A Study of the Relationship Between Reading Instruction and Male Students' Reading Scores in Single-Gender Elementary Classrooms

Chrystal Michelle Hodges

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A STUDY OF THE RELATIONSHIP BETWEEN READING INSTRUCTION AND
MALE STUDENTS’ READING SCORES IN
SINGLE-GENDER ELEMENTARY CLASSROOMS

A Dissertation
Presented for the
Doctor of Education Degree
University of Mississippi

Chrystal Michelle Hodges
May 2011
ABSTRACT

The purpose of this study was to analyze the impact of single-gender grouping on the reading performance of fourth grade male students and explore the levels of use of research-based reading strategies for their influence on reading achievement of male students in single-gender and mixed-gender class settings.

The study population consisted of 195 student participants, from 4 different schools in one mid-South school district, and 9 teacher participants of these students. The control group consisted of 98 students from two of the four schools in the study. Data was collected using the results from the Mississippi Curriculum Test, Second Edition (MCT2) assessment reading mean scores, the Teacher Questionnaire, and System to Enhance Education Performance (STEEP) test scores.

The data was analyzed, at the .05 level of significance, using Levene’s Test for Equality of Variances, Independent t-test of Means, frequency distributions, and clustered bar charts.

Results of the data analysis showed that there were significant differences in the mean reading performance level scores between fourth grade male students in single-gender and mixed-gender classes. The frequency use of general reading strategies, the literature-based approach, and the technology-based approach was greater with teachers of single-gender classes. The frequency use of the basal-based approach and the language-based approach was
equal among teachers in both class settings. The majority of the teachers surveyed used strategies to assess students’ progress in reading at least twice a week or more. Hands-on activities, choice in text selection, and literature circles were three major themes that emerged from teacher narratives on one delivery method observed to be effective with boys.
DEDICATION

I dedicate my dissertation to my family and many friends. A special gratitude is given to my loving parents, Thomas and Nona Payne, who has always been the wind beneath my wings. By instilling in me the importance of hard work, persistence, and patience, this goal was attainable. Most importantly, because of your love, nurturing, sacrifices, and support, I am truly blessed.

I also dedicate this dissertation to my church family, North Green Street Church of Christ, and many friends who continued to encourage my efforts and reminded me that “I can do all things through Christ, who strengthens me” (Philippians 4:13). I will always appreciate all that you have done, especially Miss Kenisha Thornton for encouraging me to take a leap of faith and pursue the doctoral program, Mrs. Yolanda Randle and Dr. Carol Gary for your words of wisdom, and Mrs. Alina Harges and Dr. Virginia Moore for being such good listeners while giving daily advice.

I dedicate this work and give special thanks to my loving husband, Corey Sr., and my two wonderful sons, Corey Jr. and Camryn, who continuously showed patience and understanding as I crossed this milestone in my life. Your continuous love and support encouraged me to acknowledge my abilities while inspiring me with yours.
ACKNOWLEDGEMENTS

I would like to thank God, my heavenly father, for blessing me with strength and perseverance. By putting my trust in His power and goodness, I was able to make it through many trials in my life and make this dream a reality. To my parents, sisters, brothers, church family, and friends, thank you for your encouragement and support.

Secondly, it is with sincere gratitude that I wish to express my thanks to the committee members who so willingly devoted their time and expertise to the review of my work. I truly appreciate Dr. Bobbie Smothers Jones, my committee chair, whose guidance, wisdom, and passion for excellence in education inspired me to complete this project. To Dr. Jerilou Moore I extend my gratitude for the insightful marks and helpful suggestions offered towards my study. I thank Dr. Nichelle Boyd for her optimism, support, encouragement, and willingness to lend an attentive ear. Thank you to Dr. Lori Wolff for the skillful guidance, focus, and time offered as I worked persistently to complete Chapter IV.

I thank Dr. Fannye Love and Dr. Germain McConnell for their interest and cooperation in my study. I extend my gratitude to Dr. Glen Archibald, Dr. Carol Gary, Dr. Larry Hanshaw, Dr. Virginia Moore, Dr. Michael Mott, Mrs. Alina Harges, Mrs. Yolanda Randle, and Miss Kenisha Thornton for their kindness, interest, and willingness to help.

I would like to acknowledge and thank the school district in Mississippi who granted me permission to conduct my study.
To my husband, Corey Sr., and my two wonderful sons, Corey Jr. and Camryn, I owe a debt of gratitude for your patience and emotional support. You continued to believe in me and to encourage me to succeed, even when I doubted myself. This would not have been possible without you.
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<th>Description</th>
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<tr>
<td>AAUW</td>
<td>American Association of University Women</td>
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<tr>
<td>ADHD</td>
<td>Attention Deficit Hyperactivity Disorder</td>
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<td>AYP</td>
<td>Adequate Yearly Progress</td>
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<tr>
<td>IRA</td>
<td>International Reading Association</td>
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<tr>
<td>MCT2</td>
<td>Mississippi Curriculum Test, Second Edition</td>
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<td>NAEP</td>
<td>National Assessment of Educational Progress</td>
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<td>NASSPE</td>
<td>National Association for Single-Sex Public Education</td>
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<tr>
<td>NCLB</td>
<td>No Child Left Behind Act of 2001</td>
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<td>STEEP</td>
<td>System to Enhance Education Performance</td>
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CHAPTER I

INTRODUCTION

The President of the United States, Barak Obama (2005), affirmed, “If we want to give our children the best possible chance in life,…then one of our greatest responsibilities as citizens, as educators, and as parents is to ensure that every American child can read and read well” (para. 1). Data from the National Center for Education Statistics shows that many American children are deprived of this opportunity. The 2007 National Assessment of Educational Progress (NAEP) reported that approximately one-third of U.S. fourth grade boys are reading below the basic level with no significant changes in the average scores since 2005. Additionally, NAEP showed that fourth grade boys scored, on average, lower than girls with a seven point gap between the groups. When examining test scores on reading for literacy experiences, girls scored eight points higher than boys and five points higher in reading for information.

Research shows boys’ reading achievement has fallen behind girls. Studies conducted in more than 40 countries discovered that boys are increasingly “lagging” (Rycik, 2008, p. 99) behind girls, and it is clearly apparent in reading (Merisuo-Storm, 2006; Rycik, 2008; Sommers, 2002). William G. Brozo, a professor of literacy at George Mason University and author of the popular 2002 International Reading Association (IRA) book, To Be a Boy, To Be a Reader: Engaging Teen and Preteen Boys in Active Literacy, gathered resources and noted that by fourth grade, the average boy is two years behind the average girl in both reading and writing. He also found that our special
education programs consist of boys who are four times more likely to be diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) and that boys are 50% more likely than girls to be retained a grade than girls and have less motivation to read than girls (International Reading Association Organization, 2009). With the recent performance discrepancies between boys and girls, the gender gap in reading achievement is a topic of concern facing many educators world-wide.

Presently, teachers try to counteract this imbalance by incorporating various research-based approaches for reading demonstrated to increase reading performance. Ruddell (2006) and Giordano (2000) stated that these effective instructional approaches consist of the following: (a) basal reader approach: a systematic, sequential arrangement of lessons that are teacher-directed based on students’ reading levels; (b) language-based approach: the use of oral language and personal experiences by the students to teach reading in context; (c) literature-based approach: the incorporation of literature selections and trade books, literature reading circles, and reader response journals to increase motivation and comprehension; and (d) technology-based approach: the integration of various forms of “nonprint media” (p. 284) such as computers, cassette players with earphones, and television and DVD/VCR. Carbo (2009) noted that a balanced approach to reading is extremely effective to reach a wide-range of ability levels and learning styles to maximize students’ performance in reading.

Other researchers like Norfleet-James (2007) and Zambo and Brozo (2008) also proclaimed that single-gender learning environments will help with reading achievement. They believe that gender plays a role in holistically addressing the “imperative educational challenge” (Zambo & Brozo, 2008, p. 3) of boys’ underachievement in
reading (Norfleet-James, 2007). Their attention is centralized on brain-based learning differences and how these differences (in conjunction with social perceptions in our culture, psychological/emotional differences, and educational perceptions in our schools) affect the classroom environment and student performance. For example, neuro-biological data revealed that, in the minds of girls, the female brain’s corpus callosum (which allows communication between the right and left hemispheres of the brain) is 20% larger than that of males. The female brain has stronger neural connections and devotes more cortical areas to verbal functioning, allowing girls to perform better in reading, writing, and sitting still for long periods of time. Additionally, these areas allow an increase in the use of oral vocabulary. In addition, females’ increase in production of estrogen produces a larger hippocampus (the front part of the brain) that advances their abilities to multitask activities and increases their emotions (causing immediate discussion and handling of situations). Equally important, females work better with moving from specifics to concrete when constructing conceptualizations (Gurian & Stevens, 2004; Walker, 2005). As for the male brain, more cortical areas are devoted to spatial-mechanical areas (causing boys to learn best by manipulating or being actively involved in the learning environment). Additionally, the male brain produces less serotonin and oxytocin (making boys more impulsive and less likely to sit still for long periods of time), and boys have a difficult time multitasking. Males’ surges of testosterone (five to seven daily), prompt boys to be more aggressive and stimulate abstract thinking (Walker, 2005).

Effective strategies for reading are critical in raising achievement for all students. With the No Child Left Behind Act of 2001 (NCLB) requiring schools to use innovative
strategies and techniques to meet students’ academic needs, an increasing number of educational leaders have broadened their instructional menus by offering single-gender programs (U.S. Department of Education, 2009). According to the National Association for Single-Sex Public Education (NASSPE), single-gender learning is a classroom environment where boys and girls are separated for academic learning (NASSPE, 2008). As of October 2009, there were at least 545 public schools throughout the United States that offer single-gender academic classes and at least 91 of the 545 public schools were qualified as single-sex schools (NASSPE, 2008).

Although coeducation is the norm for public schools, single-gender education was once “common place” (Ferrara, 2005, p. 1) in the United States. Title IX of the Education Act of 1972 states, “No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance” (National Center for Educational Statistics, 2009, para.1). Thus, the only schools who maintained their single-gender status were private and Catholic schools.

Advocates for single-gender education believe that, due to the contrasting function of the male and female brains, there are differences in the learning styles between boys and girls (Gurian, 2009; Gurian & Stevens, 2004; Warrington & Younger, 2006). As a result of teachers diversifying their reading instruction when children are grouped by gender, these boy-friendly and girl-friendly environments lend themselves to higher levels of reading achievement. Basilio (2008) confirmed this by stating, “The environment [single-gender classes] can be adapted to accommodate the needs of boys and teachers can teach in a style more appropriate to gender” (p. iii). Moreover, some
studies revealed that students who participated in single-gender education crossed stereotypical boundaries and were motivated to participate in subjects and activities atypical to their sex (Warrington & Younger, 2006).

Critics of single-gender education view the single-gender paradigm as “separate but equal segregation-era classrooms” (The Associated Press, 2006, para. 4) and that mixed gender classes socially and mentally prepare students for life. Many critics categorize current research that supports single-gender education as inconclusive due to small scale studies conducted by schools. The American Association of University Women’s (AAUW) study in 1998 found no evidence to support single-sex education more so than coed education, and they concluded that current studies provide a disarray of results for the effectiveness of the programs.

Numerous studies explored intervention strategies and best practices for improving boys’ performance (Gunzelmann & Connell, 2006; Kleinfield, 2006; The National Literacy Trust, 2001; Warrington & Younger, 2006). The intervention strategies and best practices are based on the school level (training teachers on gender differences and brain-based differences; and implementing instructional approaches that reach all learning styles) and the classroom level which is clearly articulating the purpose of the lesson; presenting information in small chunks; allowing time for cooperative learning; pairing low-reading students with high-reading students; integrating technology and time for movement; targeting visual-spatial strengths; allowing boys an opportunity to choose their reading selections; incorporating a holistic approach to reading; and using a combination of research-based effective approaches to reading.

In a quantitative study of single-gender classes involving case studies of three
schools, Basilio (2008) found single-gender classes to be effective for boys. However, he claimed that more research is needed to develop “best teaching practices” (Basilio, 2008, p. iii) for the male gender. The study also demonstrated the need for long term effectiveness of single-gender programs and the need for professional development opportunities for teachers of single-gender classes.

Purpose of the Study

This quasi-experimental study had two purposes:

1. To determine whether there are significant differences in mean reading performance level scores between boys in fourth grade single-gender classes and boys in fourth grade mixed-gender classes.

2. To explore the frequency use of research-based reading strategies in single-gender and mixed-gender classes among teachers of these classes.

A single-gender classroom is defined as a classroom environment where boys and girls are separated for academic learning (NASSPE, 2008).

This study was designed to take a detailed look at four suburban elementary schools in one suburban/rural school district in Mississippi. School A and School B were the treatment groups. School A has implemented a single-gender program in grade four over a course of five years and has met Adequate Yearly Progress (AYP), as delineated by NCLB, for five consecutive years. School B has implemented a single-gendered program in grade four over a course of two years and has met AYP, as delineated by NCLB, for two consecutive years. School C and School D were control groups. School C has implemented mixed-gender classes in grade four and has met AYP for five consecutive years. School D has implemented mixed-gender classes in grade four and has
met AYP for five consecutive years.

Additionally, research shows that these four exemplary elementary schools were in good standing with the State of Mississippi for the past five years. Although these exemplary elementary schools have scored lower than their school district and the state of Mississippi, the average yearly gains have surpassed both systems. For that reason, it was important to examine these research-based pedagogical strategies and best practices in an effort to determine which are most predominant in this particular school district.

Hypotheses

The following null hypotheses were tested:

Hypothesis One: There is no significant difference in mean reading performance level scores between boys in fourth grade single-gender classes and boys in fourth grade mixed-gender classes. The independent variable is the group (single-gender and mixed-gender), and the dependent variable is the reading performance scores.

Hypothesis Two: There is an equal frequency use of research-based reading strategies among teachers in fourth grade single-gender and mixed-gender classes.

Significance of the Study

This study contributed to the limited existing knowledge of single-gender learning and validated the long term success of these programs. Secondly, this study shed light on the impact teacher training on brain-based, gender differences can have on the effectiveness of boys’ reading performance. This study also provided educational leaders with data-driven research of “best teaching practices” (Basilio, 2008, p. iii) that is shown to aid single-gender programs to become more effective for elementary boys’ reading performance. Finally, this study looked at outcomes directly impacting Adequate Yearly
Progress (AYP).

