistics pointed out that just one-third of public school fourth graders and less than one-third of eighth graders read at or above grade level (Lee, Grigg, & Donahue, 2007). Schools teach students how to read to enhance learning through secondary and post-secondary educational settings.

Fifth, regardless of the reading program, districts should implement the program with fidelity. Scholastic's (2011b) Performance Pledge states that when implemented with fidelity, the majority of students will break the cycle of failure and show significant growth in reading. The Performance Pledge states that when implemented with fidelity, the majority of students will break the cycle of failure and show significant growth in reading. Teachers should receive continued professional development opportunities so the program will be implemented and will be delivered instructionally as designed. Hasselbring and Bausch (2005) stated that the focus for educators who care about youth with learning disabilities must be on providing excellent instruction.

Future Research Considerations

The findings from the study support READ 180 as a research-based reading intervention program that provides students with additional reading strategies through a structured computer-supported system that addresses students' individual literacy needs. To evaluate the impact of READ 180 and other research-based reading intervention

programs used to close the achievement gaps in gender and ethnicity, the researcher recommends that the following studies be considered:

1. Compare and describe the similarities and differences between READ 180 and other reading intervention programs identified by the Arkansas Department of Education and listed on the Arkansas Literacy Intervention Matrix (Arkansas State Personnel Development Grant, 2014)
2. Compare and describe the similarities and differences between the effect of READ 180 on reading comprehension for students in other regions of the state of Arkansas focusing on what represents quality reading instruction and a necessary time-frame that affects reading comprehension
3. Examine the relationship between implementation with fidelity regarding the required 90-minute time periods and other variations of time and their influence on reading comprehension
4. Examine the relationship between English Language Learners' language acquisition levels, years in the United States on reading comprehension in Arkansas, and type of reading program offered
5. Examine the relationship between elementary and secondary teacher preparedness in reading instruction and reading comprehension strategies
6. Examine the relationship between the professional development of secondary teachers in the areas of reading instruction and reading comprehension
7. Examine (longitudinally, 5- or 10-year study) the sustainability of essential components of READ 180 and the impact on reading comprehension

8. Examine the relationship between states and territories identified as *needs assistance* by the U. S. Department of Education in addressing special education students' achievement on standardized tests and graduation (Wire, 2014)

As schools become more reflective of the changing demographics of the world, it is imperative that educators meet the academic needs of a diverse student population. With rising enrollment of non-English speaking students(i.e. Hispanic, Marshallese), it is imperative that educators in Arkansas become more knowledgeable about successful research-based reading intervention programs that can address the increasing need for teaching reading and reading comprehension skills. Providing a comprehensive reading program that can use technology will promote student engagement and motivation while developing basic reading skills and abilities. READ 180 could provide the structure necessary, especially for secondary schools, to address the ever-growing need for a systematic reading program that will address the needs for students, regardless of gender or ethnicity. Educators must focus on the development of essential early literacy skills of Phonemic Awareness, Alphabetic Principle and Phonics, Accurate and Fluent Reading, Vocabulary, and Comprehension that must be mastered to become a good reader (Dynamic Measurement Group, 1998). Because the ability to read is highly valued and important for social and economic advancement (National Research Council, 1998), learning to read well is especially essential for the success of children with disabilities, as well as with all children. Insuring that instructional programs and practices such as READ 180 are accessible to all students despite their gender or ethnicity is important so that educational opportunities are equitable and available to improve student literacy

achievement. Reading should continue to be a major focus for educators across the nation.

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APPENDIX

APPENDIX A

IRB Approval



Status of Request for Exemption from IRB Review (For Board Use Only)

Date: 5/6/14

Proposal Number: 2014-043

Title of Project: Gender and Ethnicity by Change Over Time on Read 180 Reading Achievement for Identified Special Education Students

Principal Investigator(s) and Co-Investigator(s): Sherrie Bayles sbayles@sdale.org

- Research exempted from IRB review.
- Research requires IRB review.
- More information is needed before a determination can be made. (See attachment.)
-

I have reviewed the proposal referenced above and have rendered the decision noted above. This study has been found to fall under the following exemption(s):

1 2 3 4 5 6

In the event that, after this exemption is granted, this research proposal is changed, it may require a review by the full IRB. In such case, a *Request for Amendment to Approved Research* form must be completed and submitted.

This exemption is granted for one year from the date of this letter. Renewals will need to be reviewed and granted before expiration.

The IRB reserves the right to observe, review and evaluate this study and its procedures during the course of the study.

A handwritten signature in cursive script that reads "Rebecca O. Weaver".

Chair
Harding University Institutional Review Board