Limitations and Delimitations of the Study

The participants in the study were not randomly selected, but included fourth grade students in intact classes at four suburban elementary schools, in one school district, in a U.S. southern state. The study was restricted due to the participation of four public elementary schools and interpretation of results may be limited to the population sampled (McMillan, 2004). Nonetheless, other educational leaders may gain knowledge about the long term effectiveness of single-gender elementary programs for boys and aspects of implementation. Moreover, there may be pre-existing group differences that may affect the posttest scores (Gall, Gall, & Borg, 2007; McMillan, 2004). To minimize internal validity, homogeneity among all groups of boys in each school was established by using the last set of test scores from the 2009/2010 System to Enhance Education Performance (STEEP) screening test.

Definition of Terms

For the purpose of this study, the following operational definitions were used to describe background information, to relate to the significance of the research, and to identify concepts under investigation:

Adequate Yearly Progress. Adequate Yearly Progress (AYP) is a provision of the No Child Left Behind Act. The goal of No Child Left Behind is for 100% of children to be proficient in reading by the year 2014 and standards of AYP are set to ensure that schools reach that goal (U.S. Department of Education, 2005).

Brain-based Learning. Brain-based learning is the active engagement of purposeful strategies based on the principles of the brain (Jensen, 2008).
No Child Left Behind Act of 2001. No Child Left Behind Act of 2001 (NCLB) is the reauthorization of the Elementary and Secondary Act (ESEC)-the capital federal law that influences education from kindergarten through high school. One of the four principles it emphasizes is the implementation of innovative educational strategies and programs that are research-based, improving student learning and achievement (U.S. Department of Education, 2009).

Pedagogy/Pedagogical Strategies. Pedagogy is the practice or profession of teaching. Pedagogical strategies are the teaching strategies of instruction (Warrington & Younger, 2006).

Single-Gender Learning. Single-sex learning refers to a classroom environment where boys and girls are separated for academic learning (NASSPE, 2008).

t-Test. t-Test is a parametric statistical equation used to compare two means (McMillan, 2004).

Title IX. Title IX refers to supporting gender equity in any federal educational program and states, “No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance.” (National Center for Educational Statistics, 2009).

Organization of the Study

This study is organized into five chapters. Chapter I includes an introduction to the study. It consists of the statement of the purpose of the study, hypotheses, significance of the study, limitations and delimitations of the study, and definition of terms. Chapter II presents a review of related and relevant literature on effective
approaches for reading, background information and the modern debate between single-gender and coeducational learning, why boys under-achieve, and research-based interventions and best practices for male students. Chapter III describes the research design, hypotheses, participants, instruments, procedure, showing equivalence of two groups, and data analysis. Chapter IV includes the results of the study. Chapter V details the conclusions and discussions of the study as well as recommendations and suggestions for further research.
CHAPTER II
REVIEW OF LITERATURE

Introduction

This chapter presents a summary of different aspects of literature related to single-gender learning, boys’ underachievement, and reading. The belief is that single-gender learning, a classroom environment where boys and girls are separated for academic learning, is an alternative to meeting the needs of primary boys in reading achievement (NASSPE, 2008). Specifically, single-gender learning provides teachers with an opportunity to implement appropriate instructional strategies that challenge boys’ underachievement in reading (Chadwell, 2008). By doing this, an increase in reading performance will transpire.

The review of literature is presented as follows. First, a look at effective instructional approaches for reading is summarized, to present an array of research-based classroom strategies used to enhance reading. Second, a historical overview and the modern controversy surrounding single-gender and coeducational learning are discussed, to show how gender plays a role in holistically addressing educational issues among boys and girls. Third, the scope of concern and different perspectives of the boys’ underachievement phenomenon are presented, to provide a foundation for both the social constructivist and cognitive development theories and why changes to the entire learning environment must be considered. Fourth, intervention strategies and best practices from previous studies are explored, for both their influence on the implementation of the
curriculum and boys’ performance and to provide insight on how more research is needed to validate long-term effectiveness on boys’ reading performance and success in single-gender learning environments.

**Effective Instructional Approaches for Reading**

It is well documented that reading is the foundation for school-based learning; the basis upon which all academic skills are built. Without this foundation, students’ general knowledge may suffer (International Reading Association, 2009; Lyon, 1997; Ruddell, 2006). Although there is controversy among educators over which strategies will increase student performance and test scores, all educators hold strong to the belief that schools must provide the necessary tools for all students to become lifelong readers (Moreillon, 2007). Research literature states that reading performances in the primary grades are viewed as good predictors of future academic success (Rathvon, 2004). As educators search for ways to counteract boys’ underachievement in reading, it is crucial that schools focus on how they engage boys using research-based, effective approaches shown to increase performance. This section summarizes four effective instructional approaches as outlined in Robert Ruddell’s book, *Teaching Children to Read and Write* (2006) and Gerard Giordano’s book, *Twentieth-Century Reading Education: Understanding Practices of Today in Terms of Patterns of the Past* (2000), used in schools world-wide to teach reading.

**The Basal Reader Approach**

The most common adopted reading instruction world-wide is the basal reader approach. Roughly 75 to 85 percent of elementary classrooms use it, partially due to its link to direct teaching and its underlying theory that the best way children learn to read is
through predetermined, sequentially arranged skills-based lessons (Giordano, 2000; Ruddell, 2006). Giordano (2000) and Ruddell (2006) describe the components of a “standardized, grade-level-specific textbook in reading” (Giordano, 2000, p. 203) as: (a) a student basal text consisting of expository and narrative passages; (b) a teacher’s manual that provides guidance and comprehensive ways to teach the lessons based on specific strands such as phonics, comprehension, vocabulary, content area reading, word analysis, language, literature, and study skills; (c) a prominent Direct Reading Activity (DRA) group strategy that follows the procedures of introducing the lesson in a way to motivate students, presenting vocabulary words, facilitating silent reading, checking for comprehension of the text, rereading the text, engaging in group discussions, and participating in follow-up activities; and (d) an evaluation of a student’s performance at the end of the unit.

The first basal reader series, McGuffey Readers, was developed by William Holmes McGuffey in the 1830s (Smith, 2008). It was designed to have one text for each grade level and, during this time period, offered two qualities that were atypical in the common school textbooks- illustrations and the integration of the whole language art including spelling, comprehension, word studies, and speech. One of the most popular basal reader series, receiving 80% of the total reading sales in the 1930s, was the Dick and Jane Readers developed by William Gray (Giordano, 2000). Its reading strategy implicated a memorization method of reading whole words rather than a phonics approach. In today’s classrooms, many grade level reading textbooks are developed from companies under major publishing houses such as Holt, Rinehart and Winston,
The Language-Based Approach

The Language-Based Approach is an instructional style where students’ oral language and personal experiences are used to develop reading and literacy skills; integrating the language arts areas of speaking, listening, writing, and reading. As stated in Ruddell (2006), Goodman reported that this “rich, authentic, developmentally appropriate” (p. 14) method was initially implemented during the 1960s as supplemental activities to basal reader programs. Elementary teachers, at that time, recognized the need for reading to connect to the interests and experiences of a child. They also understood that the use of students’ current language experiences would promote learning to read and reading to learn (Giordano, 2000). Hall in 1972, an early spokeswoman, opened the door to the expression of Whole Language Approach. She alleged that teaching a child to read should be personalized with the interest of the child, creating child-centered materials that represent his/her modern spoken language and experiences to shape sentences and stories (Giordano, 2000).

There are six components of this holistic approach to reading. The components are: (a) the setting of goals and objectives designed by the teacher; (b) the creation of the learning environment and skill development activities consisting of vocabulary, word analysis, comprehension, language, literature, written expression, study skills, and thinking processes; (c) genuine child-centered lessons where a student is an active participant in choosing books; (d) literacy activities that are intertwined and influenced by social interactions and culture; (e) the development of a strong home-school
connection to fully submerge students in their literacy environment; and (f) evaluations based on teacher observations, portfolios, and student reflections.

The Literature-Based Approach

The Literature-Based Approach, the use of literature selection to increase students’ motivation and comprehension, emerged out of concerns about the effect reading had on character development and lack of “adequate exposure to full-length quality literature” (Ruddell, 2006, p. 13). Early researchers believed that the content of reading passages could influence students’ desires and abilities to read. To examine fundamental factors for reading success in 1925, researchers Anderson and Davidson found that “reading materials and equipment” (Giordano, 2000, p. 255) played an integral role in remedial reading programs. Prior to this study in 1921, O’Brien revealed that one of 15 factors that influence silent reading was the text’s content. On the other hand, a researcher named Brooks in 1926 decisively explored factors that increased poor reading skills. Believing that “a fundamental law of learning” (Giordano, 2000, p. 256) was to provide students with materials that promote an appreciation for learning, Brooks found that a lack of appropriate reading materials and external influences from the culture of school contributed to poor reading skills (Giordano, 2000). Merisuo-Storm (2006) conducted a recent study on fourth grade boys’ and girls’ reading selections, revealing that most students, mainly boys, did not take pleasure in reading school textbooks. Their preferences were books that appealed to their interest and that were relevant to their lives. Merisuo-Storm (2006) articulated the importance of choice in book selections with the following statement:

Pupils are very different as readers, and they are motivated to read very different
books and text. The reader should find topics of the text interesting and possess enough previous knowledge related to its subject matter. Therefore it is crucial to offer pupils a wide variety of reading materials (p. 112).

In today’s classrooms, some parts of literature-based programs are incorporated as a supplemental text to the basal reader approach (Ruddell, 2006). Based on students’ interests, many teachers utilize it to integrate subject areas, for whole class reading activities, and to increase motivational levels. A key component of literature-based programs is reader-response groups, also referred to as literature circles. This strategy allows students an opportunity to form their own reading groups to read the same text. The teacher facilitates the reading or discussion prompts for activating schema and ideas from the text while students use a response journal for recording thoughts. Students are given the opportunity to present new knowledge in the form of Readers Theater, plays, reports, and murals (Ruddell, 2006). For literature-based programs to be effective, Ruddell affirmed that dedication and the development of a knowledge base for literacy and literacy teaching is of essence.

*The Technology-Based Approach*

The integration of technology has taken on an innovative, well-known role in strengthening the learning and teaching of reading. Many forms of technology are used to meet the needs of classrooms consisting of a wide-range of ability levels and styles of learning (Ruddell, 2006). Their popularity dates back to the early 20th century with the radio and television integrated as the first two forms of technology-based approaches. An early spokesman in 1945 named Levenson stated that implementing radios and televisions in the classroom is imperative to reading education. Moreover, Levenson
avowed that reading instruction consisting of only printed words would hinder students who did not learn best this way (Giordano, 2000). Additionally, Levenson suggested that students who were visually impaired could benefit from a radio. A different “nonprint media” (Giordano, 2000, p. 284) that emerged in the late 20th century was computer-based instructional activities. Many educators favored the computer for the advantages of supplementing it with language-based instruction where a word processor would enhance the student-centered environment, increasing students’ motivation naturally and individualizing reading instruction. With the birth of the Internet in the 1990s, computer-based activities made numerous offerings to reading and education in general (Giordano, 2006).

Ruddell (2006) reported that technology-based strategies continue to play an integral role in supporting reading instruction today, particularly with remedial reading instruction. Some of the most common computer-based software programs used to target specific skills include Storybook Theatre and Accelerated Reader (AR) for comprehension, Reading Blaster and Beginning Reading for word identification, and Writing Advantage for vocabulary (Ruddell, 2006).

A popular resource that promotes boys’ reading is a program called Guys Read (www.guysread.com). Developed by Jon Scieszka in 2002 (a parent, former teacher, and an author of children’s literature books), it is based on the principle that to increase boys’ motivation and reading success, one must take a holistic approach by providing programs and activities that appeal to boys’ interests to make them “better readers, better students, and better guys” (Bafile, 2005, para. 1). Features of the Guys Read program include book selections for all reading levels recommended by other guys such as literature related to
boys’ literacy and the need for male role models, links to authors, and information about the program as well as how to develop your own Guys Read program (Scieszka, 2005).

To maximize reading instruction and ensure that all students have an opportunity to be successful readers, it is strongly recommended that teachers incorporate a balanced approach to teaching reading, using a combination of the four effective approaches previously discussed. Equally important, Dr. Marie Carbo, a national researcher and founder and executive director of the National Reading Styles Institute, declared that to boost students’ motivational and achievement levels in reading development, schools must first teach to the strengths of students (Carbo, 2009). This can be achieved by evaluating the needs of students such as their reading modalities first, then implementing appropriate reading instruction that matches the styles. Reading modalities are typically similar to learning styles consisting of visual (sight) learners, auditory (sound) learners, kinesthetic (movement) learners, tactile (touch) learners, global (whole pictures) learners, and analytic (details) learners.

Single-Gender and Mixed-Gender Learning

Historical Overview

American education emerged during the mid 17th century when Boston Latin School, the first U.S. public school, opened its doors to boys only on April 23, 1635 (Boston Latin School Association, 2007). Although viewed as a public school, Boston Latin School functioned as a private academy with the aim of producing educated clergymen. During this time, formal education for young girls resided in mixed-gender settings, but their secondary education was subservient to boys. Girls were granted permission to attend the master school under the conditions of space availability and
during the summer when boys were working (Women International Center, 1995).

During the early 18th century, Ursuline Academy in New Orleans, LA, opened its doors to girls in 1727 so that they could develop and master skills in reading, writing, and arithmetic to function in a developed society (Ursuline Academy, 2009). Between the mid and late 19th century, the common school movement evolved institutionalizing a tax-supported education. Although the government declared that establishing coed schools were for educational purposes and to modernize America’s schools, Riordan (1990) presumed, “The reasons for tolerating coeducation in this form were often economical rather than educational, particularly in sparsely populated areas, which could not afford to separately house students” (pp. 28-29). With federally funded schools mandated to hold a coeducational status, single-gender schools consisting of private and Catholic schools resided in larger cities located in the south and east (K12 Academics, 2009).

Throughout the late 20th century, coeducation became the norm in the United States with Title IX of the Education Amendments of 1972 enforced, stating that no person shall be discriminated against based on their sex in educational programs and activities that receive federal funding (U.S. Department of Education, 1998). In public schools, the dropout rate of male students increased due to “discontent in the face of the academic success of girls” (Riordan, 1990, p. 34), while female students limited themselves to basic skills, a level of education that would hinder them from being successful in the workforce. Shortly after coeducational schools were endorsed, The American Association of University Women’s (AAUW) 1992 report, How Schools Shortchange Girls: The Report, presented startling data that America’s classrooms disregarded girls and failed to endow them with a quality education, an education that
was currently given to boys. Support for this concern came from Sadker and Sadker (1994) in their publication of *Failing at Fairness: How America’s Schools Cheat Girls*, a report from a three year study of more than 100 classrooms revealing that more attention was given to boys; partially due to their mischievous behavior and boys’ negative behavior could have a detrimental effect on girls relating to “sex-based harassment and the unequal use of resources, including teacher time” (Tsolidis & Dobson, 2006, p. 216). Without the presence of boys, girls could freely express themselves and become leaders without the ridicules from boys. The AAUW, at this time, endorsed single-gender classes as a way to promote female achievement but later inferred that single-gender learning was harmful for girls (AAUW, 1998).

During the 21st century, numerous studies conducted world-wide on single-gender and mixed-gender learning revealed that boys and girls in single-gender schools were outperforming their counterparts in mixed-gender schools (Australian Council for Educational Research, 2000; NASSPE, 2008; Riordan, 1990). In 1990, Dr. Cornelius Riordan, professor of Sociology at Providence College in Rhode Island, published various U.S. studies on short and long term academic results of graduates from single-gender and mixed-gender Catholic schools. Riordan’s results concluded that, using a series of criterions, single-gender girls repeatedly outperformed coed girls. As for boys, single-gender schools were less beneficial for their academic needs. Thus, Riordan’s results for boys contradicted many international studies showing opposing results (NASSPE, 2008).

In Australia, a large-scale study conducted by Australian Council for Educational Research (2000) compared the performance of students in single-gender and mixed-
gender classes. The data analysis, consisting of 270,000 students in 53 academic subjects over six years, revealed that both girls and boys in single-gender classes scored between 15 to 22 percentile ranks higher than their mixed-gender counterparts.

In England, The National Foundation for Educational Research in England took a detailed look at how the size of single-gender and mixed-gender schools affected student performance in 2002. Examining approximately 3,000 high schools, findings revealed a significant gain for males and females in single-gender schools with low-achieving boys and girls gaining the most. Additionally, most gains where received by schools of medium size; small schools lack courses offered to advanced students (NASSPE, 2008).

In Jamaica, Marlene Hamilton conducted “a classic study” (NASSPE, 2008, para. 19) to examine the academic performance of students in single-gender and mixed-gender schools. Although variables were limited such as socio-economic status (due to public single-gender schools dominating the area) to distinguish the schools’ type, results were fairly similar to other globally single-gender studies: students who received higher gains were girls from single-gender schools, boys from single-gender schools were next, boys from coed schools were third, and girls from mixed-gender schools received the least gains.

To ensure that every child learns, former President George Bush signed into law the No Child Left Behind Act of 2001 (NCLB) on January 8, 2002. This law, a comprehensive plan to reconstruct the culture of schools to improve education for all children, gave public schools authorization to offer single-gender learning environments to promote student achievement in the K-12 setting (U.S. Department of Education,
Due to controversies over this plan of action, a proposal was presented by the government in the spring of 2004 for clarification of the single-gender regulations. At this time, single-gender classes were permitted for non-academic classes. With the proposed changes, public schools could offer single-gender learning environments based on the following: (a) enrollment must be voluntarily, (b) a proportionate coeducational class of the same subject must be provided, and (c) evaluation of the program conducted periodically to ensure consistency with nondiscrimination requisites (Frye, 2006; Salomone, 2005). On November 24, 2006, the final version of the single-gender regulations was completed and schools across the nation were given more flexibility to offer single-gender classes in mixed-gender schools (Protheroe, 2009). Margaret Spellings, former U.S. Secretary of Education, affirmed that single-gender learning environments must be offered so that public schools increase their means of accommodating all learning styles. (Frye, 2006).

_Modern Debate_

Single-gender verses Mixed-gender: “Is ‘separate’ discriminatory or is it failure to recognize the different needs and ways of learning by girls and boys that is discriminatory?” (Hambrook, 2009, p. 1). Single-gender learning has become a popular yet controversial issue in the educational arena world-wide. Although many countries have turned to single-gender classes as a panacea to the moral panic of boys’ underachievement and to close performance-based gender gaps, a lively debate has mounted on how effective, or destructive, single-gender learning is on student performance (Sommers, 2002; Spielhagen, 2008; Warrington & Younger, 2001).
The Case for Single-Gender Learning

Single-gender learning is built upon the nature-based theory of neuro-science, understanding that the differences in learning are due to the contrasting function of the male and female brains (Gurian, 2009; Gurian & Stevens, 2004; Warrington & Younger, 2006). Advocates argue that boys and girls possess different approaches to learning and the classroom environment with teacher preparation determining how successful students’ learning will be (Gurian & Stevens, 2004; Norfleet-James, 2007; Warrington & Younger, 2006). Although many critics compare it to the “separate but equal segregation-era classrooms” (The Associated Press, 2006, para. 4), NASSPE (2008) declared single-gender classes provide teachers with opportunities they might not otherwise have in mixed-gender class settings. When students are grouped by gender, teachers do not have to diversify their instruction (NASSPE, 2008). They can tailor the curriculum to fashion the best learning approaches used for males and females, allowing students to learn the same standards (content and skills) but through different lessons and activities. Thus, these boy-friendly and girl-friendly environments can lend themselves to higher levels of academic gains.

Dr. Spielhagen, member of the Advisory Board of the Gurian Institute for helping boys and girls succeed and author of *Debating Single-Sex Education: Separate and Equal?*, and her colleagues published numerous studies on single-gender pilot programs based on the perspectives of teachers, administrators, and students in grades six, seven, and eight. Students’ perceptions of single-gender classes were examined in 2002 using surveys, open-ended interviews, and classroom observations. Data analysis revealed that this arrangement worked for some students across all grade levels with only boys and
girls in grade six who favored it the most. Boys in grade seven opposed single-gender classes while girls in grade eight thought it would promote academic achievement (Spielhagen, 2008).

While focusing on accountability in 2002, Spielhagen’s three year study explored the effectiveness on student academic achievement in Grades 6 and 7 (N=600) in the Hudson Valley in New York State. Standardized test scores and parent-teacher surveys were used to collect data, comparing their first year in the single-gender program to their previous year in coed classes. In the first year of the study, all 6th grade students showed improvements from their previous year in mixed classes. Their mean score revealed percentile gains averaging two points in all academic areas. Performance in grade 7 revealed contrasting results due to interviews showing an unresponsive behavior to the single-gender environment. The percentile gains remained the same, and at the end of year three, interesting results surfaced from Terra Nova test scores in grades 5, 6, and 7. With the limitations of a smaller sample size and higher-ability 7th grades students placed in mixed classes (due to honors math courses only offered to mixed classes and not single-gender classes), the results showed the following: (a) gains were made in reading for both single-gender and mixed classes as well as in mathematics for mixed classes and not for single-gender classes, (b) students in single-gender classes made the greatest gains in language arts, and (c) mixed language arts classes declined.

Spieglhagen’s responded to this study saying, “In this school, analysis of the test results suggests that single-gender class arrangements clearly worked for some students. Test score gains revealed positive patterns of achievement in reading and language arts, especially as related to single-gender classes” (Spielhagen, 2008, p. 64).
In 2004, a three year pilot program was conducted at Woodward Avenue Elementary in Deland, Florida, as a response to the decline in boys’ state test scores in reading. In partnership with Stetson University researchers, Stetson’s Teacher Education professors and Woodward teachers jointly developed research-based single-gender teaching methods that “showed marked differences in the development sequences, brains, and genes of girls and boys” (Downs, 2007, p. 20). Fourth grade participants were randomly assigned to single-gender and mixed-gender classes and their state test scores were collected at the end of the school year. Data analysis demonstrated a strong indication that single-gender education, for many students, produced superior achievement. Overall, 85% of boys in single-sex classes passed the reading section in comparison to the passing of 55% of boys in coed classes (Downs, 2007).

A second argument for single-gender learning lies in the anticipation of students crossing stereotypical borders. The U.S. Department of Education (2007) pointed out that many people favor single-gender classes due to some studies revealing that females believed favoritism was shown in subjects such as mathematics and science. Teachers tend to interact with and ask more questions of male students. This kind of favoritism is impossible in single-gender culture. As for male students, “some primary school boys adopt a definition of masculinity as avoiding whatever is done by girls, to distance themselves from femininity, in terms of literacy and language subjects, communication and emotional expression and academic work” (Warrington & Younger, 2006, p. 20).

In a single-gender learning environment, students are encouraged to participate in activities atypical to their sex. As part of The Raising Boys’ Achievement Project in England, Warrington and Younger (2006) conducted a study to identify intervention
strategies for boys in reading. The research design consisted of conducting surveys about reading among elementary students and interviewing focus groups of boys to gain an understanding of how they perceive themselves as readers, their preferred reading materials, and the extent to which they read at home. Part of the data analysis revealed that boys viewed reading as a feminine activity because most people they observed reading and who pushed them to read were female family members and female school teachers (Warrington & Younger, 2006). This, as stated earlier, may affect boys’ masculinity among their peers. Nevertheless, single-gender learning environments can encourage and motivate male students to read and shine in literacy activities.

*The Case for Mixed-Gender Learning*

Not everyone agrees with single-gender learning. Critics believe that single-gender learning will send the wrong message to students about gender and their future relationship in our society (Tsoldis & Dobson, 2006). Advocates for mixed-gender learning presume that mixed-gender classes are microcosms of society, reflecting a “natural situation” (Riordan, 1990, p.40) that socially and mentally prepares students for life. Since men and women are more likely to interact in the workplace and in home, schools should provide a comparable environment where students will respect and appreciate gender differences (Kirschenbaum & Boyd, 2007; Riordan, 1990; Tsoldis & Dobson, 2006). Thus, “male and female students can learn from each other’s approaches and learn to collaborate, each bringing their style to bear in working for common goals” (Education Bug, 2009, para. 8).

Although advocates for single-gender learning believe that boys are motivated to engage in reading activities when girls are not present, Van Houte’s (2004) study
revealed opposing results. Van Houte examined the effect of girls’ presence in the classroom on the positive behavior and achievement of boys. His argument was that girls’ behavior of being obedient, organized, and of staying on task would positively influence boys’ behavior in the classroom. Data revealed that boys performed better with the presence of more girls in the classroom. Van Houte (2004) also affirmed that the proportion of girls, rather than the number of girls, affected boys’ performance.

Many critics categorize the research as being inconclusive with some schools conducting their own small scale studies and no exact or appropriate benefits to single-gender learning. Schools that have been successful may have other constructive characteristics contributing to the student achievement such as small class size and curriculum organization (Education Bug, 2009). According to the American Association of University Women’s (AAUW) study in 1998, they found no evidence to support single-gender education more so than mixed-gender education. In Jackson’s (2002) small-scale study that explored the perceptions of middle school mathematics students of single-gender versus coed education and the benefits of a single-gender learning environment, muddled results indicated that an increase in self-esteem resulted in 80% of girls in single-gender classes; yet, 65% of boys in single-gender classes observed no difference. Moreover, boys in the single-gender classes wanted to return back to mixed-gender classes.

When examining same-gender education on eighth grade science achievement in the U.S., Friend (2006) reported that there was not a significant difference in science achievement of same-gender grouping as opposed to coeducational classes. Furthermore, a more positive classroom climate was not created. As a result, this middle school, based
on policy recommendations, decided to cease implementation of same-gender grouping until further research was conducted to evaluate its effectiveness.

*Why Boys Under-Achieve*

Is boys’ underachievement due to a learning disability, a health issue such as ADHD, or lack of motivation? Or is it due to the way our educational system is designed, a school environment that is failing to adequately serve male students by unintentionally supporting female behavior with which most boys have difficulty conforming (Gunzelman & Connell, 2006)? During the early years of the twenty-first century, the controversy over boys’ performance sparked teachers, policymakers, and researchers to rationalize the gender gap discrepancy and to understand why boys underachieve in primary grades (Connolly, 2004; Renold, 2004a; Skelton, 2001; Skelton & Francis, 2003a; Warrington & Younger, 2006).

*Social Perceptions in our Culture*

Conformance to our society’s expectations of gender, unfortunately, is a behavior in which many boys participate. These stereotypes, which are part of our culture and social norms, encourage boys to be “strong, brave, silent, and macho” (Gunzelmann & Connell, 2006, p. 95). Dr. William Pollack, a Harvard clinical psychologist and author of 1999 bestseller *Real Boys: Rescuing our Sons from the Myths of Boyhood*, viewed these widely-believed myths as the Boy Code; an unspoken, unwritten list of societal beliefs about how boys should behave. When boys try to live up to these beliefs, barriers are formed against their learning (Gunzelmann & Connell, 2006; Pollack, 1998).

Several studies of students’ interaction and participation in primary grades reveal that some boys, partially due to the Boy Code, partake in their own under-achievement by
engaging in “laddish” (Warrington & Younger, 2006, p. 20) behavior, an act of protecting their masculinity. “Some primary school boys adopt a definition of masculine as avoiding whatever is done by girls, to distance themselves from appearing feminine, in terms of literacy and language subjects, communication and emotional expression and academic work” (Warrington & Younger, p. 20). Boys often possess a strong masculinity demeanor by striving to shine only in sports and not school work. The concept of sitting still and in silence, being cooperative and working diligently in school is viewed by some boys as being feminine. Based on neuro-science, boys do not sit still for long periods of time (Norfleet-James, 2007). Boys are very energetic, competitive, and enjoy a good challenge. If they are required to sit still and in silence, this action can result in being a distraction for them.

*Psychological/Emotional Differences*

It is believed that boys are not as straightforward as girls about their feelings and have a hard time articulating emotional knowledge. Geary (1998) concluded that the theory behind this belief is that boys do not experience feelings as thoroughly as girls do. Nevertheless, neuroscience revealed that as humans mature the following actions take place: the development of males’ amygdala increases, an area of the brain that responds to emotions reflecting anxiety or anger, and the development of females’ hippocampus increases, an area of the brain that influences long term memory (Norfleet-James, 2007). Although these results contradict the stereotype regarding boys’ feelings, Cahill (2003) and Sax (2005) synthesized that boys (just like girls) can be emotional but lack the ability and skills to successfully express these emotions.

As previously stated, many boys believe and partake in the Boy Code, engaging
in “laddish” (Warrington & Younger, 2006, p. 20) behavior which causes them to cover up their emotions. Motivation theorists Dweck and Covington, concluded that this harmful act (laddishness behavior) is based on the self-worth theory; a tactic where boys pretend to not be interested in school work; holding tight to their masculine self-image so that they can be accepted by peers (Warrington & Younger, 2006). Over time, these self-protection approaches could develop into a habit of repeated failure to achieve and result in lowering one’s self-esteem and developing a mental state of depression and anxiety. The symptoms of boys, who are diagnosed with being depressed, may be misunderstood due to their aggressive or deceitful behavior. “The paradox of boys is that, while they won’t discuss their emotions, they are extremely influenced by their emotional reactions” (Norfleet-James, 2007, p. 118).

**Educational Perceptions in our Schools**

The school’s climate, educational expectations, and testing policies can mentally place boys at risk in reading and school (Gunzelmann & Connell, 2006). Gunzelmann and Connell (2006) explained how, on one side of the door, boys are expected to be less tolerant, not to whine, to tough things out, and to keep some comments to themselves. On the other side of the door, boys are expected to sit still, be cooperative, and only speak when being spoken to. Engaging in such cumbersome behavior, with experiencing repeated academic difficulties, confusion and discouragement can evolve. Consequently, many boys will develop a belief that they do not measure up socially and emotionally and will view school as not being an enjoyable place to be.

Typical reading assignments in the elementary classroom also may impact boys’ achievement and motivation towards reading. Results from a reading interest survey
showed that most fourth grade students, particularly boys, are not enticed with classroom reading materials. Girls preferred reading a wide selection of text, from adventure books to humorous stories and comics. On the other hand, boys were more selective of text and preferred nonfiction books, magazines, comics, and books in series. The least favorite genres for boys were poetry, stories, and fairytales, selections that are widely used in elementary classrooms. A large amount of selected books in classrooms are based on teachers’ or schools’ views of quality books, which usually are not boys’ first choice of topics and texts that they perceive are for girls (Merisuo-Storm, 2006).

Many elementary reading assignments contain few heroic non-fiction stories. Due to strong differences in boys’ and girls’ reading preferences, many critics believe that the language curriculum appears to be geared toward the female gender. Bauerlein and Stotsky (2005) affirmed this appearance of bias in the elementary language curriculum by articulating the following:

Few strong and active male role models can be found as lead characters. Gone are the inspiring biographies of the most important American presidents, inventors, scientists and entrepreneurs. No military valor, no high adventure. On the other hand, stories about adventurous and brave women abound. Publishers seem to be more interested in avoiding "masculine" perspectives or "stereotypes" than in getting boys to like what they are assigned to read (para. 7).

The implementation of boy-friendly pedagogy consisting of reading materials that is appealing to male students is a plus. If schools do not incorporate textbooks and reading assignments that reflect topics of interests for male students, it can contribute to the harmful cycle in which boys are caught.
In the age of accountability with the NCLB Act, with standardized testing and the fast pace of the curriculum, many boys are at an even greater risk for failure. Biological science on the development and operation of boys’ and girls’ brains reveals that boys develop some skills later than girls. Gunzelmann and Connell (2006) responded to the fast-paced dynamics of schools saying, “That trend results in no greater knowledge, but it puts added pressure on children to measure up and to hurry their learning” (p. 96).

**Neuro-biological Differences**

Neurobiological data reveals that there are differences in how the male and female brains receive and process information. Gurian and Stevens (2004) reported that in the minds of girls, the female brain has stronger neural connections and a larger hippocampus. Thus, a larger hippocampus allows girls to multi-task, have fewer attention span problems and greater use of sensory memory details in speaking and writing, and devote more cortical areas to verbal functioning, making girls better at sensory memory, listening, sitting still, and the complexities of reading and writing. In the minds of boys, the male brain devotes more cortical areas to spatial-mechanical functioning and is designed to go into a “state of rest” after a certain length of time to renew or recharge. It (the male brain) also has less serotonin and oxytocin which makes boys more impulsive and less likely to sit still for long periods of time.

The sensory systems, in which learning experiences enter the brain, are biologically made up differently, resulting in the transmitting of classroom instruction varying among the genders. Dr. Norfleet-James, a psychologist and former classroom teacher of boys, reported on recent work in gender studies and brain research. She found that research on the brain and vision revealed that boys are more likely to be color-blind;
a disorder where humans can see the colors but struggle with identifying the differences among colors or similar shades of colors (Norfleet-James, 2007). For example, the most common colorblindness is red/green where boys have difficulty discriminating between white, pink, and pale green. The rarer form of colorblindness is blue/yellow where boys have difficulty discriminating between white, pale blue and pale yellow.

In addition to colorblindness, boys do not use colors in the same way as girls (Norfleet-James, 2007). Girls tend to have a high tolerance for light whereas boys tend to only have half as much. In a study on the effects of indoor lighting on mood and cognition, it was reported that girls are more likely to solve problems in the presence of 3000K lights which are depicted as warm-slightly pink whereas boys are more likely to solve problems in the presence of 4000K lights which are depicted as cool-slightly blue. Moreover, these findings were the case for boys and girls with long-term recall and mood (Knez, 1995; Norfleet-James, 2007).

Alternatively, boys view objects in motion exceedingly well which results in their strong interest in television and video games and are readily able to separate an object from its background. As a result, any movement in a classroom, such as someone raising their hand, dropping a book, or someone walking across the room, will attract boys’ attention. Research stated that boys’ sharp eyes for objects allow them to receive information easily through visual methods (Norfleet-James, 2007).

Norfleet-James (2007) also stated that research on hearing revealed that boys have a more difficult time hearing high-pitched sounds and softer sounds. This is partially due to the make-up of the inner ear which is different for boys and girls. The cochlea, a coil tube where sound energy is transformed, is longer for boys and causes a delay in
their response to questions. On the other hand, girls have a shorter cochlea which allows a quicker response. As boys do not hear soft or high sounds very well and do not respond to sound as quickly as girls, they may have difficulty receiving instruction given aurally.

In regard to touch, many studies and observations indicated that this particular sensory modality is a major source of information for boys and “the way that boys learn best is to manipulate their environment” (Norfleet-James, 2007, p. 39). Consequently, boys do not learn with traditional instruction until they have been actively involved first. A distinct factor of gender differences in the brain is how boys and girls approach learning from different viewpoints. In the early grades, girls’ left hemisphere strength gives them the advantage to use communication, spoken or written, as their primary source of information, allowing girls to naturally excel in reading, writing, and speaking. The boys’ left hemisphere strength gives them the advantage to recall facts and categorize information quicker than girls. On the other hand, the girls’ right hemisphere strength gives them the advantage over boys to express their emotions and be more empathetic of other’s feelings. The boys’ right hemisphere strength gives them the advantage to use visual-spatial and fine-motor skills as their primary source of information, allowing boys to naturally excel in math, science, and geography (Connell & Gunzelmann, 2004; James, 2009). If lessons begin with lectures or reading of materials, young boys are more likely to not comprehend the materials. Conversely, if lessons begin with a video, demonstration or hands-on activity, girls may find it difficult to relate. Neither instructional approach is greater than the other, just different.

Intervention Strategies and Best Practices

The National Literacy Trust organized an analysis of recommended actions
acquired from previous research on boys’ underachievement. Research on gender indicates that practices performed at the local level can provide a foundation for educational performance such as teacher training on gender differences and brain-based differences. Additionally, the local level can initiate discussions with students, teachers, and parents regarding the effects attitudes toward male and female roles may have on the school’s social and learning environment, and they can implement instructional approaches to learning for all learning styles. At the classroom level, case studies discovered that boys’ reading performance can be enhanced through classroom strategies. These strategies included clearly articulating to students the purpose for lessons and presenting information in small chunks, organizing assignments rationally, pairing low-achieving readers with high-achieving readers, and providing opportunities to actively engage in cooperative learning groups (National Literacy Trust, 2001).

The research also provided suggestions for assessment practices which will assist in improving the reading performance of boys. Such strategies involve reserving time for self-evaluations and teacher-student discussions, giving more helpful and guiding comments rather than numerical scores, providing immediate responses for assignments, and promptly returning homework (The National Literacy Trust, 2001).

An important factor in counteracting boys’ underachievement is to vary the instructional methods to reach all learners in the classroom, particularly boys. Gunzelmann and Connell (2006) reported on several instructional strategies that can be effective. For example, provide activities that target visual-spatial strengths, integrate time for movements or physical activities, and incorporate hands-on materials and technology to demonstrate learning. Other strategies suggested consist of allowing boys
to have a voice in the selection of reading materials and establishing a supportive learning environment where boys feel safe to express themselves and where the Boy Code rules (an unspoken, unwritten list of societal beliefs about how boys should behave) are not applied.

The Boys Project with the University of Alaska identified five interventions to address reading and engagement in school. These interventions consisted of assisting teachers to develop a knowledge base on gender differences in development and learning, beginning school at a later age for slow developing boys, creating classes or schools with individualized education, providing boys with caring adult role models, and respecting boys. From these general interventions are specific strategies to target boys’ success such as creating instructional materials that target boys’ preferred learning styles, offering single-gender learning environments, providing boys with caring adult role models, and changing educators’ attitudes towards boys (Kleinfield, 2006).

The Raising Boys’ Achievement Project in England was a similar study consisting of over 50 primary, secondary, and special schools with mostly students from deprived socio-economic contexts. The project identified key strategies with potential to raise boys’ (and girls’) motivation, learning, and engagement in school and, as a result, raise achievement. Intervention strategies developed were categorized into four areas: organization of school’s learning environment, individual target-setting and mentoring, pedagogic approaches to teaching and learning, and socio-cultural strategies for boys to develop a feeling of self-worth and become actively involved in school life (Warrington & Younger, 2006).

Establishing strategies to improve reading was a main focus area of the project for
primary schools. A pedagogic strategy found to be effective was the use of a holistic approach to reading: combining reading, writing, speaking, and listening as a whole along with the combination of the four effective reading approaches mentioned earlier in the literature (basal reader, literature-based, language-based, and technology-based). Moreover, findings showed how reading practices are facilitated in conjunction to paired reading and group work, using varied reading instruction with short, focused activities, and integrating technology (Warrington & Younger, 2006).

Warrington and Younger’s (2006) report also gave some suggestions for creating a socio-cultural model as a whole school to address boys’ underachievement. Reducing images of laddish masculinity in hopes of increasing boys’ engagement, elements as citizenship initiatives, celebrating success for all boys so that they will view learning as being cool and a place for boys, involvement in creative and performing arts, and programs that allow underachieving boys to overcome shyness and lack of confidence. Fully involving underachieving boys in schools that value individuality, equality, leadership, and teamwork, and where there is a community of leadership and commitment among the faculty to implement these practices, can ensure success and achievement.

An intervention that addresses the gender-based performance gap for boys and that has received much attention nationally and internationally is single-gender learning. Due to the recent revisions of the U.S. Department of Education No Child Left Behind Act, educators are given the approval, with specific guidelines and follow-up evaluations, to offer single-gender schools and classes as an alternative to promote achievement. Basilo (2008) assessed the single-gender learning intervention in his recent study.
involving three case studies in two southeastern states. The study examined the effects single-sex classes have on boys’ reading performance as compared to boys in mixed-gender classes. In addition, the study explored reading strategies used in single-gender classes and teachers’ perceptions of single-gender classes.

Participants for this study, selected from the National Association of Single-Sex Classroom’s (NASSPE) website, consisted of 359 students, 117 third grade students (100 males and 37 females) in Case One school located in central Florida, 112 fifth grade students (64 males and 48 females) in Case Two school located in south Florida, and 130 sixth grade students (69 males and 61 females) in Case Three school located in a rural part of southern Louisiana. Case One and Case Two schools both received a grade of “A” by the Florida Department of Education and Case Three school was deemed as a “school of decline” (Basilo, 2008, p. 105) by the Louisiana Department of Education due to their decline in test scores the previous year. Three separate case studies were conducted due to the disparity in location, size, and grades used.

Participants were compared using 2006-2007 state reading test scores for reading performance (FCAT-Florida’s state test and iLEAP-Lousiana’s state test). Participating teachers in the study completed a questionnaire that examined teaching styles, instructional materials and programs used, participation in professional development on brain-based research, and perceptions of single-sex classes.

The data analysis revealed mixed results. When examining the differences in standardized reading test scores, students in single-gender classes outperformed students in mixed-gender classes in Case One and Case Three schools. When examining the differences in boys’ reading scores, boys in single-gender classes outperformed boys in
coeducational classes in Case One and Case Three schools with a significant difference in Case One school. Although no information was provided from Case One school, the data provided for the difference in learning gains between boys in both classes revealed that boys in the single-gender classes (91.6%) demonstrated a higher mean average than boys in coeducational classes (80.4%) for Case Two school and boys in coeducational classes (67.9%) demonstrated a higher mean average than boys in single-gender classes (52.9%) in Case Three school.

The findings from teachers’ questionnaires revealed that a need for single-gender learning environments was warranted, particularly for boys. In the all-boys classes, the methods of using learning centers daily, the use of manipulatives for engagement and to stay on task, and competition activities to target higher level thinking skills and mastery within a shorter time span was effective. In the all-girl classes, teachers believed that girls needed motivation to take on leadership roles due to their hesitation in discussions. Girls did, however, favor a computer-based approach to reading in which the researcher presumed was “a result of their reserved demeanor” (Basilo, 2008, p. 115).

In response to professional development, only one of the five teachers received training on brain-based teaching. Moreover, none of the teachers received any form of training to develop a knowledge base for the variation between teaching single-gender classes and coeducational classes. The limited knowledge teachers gained derived from personal research and colleagues within the school setting. Two points were concluded from this study: (a) single-gender classes can improve reading standardized test scores, but not all students benefit from single-gender classes learning environments and (b) schools must provide professional development on brain-based instructions and
gender differences so that single-gender programs are successful. In providing recommendations for future studies, the researcher suggested that multiple year studies on schools that demonstrated success with single-gender programs are needed. These studies will provide educators with guidance as to how to set up single-gender classes as well as validate the significance of the program.

Summary

Boys’ underachievement in reading is a prevalent issue and topic of concern facing many educators. With the No Child Left Behind Act (NCLB) giving schools flexibility with single-gender education, many schools are offering single-gender classes as an alternative to address the plethora of explanations significant to probable causes of boys’ underachievement in reading.

Although several studies have indicated that single-gender learning has the potential to improve boys’ performance, more research is needed to validate its long-term effectiveness and specific variables used in the boys’ single-gender culture in mixed-gender schools (Tsolidis & Dobson, 2006). This is partially due to the fact that many schools that implement single-gender programs in coed schools have been short-term with little follow-up. Campbell and Wahl (1998) believed that looking beyond students’ sex is critical because just simply separating the sexes does not maximize learning. More insight is needed to see what pedagogical strategies are used to promote achievement, the frequency of these pedagogical strategies, and students’ perceptions of the program. Liz Maatz, public policy director for the American Association of University Women, declared that more research-based evidence is needed to show that single-gender learning truly works to increase student performance. Additionally, a look at reading instruction
strategies, specific approaches, and the frequency of those approaches will assist teachers with an opportunity to “plan a developmentally appropriate curriculum that enhances their students’ logical and conceptual growth” (On Purpose Associates, 1998, para. 8; The Associated Press, 2006). Most importantly, Basilo (2008) urged that schools must train classroom teachers on how boys and girls learn. In the classroom, teachers are trained to differentiate instruction for all students from struggling learners to advanced learners. However, schools fail to train teacher on how boys and girls learn.

In this study, the goal was to take a detailed look at four elementary schools in one school district in Mississippi. Two of the participating schools implemented a single-gender program in grade four, one school implementing it for five consecutive years and made Adequate Yearly Progress (AYP) for the same five consecutive years and the second school implementing it for two consecutive years and made AYP for five consecutive years. Therefore, the long-term effectiveness of its single-gender program was examined by focusing on the relationship between test scores and the frequency of research-based teaching strategies used that are appropriate and beneficial for male students in reading. The remaining two participating schools have mixed-gender classes in grade four and were used as control groups.

The next chapter, Chapter III: Methodology, will include a detailed description of the research design, hypotheses, participants, instruments, procedure, showing equivalence of two groups, and data analysis.
CHAPTER III
METHODOLOGY

Introduction

The current quasi-experimental study analyzed the impact of single-gender grouping on the reading performance of fourth grade male students and explored the levels of use of research-based reading strategies for their influence on reading achievement of male students in single-gender and mixed-gender class settings. Chapter III includes the following components: research design, hypotheses, participants, instruments, procedure, showing equivalence of two groups, and data analysis.

Research Design

This study employed a nonequivalent groups, posttest-only experimental design with one qualitative component.

<table>
<thead>
<tr>
<th>School</th>
<th>Assignment</th>
<th>n</th>
<th>Treatment</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4th grade</td>
<td>42</td>
<td>single-gender grouping</td>
<td>MCT2</td>
</tr>
<tr>
<td>B</td>
<td>4th grade</td>
<td>55</td>
<td>single-gender grouping</td>
<td>MCT2</td>
</tr>
<tr>
<td>C</td>
<td>4th grade</td>
<td>49</td>
<td>mixed-gender grouping</td>
<td>MCT2</td>
</tr>
<tr>
<td>D</td>
<td>4th grade</td>
<td>49</td>
<td>mixed-gender grouping</td>
<td>MCT2</td>
</tr>
</tbody>
</table>

(MCT2) Mississippi Curriculum Test, Second Edition
The nonequivalent groups, posttest-only experimental design was chosen because random assignment to the two groups was not possible and the Mississippi Curriculum Test, Second Edition is given at the end of the school year. However, this type of study, if carefully designed, yields useful knowledge (Gall, Gall, & Borg, 2007; McMillan, 2004).

**Hypotheses**

The following null hypotheses were used for this study:

Hypothesis One: There is no significant difference in mean reading performance level scores between boys in fourth grade single-gender classes and boys in fourth grade mixed-gender classes. The independent variable is the group (single-gender and mixed-gender), and the dependent variable is the reading performance scores.

Hypothesis Two: There is an equal frequency use of research-based reading strategies among teachers in fourth grade single-gender and mixed-gender classes.

**Participants**

Male students (n=97) in four single-gender fourth grade classes and male students (n=98) in two mixed-gender fourth grade classes, all in public elementary schools in one Mississippi school district, were selected as student participants. Teachers of the single-gender (n=3) and coeducational (n=6) fourth grade classes were selected as teacher participants.

**Instruments**

There were three instruments implemented during the study. First, the System to Enhance Education Performance (STEEP) was used to collect archival data. This instrument assisted the study in obtaining homogeneity among all 195 student participants, due to intact classes, at the onset of the study (VanDer Heyden, Witt, &
Second, the Language Arts section of the Mississippi Curriculum Test, Second Edition (MCT2) was used as a posttest to measure the reading level of all 195 student participants in each of the classroom setting. Third, the Teacher Questionnaire was given to teacher participants, at the end of the study, to obtain homogeneity among all teachers and to solicit information on classroom organization, reading instruction and reading assessment.

System to Enhance Education Performance (STEEP) is a standard protocol of Response to Intervention that consists of a step by step process for identifying student problems and determines the students’ needs (iSTEEP, LLC., 2009). It is conducted using curriculum-based measurement probes in reading, measuring phonemic awareness, reading fluency, and reading comprehension. STEEP has a good reliability rating of greater than 0.90, and Dr. Joe Witt (personal communication, October 30, 2009), Senior Scientist at iSTEEP, stated, “For screening, we believe classification accuracy is the most important form of validity.”

The Mississippi Curriculum Test, Second Edition (MCT2) was developed by Pearson Educational Measurement, and the Language Arts content area of the test is designed to measure student achievement in the following competencies: (a) reading, (b) vocabulary, (c) writing, and (d) grammar; and it scores each student using: Advanced (<162), Proficient (150-162), Basic (138-149), and Minimal (>137) performance levels (Mississippi Department of Education, 2010). It [the test] contains 50 multiple-choice items of varying degrees of difficulty that are aligned to the content, skills, and processes represented by Mississippi’s academic content standards as specified in the state curriculum frameworks and the academic performance level descriptors (Mississippi
Department of Education, 2010). Mrs. Kim Jones (personal communication, September 15, 2010), MCT2 Coordinator, stated, “The MCT2 field test, administered May 7 – 22, 2007, demonstrated a reliability (Cronbach’s alpha) of both all and selected subset groups to be higher than 0.80.” Students in grades 3-8 participated in the field test; however, students only took the reading/language arts or the mathematics test, not both. The results of the field test were used to assess only the validity of the items, not to measure student performance.

The Teacher Questionnaire contains 36 questions soliciting information on demographics, classroom organization, reading instruction, and reading assessment. Five questions required teacher participants to select the answer and 30 questions allowed teacher participants to respond to questions, using a four-point Likert-type scale, by indicating Almost every day, Once or twice a week, Once or twice a month, and Never or hardly ever. One open-ended question was created by the researcher to allow teacher participants to discuss one delivery method or strategy for reading instruction they observed to be more effective with boys. A panel of experts analyzed the open-ended question to determine the face validity of the item. The Teacher Questionnaire was a modification of the fourth grade Teacher Questionnaire developed by National Assessment of Educational Progress (NAEP) in 2003 for supplemental information about the instructional experiences to make the NAEP assessment more accurate and complete (National Center for Education Statistics, 2009). External advisory groups and field testing were used to develop question on the initial test, making sure each question was grounded in educational research. The items were piloted and based upon data results, some items are revised. Finally, the items underwent reviews by item development
contractors again and then by National Center for Education Statistics (NCES). Kerry Gruber (personal communication, February 18, 2010), Project Director of School and Staffing Survey at National Center for Education Statistics, stated that the Teacher Questionnaire is in the public domain and paid for by taxpayers. Therefore, obtaining permission to use this instrument was not required.

Procedure

Approval to initiate this study was obtained from the dissertation committee, Institutional Review Board for the Protection of Human Subjects (I.R.B.) from The University of Mississippi, and the School District’s Superintendent’s office. Upon approval from each review board, the researcher requested and received permission to conduct the study from all principals where the research was conducted. Evidence of permission granted from the superintendent and all principals was provided to IRB as part of the approval process.

Prior to the beginning of this study, an email was sent to all principals to requesting general fourth grade information pertaining to the following: (a) number of male students, (b) single-gender and/or coeducational classes, (c) reading program and strategies, and (d) teacher-student ratio. A cover letter addressed to the teachers was distributed and explained by the principal of each school. Along with the cover letter, the Teacher Questionnaire was given to both teachers of single-gender and mixed-gender classes. The Teacher Questionnaire consisted of three parts. Part one solicited demographics information to obtain homogeneity among all teacher participants, part two solicited information on classroom organization, and part three solicited information on reading instruction and assessment. Archival quantitative data was obtained consisting of
the MCT2 reading scores from May 2010 of male students in both single-gender and mixed-gender fourth grade classes. All data were analyzed using PASW 18 (formally Statistical Package for the Social Sciences).

Showing Equivalence of Two Groups

With respect to using the MCT2 posttest scores, archival quantitative data was obtained consisting of the last administration of the STEEP reading fluency and comprehension test scores of male students in single-gender and mixed-gender classes. This data assisted the study in a neutral way to establish equivalence of the two groups, due to intact classes, prior to taking the MCT2. Although the data of STEEP reports both reading fluency and comprehension performance levels, in contrast to only reading comprehension performance levels of MCT2, research reflects a strong correlation to be evident between reading fluency and reading comprehension achievement (McLaughlin, 2010; Pikulski & Chard, 2005; Savage, 2007; Tompkins, 2002).

Data Analysis

Levene’s Test for Equality of Variances was the statistical test performed on the data from the STEEP reading test scores to show group equivalence. Independent t-test of Means was the statistical test performed on the data from the MCT2 Language Arts scores to determine whether there was a significant difference in mean reading performance level scores between boys in fourth grade single-gender classes and mixed-gender classes.

Frequency distributions and clustered bar charts were employed on the data from the Teacher Questionnaire to determine if there was an equal frequency use of research-based reading strategies among teachers of fourth grade single-gender and mixed-gender
classes. Additionally, a clustered bar chart was used for analyzing assessment methods for reading instruction. Themes were generated and frequency distributions were used on the teacher comments for one delivery method/strategy for reading instruction observed to be more effective in both classroom settings, were analyzed using Levene’s Test for Equality of Variances, frequency distributions, and clustered bar charts was completed using PASW 18 (formally SPSS). When inferential statistics were generated, the level of confidence (p< .05) was exerted as the criterion for statistical significance. The computing of the Independent t-test of Means for the MCT2 scores was done by hand due to summary data that could not be inputted in PASW18.

The next chapter, Chapter IV: Results, will include a detailed description of data management, showing equivalence of both groups, demographic information of teacher participants, classroom organization of teacher participants, and results of the research hypotheses and teacher comments.
CHAPTER IV
RESULTS

Introduction

This study consisted of two purposes: (a) to determine whether there are significant differences in mean reading performance level scores between boys in fourth grade single-gender classes and boys in fourth grade mixed-gender classes and (b) to explore the frequency use of research-based reading strategies in single-gender and mixed-gender classes among teachers of these classes. Chapter IV presents research results for the analysis of the data received from archival data of the STEEP and MCT2 tests and from the teacher participants through the Teacher Questionnaire. The data was analyzed using Levene’s Test for Equality of Variances, Independent t-test of Means by hand, frequency distributions, and clustered bar charts.

Data Management

From four elementary schools in one suburban/rural school district in Mississippi, archival data of 195 STEEP test scores and four MCT2 Language Arts reports were collected on all student participants from the 2009/2010 school year. STEEP test scores were used to address initial equivalence of the variance of scores between single-gender and mixed-gender students prior to taking the MCT2 Language Arts test. MCT2 Language Arts scores were used in this study at the school level and not at the level of individual students. Hence, mean comparisons of levels of performance (i.e., % Minimal,
% Basic, % Proficient, % Advanced) were at the school level only for single-gender and mixed-gender schools. Additionally, a total of 10 teacher questionnaires were distributed to teachers, both of single-gender and mixed-gender 2009/2010 classes, from the four schools used in this study. Only nine questionnaires were used in this study due to the absence of one teacher, resulting in a participation rate of 90 percent.

**Demographic Information of Teacher Participants**

Demographic information included ethnicity, gender, years of teaching, educational background with language arts emphasis areas, National Board Certification, and attendance of professional development for brain-based learning/instruction (single-gender teachers only). These demographics are presented in tables 1, 2, 3, 4, and 5.

As shown in Tables 1 and 2, there were nine teachers included in the questionnaire. Analysis determined that 100% (n=9) of the participants were Caucasian female. Twenty-two percent (n=2) of the participants had six or less years of teaching experience and seventy-eight percent (n=7) of the participants had seven or more years of teaching experience. Eleven percent (n=1) were National Board Certified, and two single-gender teachers received training twice for brain-based learning and instruction.

**Table 1**

<table>
<thead>
<tr>
<th>School</th>
<th>Number of Teachers Surveyed</th>
<th>Ethnicity/Gender</th>
<th>Average Teaching Experience</th>
<th>National Board Certified</th>
<th>Attendance of Professional Development Training for Brain-based Learning/Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>Caucasian/Female</td>
<td>8.5yrs.</td>
<td>No</td>
<td>0 times</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>Caucasian/Female</td>
<td>11yrs.</td>
<td>No</td>
<td>2 times for each teacher</td>
</tr>
</tbody>
</table>
Table 2

Demographic Information for Teachers of Mixed-gender Classes

<table>
<thead>
<tr>
<th>School</th>
<th>Number of Teachers Surveyed</th>
<th>Ethnicity/Gender</th>
<th>Average Teaching Experience</th>
<th>National Board Certified</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>4</td>
<td>Caucasian/Female</td>
<td>15.5yrs.</td>
<td>1</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Caucasian/Female</td>
<td>5yrs.</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 3 and 4, below, displays the degree of academic achievement of the teacher population involved in this research. Fifty-six percent (n=5) of the participants’ highest degree is a Bachelor and forty-four percent (n=4) of the participants’ highest degree is a Master. As for reading emphasis areas, thirty-three percent (n=3) of the participants had a minor in reading/language arts/literacy, twenty-two percent (n=2) of the participants had a minor in English, eleven percent (n=1) had a minor in both reading/language arts/literacy and English.

Table 3

Educational Background of Teachers Surveyed

<table>
<thead>
<tr>
<th>Number of Teachers with Bachelors</th>
<th>Percent of Teachers with Bachelors</th>
<th>Number of Teachers with Masters</th>
<th>Percent of Teachers with Masters</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>56%</td>
<td>4</td>
<td>44%</td>
</tr>
</tbody>
</table>
Table 4

*Teachers with Emphasis Areas of Language Arts*

<table>
<thead>
<tr>
<th>Number of Teachers with a Minor in Reading/Literacy</th>
<th>Number of Teachers with a Minor in Reading/Literacy</th>
<th>Number of Teachers with a Minor in Reading/Literacy</th>
<th>Number of Teachers with a Minor in Reading/Literacy</th>
<th>Number of Teachers with a Minor in Reading/Literacy</th>
<th>Number of Teachers with a Minor in Reading/Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>Teachers</td>
<td>Teachers</td>
<td>Teachers</td>
<td>Teachers</td>
<td>Teachers</td>
</tr>
<tr>
<td>with a Minor in English</td>
<td>with a Minor in English</td>
<td>with a Minor in English</td>
<td>with a Minor in English</td>
<td>with a Minor in English</td>
<td>with a Minor in English</td>
</tr>
<tr>
<td>Reading/Literacy</td>
<td>Reading/Literacy</td>
<td>Reading/Literacy</td>
<td>Reading/Literacy</td>
<td>Reading/Literacy</td>
<td>Reading/Literacy</td>
</tr>
<tr>
<td>Arts/Literacy</td>
<td>Arts/Literacy</td>
<td>Arts/Literacy</td>
<td>Arts/Literacy</td>
<td>Arts/Literacy</td>
<td>Arts/Literacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>33%</td>
<td>2</td>
<td>22%</td>
<td>1</td>
<td>11%</td>
</tr>
</tbody>
</table>

*Classroom Organization of Teacher Participants*

Classroom organization consists of classroom setting, number of students, hours spent on language arts instruction, and groups created for reading instruction. These organization areas are presented in Table 5.

Table 5

*Classroom Organization of Teacher Participants*

<table>
<thead>
<tr>
<th>Classroom Setting</th>
<th>Average Number of Students in Classroom</th>
<th>Average Hours Spent on Language Arts Instruction Per Week</th>
<th>Groups for Reading Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Gender</td>
<td>24</td>
<td>10</td>
<td>Ability, Interest, Diversity, Gender</td>
</tr>
<tr>
<td>Mixed-Gender</td>
<td>23</td>
<td>10</td>
<td>Ability, Interest, Diversity</td>
</tr>
</tbody>
</table>

As shown in Table 5, the average number of students in single-gender classes was 24, and the average number of students in mixed-gender classes was 23. Both classroom settings spent an average of 10 hours per week on language arts instruction formed reading groups based on the following: ability levels, interest, and diversity. Nevertheless, single-gender classes formed reading groups based on gender.
Showing Equivalence of Two Groups

Table 6 reports findings regarding the test of equality of variances. The Levene’s test of homogeneity of variance was used to test the assumption that each group had approximately the same variance at the onset of the study. Levene’s test indicated no violation of the assumption of homogeneity \( F(193) = 3.804; p = .053 \). Therefore, differences in the variances of the two groups existed but did not rise to the level of significance. According to Salkind (2000), the Levene’s test for equality of variances evaluates whether the population variances of two independent samples are equal.

Table 6

<table>
<thead>
<tr>
<th>Levene Statistic</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.804</td>
<td>.053</td>
</tr>
</tbody>
</table>

Note. Not significant at the p > .05 level

Results for Hypotheses

Hypothesis One

There is no significant difference in mean reading performance level scores between boys in fourth grade single-gender classes and boys in fourth grade mixed-gender classes.

The Independent t-test of Means was conducted by hand to compare the performance level means (Minimal, Basic, Proficient, Advanced) of boys in fourth grade single-gender and mixed-gender classes. Each dependent variable was set at alpha .05, a critical value of +/-1.96, and degrees of freedom of 373. Results shown in Table 7 indicate the means of each performance level, test statistic values, and degrees of freedom. The Independent t-test of Means at the Minimal performance level indicated a
significant difference between the scores of fourth grade boys in single-gender (M=5.9) and mixed-gender classes (M=4.25) with scores of single-gender classes being significant; t(373)=14.41. At the Basic performance level, the Independent t-test of Means indicated a significant difference between the scores of fourth grade boys in single-gender (M=31.2) and mixed-gender classes (M=17) with scores of single-gender classes being significant; t(373)=17.21. At the Proficient performance level, the Independent t-test of Means indicated a significant difference between the scores of fourth grade boys in single-gender (M=46) and mixed-gender classes (M=48.05) with scores of mixed-gender classes being significant; t(373)= -3.43. At the Advanced level, the Independent t-test of Means indicated a significant difference between the scores of fourth grade boys in single-gender (M=16.9) and mixed-gender classes (M= 30.7) with scores of mixed-gender classes being significant; t(373)= -14.84. Due to significant differences on all four performance levels, Hypothesis One was rejected.

Table 7

Performance Level Means for Both Class Settings

<table>
<thead>
<tr>
<th>Class Settings</th>
<th>Single-Gender</th>
<th>Mixed-Gender</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>5.9</td>
<td>4.25</td>
<td>14.41*</td>
<td>373</td>
</tr>
<tr>
<td>Basic</td>
<td>31.2</td>
<td>17</td>
<td>17.2*</td>
<td>373</td>
</tr>
<tr>
<td>Proficient</td>
<td>46</td>
<td>48.05</td>
<td>-3.43**</td>
<td>373</td>
</tr>
<tr>
<td>Advanced</td>
<td>16.9</td>
<td>30.7</td>
<td>-14.84**</td>
<td>373</td>
</tr>
</tbody>
</table>

Note. * = Critical value of 1.96, ** = Critical value of -1.96

Hypothesis Two

There is an equal frequency use of research-based reading strategies among teachers in fourth grade single-gender and mixed-gender classes.
Frequency distributions and clustered bar charts were used to compare the frequency use of four research-based reading strategies among teachers in fourth grade single-gender and mixed-gender classes. Statistical analysis was not performed on the data due to small sample size. Thus, reject or fail to reject the results could not be concluded. In Table 8 and Figure 1, results indicate the frequency use of general strategies implemented in both class settings. Four items on the questionnaire addressed how often single-gender and mixed-gender teachers implemented general reading strategies in their classrooms. The questions were addressed using a Likert-type scale of 1-4, with 1 representing “never or hardly ever” to the statement and 4 representing “almost every day” to the statement. The four questions were clustered and a mean and median score were obtained. The clustered mean score of the total population of both single-gender and mixed-gender teachers surveyed was 3.50 with a median score of 4 (Table 8). For teachers of single-gender classes, the clustered mean score was 4.00 with a median score of 4 (Table 8). For teachers of mixed-gender classes, the clustered mean score was 3.37 with a median score of 4 (Table 8).

Based on the results revealed in the survey, the majority implemented general reading strategies almost daily in the classroom. Teachers of both class settings surveyed (M=3.67) correspondingly stated they presented information in small chunks almost daily (Q-k.). The teachers of both class settings surveyed (M= 3.89) also stated they allowed their students to read silently or independently almost daily (Q-p.). Teachers of both class settings surveyed (M=2.89) likewise stated they engaged their students in hands-on reading activities and learning centers at least once or twice a week (Q-f.). Nevertheless, frequency variance was shown between teachers of single-gender classes (M=4.00) using
read alouds almost daily and teachers of mixed-gender classes (M=3.33) using read
alouds once or twice a week (Q-a.).

Table 8

*General Strategies Implemented in Both Class Settings*

<table>
<thead>
<tr>
<th>Survey Questions</th>
<th>Single-gender</th>
<th>Mixed-gender</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Md</td>
<td>M</td>
</tr>
<tr>
<td>Q-a.</td>
<td>4.00</td>
<td>4</td>
<td>3.33</td>
</tr>
<tr>
<td>Q-f.</td>
<td>3.00</td>
<td>3</td>
<td>2.83</td>
</tr>
<tr>
<td>Q-k.</td>
<td>4.00</td>
<td>4</td>
<td>3.50</td>
</tr>
<tr>
<td>Q-p.</td>
<td>4.00</td>
<td>4</td>
<td>3.83</td>
</tr>
<tr>
<td>Total</td>
<td>4.00</td>
<td>4</td>
<td>3.37</td>
</tr>
</tbody>
</table>

*Note.* M=mean, Md=median

Results shown in Figure 1 present the overall mean summary of each general
strategy used among teachers in single-gender and mixed-gender classes. Analyzing the
results as a whole, the frequency use of general reading strategies was greater with
teachers of single-genders classes than with teachers of mixed gender classes (Figure 1).
Figure 1:

*Mean Summary of General Strategies*

![Bar chart showing frequency of general strategies for single-gender and mixed-gender classes.]

**Note.** 1=Never or hardly ever, 2=Once or twice a month, 3=Once or twice a week, 4=Almost daily

**Note.** Q-a.=Read alouds, Q-f.=Hands-on and learning centers, Q-k.=Information in small chunks, Q-p.=Read silently or independently

In Table 9 and Figure 2, results indicate the frequency use of basal-based strategies incorporated in both class settings. Four items on the questionnaire addressed how often single-gender and mixed-gender teachers implemented the basal-based approach in their classrooms. The questions were addressed using a Likert-type scale of 1-4, with 1 representing “never or hardly ever” to the statement and 4 representing “almost every day” to the statement. The four questions were clustered and a mean and median score were obtained. The clustered mean score of the total population of single-gender and mixed-gender teachers surveyed was 2.75 with a median score of 3 (Table 9). For teachers of single-gender classes, the clustered mean score was 2.75 with a median score of 3 (Table 9). For teachers of mixed-gender classes, the clustered mean score was 2.75 with a median score of 3 (Table 9).
Based on the results revealed in the survey, the majority implemented basal-based strategies once or twice a week in the classroom. Teachers of both class settings surveyed (M=2.78) correspondingly stated they incorporated workbooks and worksheets into their reading instruction once or twice a week (Q-g.). The teachers of both class settings (M=3.00) also stated they placed their students in reading groups once or twice a week (Q-l). Frequency variance was shown between teachers of single-gender classes (M=2.00) using grade level reading text once or twice a month and teachers of mixed-gender classes (M=3.00) using grade level text once or twice a week (Q-b.). Likewise, frequency variance was shown between teachers of single-gender classes (M=3.00) pairing low-achieving students with high-achieving students once or twice a week and teachers of mixed-gender classes (M=2.33) pairing low-achieving students with high-achieving students once or twice a month (Q-q.).

Table 9

<table>
<thead>
<tr>
<th>Basal-based Strategies Implemented in Both Class Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Questions</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Q-b.</td>
</tr>
<tr>
<td>Q-g.</td>
</tr>
<tr>
<td>Q-l.</td>
</tr>
<tr>
<td>Q-q.</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

*Note.* M=mean, Md=median

Results shown in Figure 2 present the overall mean summary of each basal-based strategy used between teachers in single-gender and mixed-gender classes. Analyzing the
results as a whole, the frequency use of the basal-based approach was the same between teachers of single-gender and mixed gender classes (Figure 2). Nevertheless, teachers of single-gender classes used grade level reading text less frequently than teachers of mixed-gender classes and paired low-achieving students with high-achieving students more frequently than teachers of mixed-gender classes (Figure 2).

Figure 2

Mean Summary of Basal-based Strategies

<table>
<thead>
<tr>
<th>Basal-based Strategies</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.b.</td>
<td>2</td>
</tr>
<tr>
<td>Q.g.</td>
<td>3</td>
</tr>
<tr>
<td>Q.l.</td>
<td>4</td>
</tr>
<tr>
<td>Q.q.</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. 1=Never or hardly ever, 2=Once or twice a month, 3=Once or twice a week, 4=Almost daily

Note. Q-b.=Grade level reading text, Q-g.=Workbooks/worksheets, Q-l.=Reading groups, Q-q.=Pairing low-achieving with high-achieving

In Table 10 and Figure 3, results indicate the frequency use of language-based strategies incorporated in both class settings. Four items on the questionnaire addressed how often single-gender and mixed-gender teachers implemented the language-based approach in their classrooms. The questions were addressed using a Likert-type scale of 1-4, with 1 representing “never or hardly ever” to the statement and 4 representing “almost every day” to the statement. The four questions were clustered and a mean and
median score were obtained. The clustered mean score of the total population of single-gender and mixed-gender teachers surveyed was 2.92 with a median score of 3 (Table 10). For teachers of single-gender classes, the clustered mean score was 3.08 with a median score of 3 (Table 10). For teachers of mixed-gender classes, the clustered mean score was 2.83 with a median score of 3 (Table 10).

Based on the results revealed in the survey, the majority implemented language-based strategies once or twice a week in the classroom. Teachers of both class settings surveyed (M=3.00) correspondingly stated they provide students opportunities to write about personal experiences once or twice a week (Q-h.). Frequency variance was shown between teachers of single-gender classes (M=4.00) allowing students to write about something they read almost daily and teachers of mixed-gender classes (M=3.17) allowing students to write about something read once or twice a week (Q-c.). Frequency variance was also shown between teachers of single-gender classes (M=4.00) helping students to understand new words almost daily and teachers of mixed-gender classes (M=3.33) helping students to understand new words once or twice a week (Q-m). Additionally, frequency variance was shown between teachers of single-gender classes (M=1.33) hardly ever engaging their students in reader’s theater/role play and teacher of mixed-gender classes (M=1.83) engaging their students in reader’s theater/role play once or twice a month (Q-r.).
Table 10

<table>
<thead>
<tr>
<th>Survey Questions</th>
<th>Single-gender</th>
<th></th>
<th>Mixed-gender</th>
<th></th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Md</td>
<td>M</td>
<td>Md</td>
<td>M</td>
</tr>
<tr>
<td>Q-c.</td>
<td>4.00</td>
<td>4</td>
<td>3.17</td>
<td>3</td>
<td>3.44</td>
</tr>
<tr>
<td>Q-h.</td>
<td>3.00</td>
<td>3</td>
<td>3.00</td>
<td>3</td>
<td>3.00</td>
</tr>
<tr>
<td>Q-m.</td>
<td>4.00</td>
<td>4</td>
<td>3.33</td>
<td>4</td>
<td>3.56</td>
</tr>
<tr>
<td>Q-r.</td>
<td>1.33</td>
<td>1</td>
<td>1.83</td>
<td>2</td>
<td>1.67</td>
</tr>
<tr>
<td>Total</td>
<td>3.08</td>
<td>3</td>
<td>2.83</td>
<td>3</td>
<td>2.92</td>
</tr>
</tbody>
</table>

*Note:* M=mean, Md=median

Results shown in Figure 3 present the overall mean summary of each language-based strategy used between teachers in single-gender and mixed-gender classes. Analyzing the results as a whole, the frequency use of the language-based approach was the same between teachers of single-gender and mixed gender classes (Figure 3). Nevertheless, teachers of single-gender classes allowed students to write about something they read and assisted students in understanding new words more frequently than teachers of mixed-gender classes, but hardly ever engaged students in reader’s theater or role play (Figure 3).
In Table 11 and Figure 4, results indicate the frequency use of literature-based strategies incorporated in both class settings. Four items on the questionnaire addressed how often single-gender and mixed-gender teachers implemented the literature-based approach in their classrooms. The questions were addressed using a Likert-type scale of 1-4, with 1 representing “never or hardly ever” to the statement and 4 representing “almost every day” to the statement. The four questions were clustered and a mean and median score were obtained. The clustered mean score of the total population of single-gender and mixed-gender teachers surveyed was 3.14 with a median score of 3 (Table 11). For teachers of single-gender classes, the clustered mean score was 3.67 with a median score of 4 (Table 11). For teachers of mixed-gender classes, the clustered mean score was 2.88 with a median score of 3 (Table 11).
Based on the results revealed in the survey, the majority implemented literature-based strategies once or twice a week in the classroom. Teachers of both class settings surveyed (M=3.67) correspondingly stated they read books or allowed students to read books chosen by them almost daily (Q-d). Frequency variance was shown between teachers of single-gender classes (M=4.00) using trade books to integrate other subject areas almost daily and teachers of mixed-gender classes (M=2.83) using trade books to integrate other subject areas once or twice a week (Q-i.). Frequency variance was also shown between teachers of single-gender classes (M=4.00) using literature circles almost daily and teachers of mixed-gender classes (M=3.00) using literature circles once or twice a week (Q-n.). Additionally, frequency variance was shown between teachers of single-gender classes (M=2.67) allowing students to complete projects or activities about their text once or twice a week and teacher of mixed-gender classes (M=2.17) allowing students to complete projects or activities about their text once or twice a month (Q-s.).

Table 11

<table>
<thead>
<tr>
<th>Survey Questions</th>
<th>Single-gender</th>
<th>Mixed-gender</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Md</td>
<td>M</td>
</tr>
<tr>
<td>Q-d.</td>
<td>4.00</td>
<td>4</td>
<td>3.50</td>
</tr>
<tr>
<td>Q-i.</td>
<td>4.00</td>
<td>4</td>
<td>2.83</td>
</tr>
<tr>
<td>Q-n.</td>
<td>4.00</td>
<td>4</td>
<td>3.00</td>
</tr>
<tr>
<td>Q-s.</td>
<td>2.67</td>
<td>3</td>
<td>2.17</td>
</tr>
<tr>
<td>Total</td>
<td>3.67</td>
<td>4</td>
<td>2.88</td>
</tr>
</tbody>
</table>

Note. M=mean, Md=median
Results shown in Figure 4 present the overall mean summary of each literature-based strategy used between teachers in single-gender and mixed-gender classes.

Analyzing the results as a whole, the frequency use of the literature-based approach was greater with teachers of single-gender classes than teachers of mixed-gender classes (Figure 4).

Figure 4

*Mean Summary of Literature-based Strategies*

<table>
<thead>
<tr>
<th>Literature-based Strategies</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.d. (Read books chosen by students)</td>
<td>4</td>
</tr>
<tr>
<td>Q.i. (Tradebooks to integrate other subject areas)</td>
<td>3</td>
</tr>
<tr>
<td>Q.n. (Literature circles)</td>
<td>2</td>
</tr>
<tr>
<td>Q.s. (Group projects or activities about reading)</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. 1=Never or hardly ever, 2=Once or twice a month, 3=Once or twice a week, 4=Almost daily

Note. Q-d.=Read books chosen by students, Q-i.=Tradebooks to integrate other subject areas, Q-n.=Literature circles, Q-s.=Group projects or activities about reading

In Table 12 and Figure 5, results indicate the frequency use of technology-based strategies incorporated in both class settings. Three items on the questionnaire addressed how often single-gender and mixed-gender teachers implemented the technology-based approach in their classrooms. The questions were addressed using a Likert-type scale of 1-4, with 1 representing “never or hardly ever” to the statement and 4 representing “almost every day” to the statement. The three questions were clustered and a mean and
median score were obtained. The clustered mean score of the total population of single-gender and mixed-gender teachers surveyed was 2.00 with a median score of 2 (Table 12). For teachers of single-gender classes, the clustered mean score was 2.78 with a median score of 3 (Table 12). For teachers of mixed-gender classes, the clustered mean score was 1.61 with a median score of 1 (Table 12).

Based on the results revealed in the survey, the majority implemented technology-based strategies once or twice a month in the classroom. Frequency variance was shown between teachers of single-gender classes (M=1.67) using movies, videos, filmstrips, and television once or twice a month and teachers of mixed-gender classes (M=1.33) hardly ever using movies, videos, filmstrips, and television (Q-e.). Frequency variance was shown between teachers of single-gender classes (M=3.00) using tapes, compact discs (cds), and records once or twice a week and teachers of mixed-gender classes (M=1.50) using tapes, compact discs (cds), and records once or twice a month (Q-j.). Frequency variance was also shown between teachers of single-gender classes (M=3.67) incorporating computer-based reading activities almost daily and teachers of mixed-gender classes (M=2.00) incorporating computer-based reading activities once or twice a month (Q-o.).
### Table 12

*Technology-based Strategies Implemented in Both Class Settings*

<table>
<thead>
<tr>
<th>Survey Questions</th>
<th>Single-gender</th>
<th>Mixed-gender</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Md</td>
<td>M</td>
</tr>
<tr>
<td>Q-e.</td>
<td>1.67</td>
<td>2</td>
<td>1.33</td>
</tr>
<tr>
<td>Q-j.</td>
<td>3.00</td>
<td>4</td>
<td>1.50</td>
</tr>
<tr>
<td>Q-o.</td>
<td>3.67</td>
<td>4</td>
<td>2.00</td>
</tr>
<tr>
<td>Total</td>
<td>2.78</td>
<td>3</td>
<td>1.61</td>
</tr>
</tbody>
</table>

*Note.* M=mean, Md=median

Results shown in Figure 5 present the overall mean summary of each technology-based strategy used between teachers in single-gender and mixed-gender classes.

Analyzing the results as a whole, the frequency use of the technology-based approach was greater with teachers of single-gender classes than teachers of mixed-gender classes (Figure 5).
**Figure 5**

*Mean Summary of Technology-based Strategies*

<table>
<thead>
<tr>
<th>Literature-based Strategies</th>
<th>Single-gender</th>
<th>Mixed-gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q-e.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Q-j.</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Q-o.</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note.* 1=Never or hardly ever, 2=Once or twice a month, 3=Once or twice a week, 4=Almost daily

*Note.* Q-e.=Movies, videos, filmstrips, television, Q-j.=Tapes, cds, records, Q-o.=Computer-based activities

**Assessment Strategies for Reading Instruction**

Eleven items on the questionnaire addressed strategies used to assess students’ progress in reading in single-gender and mixed-gender classes. Items were answered using a Likert-type 1-4 scale, with 1 representing “never or hardly ever” to the statement and 4 representing “almost every day” to the statement. The eleven items were compiled and charted to analyze the frequency use of each assessment strategy by class setting (Figure 6).
Based on the results revealed in the survey, the majority used strategies to assess students’ progress in reading at least twice a week or more. Teachers of both class settings surveyed correspondingly stated they completed teacher observations (Q-8f), read paragraph-length written responses about what students read (Q-8h), and gave short-answer tests (Q-8j) at least twice a week or more. Teachers of both class settings surveyed also equally stated they gave immediate responses for assignments and homework (Q-8d) almost daily. Likewise, teachers of both class settings surveyed stated they allowed students to complete reading portfolios (Q-8e) and projects/presentations (Q-8k) at least once a month. Frequency variance was shown between teachers of single-gender classes allowing students to complete self-evaluations once or twice a week and teachers of mixed-gender classes allowing students to complete self-evaluations once or
twice a month (Q-8a). Frequency variance was also shown between teachers of single-gender classes engaging in teacher-student discussions (Q-8b), providing helpful and guiding comments (Q-8c), giving oral reading assignments (Q-8g), and multiple choice tests (Q-8i) almost daily and teachers of mixed-gender employing the same assessment strategies once or twice a week.

Narrative Comments of One Observed Delivery Method/Strategy

One item on the questionnaire addressed the observation of one delivery method or strategy for reading instruction shown to be more effective with fourth grade boys in single-gender and mixed-gender classes. The question was answered using an open-ended response. Three major themes pertaining to this question emerged from the information taken from the questionnaire. The three major themes were: hands-on learning, choice in text selection, and literature circles. Table 13 presents the frequency count of the three major themes among teachers of single-gender and mixed-gender classes.

Table 13

<table>
<thead>
<tr>
<th>Major Themes in One Observed Delivery Method/Strategy</th>
<th>Major Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hands-on activities</td>
</tr>
<tr>
<td>Single-gender</td>
<td>2</td>
</tr>
<tr>
<td>Mixed-gender</td>
<td>1</td>
</tr>
</tbody>
</table>

Teachers of both class settings gave the following responses regarding hands-on learning:

Single-gender:
“*Yes. Boys are more hands-on learners. They also do better when the material/skills are broken down into smaller increments.*”
Mixed-gender:
“Yes. Boys need more hands-on experience than girls. They are busier.”

Teachers of mixed-gender class settings gave the following responses regarding giving boys choices in text selection:

Mixed-gender:
“Yes. The boys in my homeroom class love to choose their own books and read independently. They take pride in their new found genres. They also enjoy writing about what they read and/or learned. It’s great to see their thoughts and how they connect to the text.”

“Yes. Boys respond better to reading instruction if they are allowed to choose their own book/genre.”

Teachers of both class settings gave the following responses regarding literature circles.

Single-gender:
Yes. I grouped my students according to ability and chose books that I knew would appeal to each group. Each group participated in literature groups with open-ended discussions.”

Mixed-gender:
“Yes, interest-based reading groups. They thrive with this and take pride on leadership and really hold each other accountable.”

“Yes, literature circles where only boys were in the group and it was their choice on what to read.”

Summary

In Chapter IV, the results were presented. Hypothesis One was tested using Independent t-test of Means by hand. There were significant differences found on the mean scores of all four performance levels (Minimal, Basic, Proficient, Advanced) between boys in fourth grade single-gender classes and boys in mixed-gender classes. More boys in single-gender fourth grade classes scored on the Minimal and Basic performance levels than boys in mixed-gender fourth grade classes, and more boys in mixed-gender classes scored on the Proficient and Advanced performance levels than boys in single-gender classes. Due to significant differences on all four performance
levels, Hypothesis One was rejected. Hypothesis Two was tested using frequency
distributions and cluster bar charts. The frequency use of general reading strategies, the
literature-based approach, and the technology-based approach was greater with teachers
of single-gender classes. The frequency use of the basal-based approach and the
language-based approach was equal among teachers in both class settings. Assessment
strategies for reading instruction were analyzed using a clustered bar chart. The majority
of the teachers surveyed used strategies to assess students’ progress in reading at least
twice a week or more. However, there were frequency variances shown in five of the
eleven assessment strategies between teachers of single-gender and teachers of mixed-
gender classes. Three major themes were generated and a frequency table was used to
report narrative comments on one delivery method/strategy observed to be effective for
fourth grade boys in both class settings. The three major themes were hands-on activities,
choice in text selection, and literature circles.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents a summary of the study. A discussion of the results and recommendations for further research are also presented.

Purpose of the Study

This study consisted of two purposes: (1.) to determine whether there are significant differences in mean reading performance level scores between boys in fourth grade single-gender classes and boys in mixed-gender classes, and (2.) to explore the frequency use of research-based reading strategies in single-gender and mixed-gender classes among teachers of these classes. The 2009-2010 mean reading scores of male fourth grade students who had taken the MCT2 were used to measure significant differences. The Teacher Questionnaire from teachers of these classes was used to measure frequency use of research-based reading strategies. The study population consisted of 195 student participants, from 4 different schools in one mid-South school district, and 9 teacher participants of these students. The control group consisted of 98 students from two of the four schools in the study. The control group had not been exposed to any type of single-gender class environment. The study proposed two null hypotheses: (a) There is no significant difference in mean reading performance levels between boys in fourth grade single-gender classes and boys in fourth grade mixed-gender classes, and (b) There is an equal frequency use of research-based reading strategies among teachers in fourth grade single-gender and mixed-gender classes.
Conclusions

The findings of this research study indicated the following conclusions:

1. There were more boys in fourth grade single-gender classes to score on the Minimal and Basic performance levels than boys in fourth grade mixed-gender classes.
2. There were more boys in fourth grade mixed-gender classes to score Proficient and Advanced performance levels than boys in fourth grade single-gender classes.
3. General reading strategies, the literature-based approach, and the technology-based approach were implemented more frequently by teachers of single-gender classes.
4. The basal-based approach and the language-based approach were equally implemented among teachers in single-gender and mixed-gender classes.
5. The majority of the teachers surveyed used a variety of strategies to assess students’ progress in reading at least twice a week or more.
6. Hands-on activities, choice in text selection, and literature circles were three major themes that emerged from teacher narratives on one delivery method observed to be effective with boys.

Discussion of Results

Two hypotheses were examined in this study. The first hypothesis examined the differences in reading performance levels of fourth grade male students in single-gender classes and fourth grade male students in mixed-gender classes. The results showed that there were significant differences in the mean reading performance levels between fourth grade male students in single-gender and mixed-gender classes. The significance on the Minimal and Basic performance levels came from boys in fourth grade single-gender classes, and the significance on the Proficient and Advanced performance levels came from boys in fourth grade mixed-gender classes. The findings of this study support
American Association of University Women (1998) and Riordan (1990) who concluded the following: (a) no evidence was found to support single-gender education more so than coed education and (b) single-gender education was less beneficial to academic needs for boys.

The second hypothesis explored the frequency use of research-based reading strategies used by teachers of single-gender and mixed-gender classes. The results revealed that, overall; teachers of both class settings used a combination of the research-based reading approaches to maximize their instruction. The results also indicated that teachers of single-gender classes used general reading strategies, the literature-based approach, and the technology-based approach more frequently than teachers of mixed-gender classes. The results also revealed that the frequency use of the basal-based approach and the language-based approach was equal among teachers in both class settings. The findings of this study support Giordano (2000), Hall (1972), and Ruddell (2006) who indicated that most teachers use the language-based approach in conjunction with the basal-based approach to engage their students in rich, authentic, developmentally appropriate methods. The findings also support Dr. Marie Carbo (2009) and Warrington and Younger (2006) who strongly recommended that teachers should incorporate a balanced approach to teaching reading, using a mixture of the four effective approaches stated in Chapter II, to ensure all students have an opportunity to be successful readers.

The assessment strategies explored the frequency use of various strategies to assess students’ progress in reading. The results revealed that teachers of both class settings used various strategies to assess students’ progress in reading at least twice a week or more. These strategies consisted of the following: teacher-student discussions, helpful and guiding comments, immediate feedback for assignments, teacher
observations, oral reading assignments, paragraph-length written responses, multiple choice tests, and short-answer tests. The results also indicated that teachers of both class settings used self-evaluations, reading portfolios, and projects/presentations to assess students’ progress in reading at least once a month. The findings support The National Literacy Trust (2001), who gave an analysis of recommended actions, from previous studies, for assessment practices to assist in improving the reading performance of male students.

Three major themes emerged from the teacher narrative comments on one method/strategy observed to be effective with boys. The three major themes were: hands-on activities, choice in text selection, and literature circles. Teachers of both class settings gave the following responses regarding hands-on learning:

Single-gender:
“Yes. Boys are more hands-on learners. They also do better when the material/skills are broken down into smaller increments.”

Mixed-gender:
“Yes. Boys need more hands-on experience than girls. They are busier.”

Teachers of mixed-gender class settings gave the following responses regarding giving boys choices in text selection:

Mixed-gender:
“Yes. The boys in my homeroom class love to choose their own books and read independently. They take pride in their new found genres. They also enjoy writing about what they read and/or learned. It’s great to see their thoughts and how they connect to the text.”

“Yes. Boys respond better to reading instruction if they are allowed to choose their own book/genre.”

Teachers of both class settings gave the following responses regarding literature circles.

Single-gender:
Yes. I grouped my students according to ability and chose books that I knew would appeal to each group. Each group participated in literature groups with open-ended
discussions."

Mixed-gender:
"Yes, interest-based reading groups. They thrive with this and take pride on leadership and really hold each other accountable."

“Yes, literature circles where only boys were in the group and it was their choice on what to read.”

Due to small teacher population size in this study, results are not transferable. However, the findings of this study support Gunzelmann and Connell (2006) who, to counteract boys’ underachievement, emphasized using the following instructional methods: (a) incorporating hands-on materials and physical movement, (b) having a voice in the selection of reading materials, and (c) establishing a supportive learning environment where boys feel safe to express themselves. Research by Basilio (2008) also reported that the use of manipulatives for engagement and to stay on task was effective.

Recommendations for Further Study

The following recommendations were derived as avenues for further study and practice of single-gender education and reading instruction for elementary male students:

1. Conduct a replication of this study by implementing the following components:
   
   (A) Increase the sample size of the study. The current study used 97 boys in single-gender classes, 98 boys in mixed-gender classes, and 9 teachers of these class settings. A replication of this study could be conduct with larger student and teacher samples to determine if findings can be generalized.

   (B) Include more school districts in different geographical locations. The current study used one mid-South school district. A replication of the current study using schools from different geographical locations will further increase generalization of the study.
2. Future research can be conducted to determine the contributing factors of higher reading performance levels from students of mixed-gender classes.

3. Additional professional development may be necessary in order to effectively implement strategies in single-gender classes. Teachers of the two schools that implemented the single-gender program for two or more years received professional development on brain-based learning. Training on brain-based learning is helpful, but understanding the differences between implementing instruction in single-gender classes and mixed-gender classes is essential.
BIBLIOGRAPHY


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APPENDIX A

Institutional Review Board Approval
June 30, 2010

Ms. Chrystal Hodges  
Curriculum and Instruction  
1918 Briar Ridge Road  
Tupelo, MS  38804

Dr. Bobbie Smothers-Jones  
Curriculum and Instruction  
University, MS  38677

Dear Ms. Hodges and Dr. Smothers-Jones:

This is to inform you that your application to conduct research with human participants, A Study of the Relationship between Reading Instruction and Male Students’ Reading Performance in Single-Gender Elementary Classes (Protocol 10-179), has been approved as Exempt under 45 CFR 46.101(b)(1 and 2).

Please remember that all of The University of Mississippi’s human participant research activities, regardless of whether the research is subject to federal regulations, must be guided by the ethical principles in The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research.

It is especially important for you to keep these points in mind:

- You must protect the rights and welfare of human research participants.
- Any changes to your approved protocol must be reviewed and approved before initiating those changes.
- You must report promptly to the IRB any injuries or other unanticipated problems involving risks to participants or others.

If you have any questions, please feel free to call me at (662) 915-7482.

Sincerely,

[Signature]

Diane W. Lindley  
Coordinator, Institutional Review Board

A Great American Public University  
www.olemiss.edu
APPENDIX B

Researcher’s Letters to Superintendent, Principals, and Teachers
June 2010

Dear Superintendent,

My name is Chrystal Hodges and I am currently an instructor at The University of Mississippi Tupelo Campus in Tupelo, Mississippi. I am a doctoral student in my last two semesters at the University of Mississippi in Elementary Education Curriculum and Instruction. I am asking your permission to conduct my study, A Study of the Relationship between Reading Instruction and Male Students’ Reading Performance in Single-Gender Elementary Settings, in your school district for the 2009/2010 school year.

The rationale of this study will be to analyze the impact of single-gender grouping on the reading performance of fourth grade boys and to examine the relationship between those scores and the frequency use of research-based teaching strategies of the single-gender classroom environment. Since an increasingly number of elementary male students is underachieving in reading, they must be taught in an environment that uses specific research-based strategies appropriate and beneficial in the development of their reading proficiency. Because of this disconnect, it is important for teachers and educators alike to provide the proper environment and tools these students need to become successful, independent readers. The information taken from this study will validate the long term success of single-gender programs and provide educational leaders with data-driven research of teaching strategies that is proven to aid single-gender programs to become more effective for elementary male students’ reading performance. I plan to implement my research in October 2010, for the 2009/2010 school year. The research study will last for four weeks.

From your school district, I am asking that four of your elementary schools be used. First, I will collect test scores from the last administration of the STEEP universal screening test. Secondly, I will distribute and collect The Teacher Questionnaire from teacher participants in the treatment and control groups.

**Null Hypothesis One**: There is no significant difference in mean reading proficiency posttest scores between boys in single-gender fourth grade classes and boys in coeducational fourth grade classes.

**Null Hypothesis Two**: There is an equal frequency use of research-based pedagogical strategies in single-gender classes to increase the reading proficiency of fourth grade boys.

I will use my findings to further my research in single-gender learning environments and reading instruction for male students. Participation for this study is strictly voluntary and presents no risk to students. Thank you for considering my study. I look forward to meeting you. If you have any questions and/or concerns, please feel free to contact me or the chair of my dissertation committee.
Sincerely,
Chrystal Hodges
Instructor, University of Mississippi
Doctoral Student, University of Mississippi
August 2010

Dear Administrator,

My name is Chrystal Hodges and I am currently an instructor at The University of Mississippi Tupelo Campus in Tupelo, Mississippi. I am a doctoral student in my last two semesters at the University of Mississippi in Elementary Education Curriculum and Instruction. I am asking your permission to conduct my study, A Study of the Relationship between Reading Instruction and Male Students’ Reading Scores in Single-Gender Elementary Settings, in your school district for the 2009-2010 school year.

The rationale of this study will be to analyze the impact of single-gender grouping on the reading performance of fourth grade boys and to examine the relationship between those scores and the frequency use of research-based teaching strategies of the single-gender classroom environment. Since an increasingly number of elementary male students is underachieving in reading, they must be taught in an environment that uses specific research-based strategies appropriate and beneficial in the development of their reading proficiency. Because of this disconnect, it is important for teachers and educators alike to provide the proper environment and tools these students need to become successful, independent readers. The information taken from this study will validate the long term success of single-gender programs and provide educational leaders with data-driven research of teaching strategies that is proven to aid single-gender programs to become more effective for elementary male students’ reading performance. I plan to implement my research in October 2010, for the 2009/2010 school year. The research study will last for four weeks.

The Superintendent has granted me permission to conduct my study in your school district. First, I will collect test scores from the last administration of the STEEP universal screening test. Secondly, I will distribute and collect The Teacher Questionnaire from teacher participants in the treatment and control groups.

I will use my findings to further my research in single-gender learning environments and reading instruction for male students. Participation for this study is strictly voluntary and presents no risk to students. Thank you for considering my study. I look forward to meeting you. If you have any questions and/or concerns, please feel free to contact me or the chair of my dissertation committee.

Chrystal Hodges
1918 Briar Ridge Road
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(662) 844-5622
Email: cmpayne@olemiss.edu

Dr. Bobbie Smothers-Jones, Ed.D.
Curriculum and Instruction Department
University of Mississippi
Desoto Center
Telephone: 662-393-1653
Email: smothers@olemiss.edu
Sincerely,
Chrystal Hodges
Instructor, University of Mississippi
Doctoral Student, University of Mississippi
August 2010

Dear Teacher,

My name is Chrystal Hodges and I am currently an instructor at The University of Mississippi Tupelo Campus in Tupelo, Mississippi. I am a doctoral student in my last two semesters at the University of Mississippi in Elementary Education Curriculum and Instruction. I am asking your permission to conduct my study, A Study of the Relationship between Reading Instruction and Male Students’ Reading Scores in Single-Gender Elementary Settings, in your school district for the Spring of 2010.

The rationale of this study will be to analyze the impact of single-gender grouping on the reading performance of fourth grade boys and to examine the relationship between those scores and the frequency use of research-based teaching strategies of the single-gender classroom environment. Since an increasingly number of elementary male students is underachieving in reading, they must be taught in an environment that uses specific research-based strategies appropriate and beneficial in the development of their reading proficiency. Because of this disconnect, it is important for teachers and educators alike to provide the proper environment and tools these students need to become successful, independent readers. The information taken from this study will validate the long term success of single-gender programs and provide educational leaders with data-driven research of teaching strategies that is proven to aid single-gender programs to become more effective for elementary male students’ reading performance. I plan to implement my research in October 2010, for the 2009/2010 school year. The research study will last for four weeks.

The Superintendent and Principal have granted me permission to conduct my study. First, I will collect test scores from the last administration of the STEEP universal screening test. Secondly, I will distribute and collect The Teacher Questionnaire from teacher participants in the treatment and control groups.

I will use my findings to further my research in single-gender learning environments and reading instruction for male students. Participation for this study is strictly voluntary and presents no risk to students. Thank you for considering my study. I look forward to meeting you. If you have any questions and/or concerns, please feel free to contact me or the chair of my dissertation committee.

Chrystal Hodges
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Dr. Bobbie Smothers-Jones, Ed.D.
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Desoto Center
Telephone: 662-393-1653
Email: smothers@olemiss.edu
Sincerely,
Chrystal Hodges
Instructor, University of Mississippi
Doctoral Student, University of Mississippi
APPENDIX B

Researcher’s E-Mails Requesting Data for General Information from Principals
(Principal’s Name)

My name is Chrystal Hodges. I am an instructor and a Doctoral student in the Curriculum and Instruction Department at the University of Mississippi. I am conducting research regarding the reading performance of fourth grade boys. Specifically, I am interested in examining teaching methods and tools used to teach reading in both single-gender and coeducational classes. It would be very helpful if you could answer these questions for me so that I can use your school district in my study.

Please include the name of the school and the answers.

1. What grades contain single-gender classrooms?

2. Do you have single-gender reading classes?

3. Do you offer single-gender reading classes for boys?

4. If so, do you also have coed reading classes for the same grade level?

5. If you offer single-gender reading classes for boys, approximately how many boys are in the single-gender classes per grade?

6. What year did you begin single-gender reading classes in reading?

7. Have the teachers, who teach in single-gender classrooms, received professional development on gender/brain-based differences?

8. What reading programs and textbooks are used for the 2009-2010 school year in grade four?

9. What type of reading strategies are implemented in grade four?

10. What is the student-teacher ratio for grade four?

Again, I want to thank you for your time and assistance. I look forward to talking to you soon to make arrangements to meet and further discuss my research.

Sincerely,

Chrystal Hodges
Doctoral student, University of Mississippi
(Principal’s Name)

My name is Chrystal Hodges. I am an instructor and a Doctoral student in the Curriculum and Instruction Department at the University of Mississippi. I am conducting research regarding the reading performance of fourth grade boys. Specifically, I am interested in examining teaching methods and tools used to teach reading in both single-gender and coeducational classes. It would be very helpful if you could answer these questions for me so that I can use your school district in my study.

Please include the name of the school and the answers.

1. Approximately how many boys are in grade four?

2. What reading programs and textbooks are used for the 2009-2010 school year in grade four?

3. What type of reading strategies are implemented in grade four?

4. What is the student-teacher ratio for grade four?

Again, I want to thank you for your time and assistance. I look forward to talking with you soon to make arrangements to meet and further discuss my research.

Sincerely,

Chrystal Hodges
Doctoral student, University of Mississippi
APPENDIX C

Teacher Questionnaire and Cover Letter
October, 2010

Dear Colleague,

As a former public school teacher, I know how busy you are and I want to extend my gratitude to you for taking time to read this letter. In the interest of understanding ways to meet the reading needs of male students, I am conducting research on the relationship between reading instruction and male students’ reading performance in fourth grade single-gender and coeducational classes. The enclosed questionnaire is designed to assess the reading instruction you implement in your classroom and how often you use those strategies to instruct your students. It should only require 15 minutes of your time to complete. As you read each item, it is best to mark an answer based on your first impression. Your responses will remain confidential, and they will be shredded following the completion of the study.

The completion of this questionnaire is voluntary, and no penalty will ensue if you choose not to complete it. If you have any questions about this specific research study, please feel free to contact me at 662-844-5622 (work), 662-401-2676 (cell), or cmpayne@olemiss.edu (email). This study has been reviewed by The University of Mississippi’s Institutional Review Board (IRB). The IRB has determined that this study fulfills the human research subject protections obligations required by state and federal law and University policies. If you have any questions, concerns, or reports regarding your rights as a participant of research, please contact the IRB at (662) 915-7482.

Please enclose your completed questionnaire in the envelope and return it to your Principal’s office by Friday, October 22, 2010. Thank you for your participation in this study.

Sincerely,

Chrystal M. Hodges
Doctoral Student, The University of Mississippi
Instructor, The University of Mississippi Tupelo Center
**Teacher Questionnaire**

Chrystal Hodges  
Doctoral Student  
The University of Mississippi

Directions: Answer each question by placing a checkmark on the line for the appropriate response. Responses will be kept strictly confidential. Your participation is voluntary. *Thank you for your time and interest.*

Note: This study has been reviewed by The University of Mississippi’s Institutional Review Board (IRB). The IRB has determined that this study fulfills the human research subject protections obligations required by state and federal law and University policies. If you have any questions, concerns, or reports regarding your rights as a participant of research, please contact the IRB at (662) 915-7482.

**Part I: Teacher Demographic Information**

1. Which of the following best describe you?  
   - ____ White/non-Hispanic  
   - ____ Asian/Pacific Islander  
   - ____ African American  
   - ____ Hispanic  
   - ____ Native American/American Indian  
   - ____ Other, please specify________

2. What is your gender?  
   - _____ Male  
   - _____ Female

3. Counting this year, how many years have you worked as a teacher?  
   - ____ 0-3yrs.  
   - ____ 4-6yrs.  
   - ____ 7-10yrs.  
   - ____ 11-15yrs.  
   - ____ 16-20yrs.  
   - ____ >20yrs.

4. What is the highest academic degree you hold?  
   - _____ Bachelor  
   - _____ Master  
   - _____ Education Specialist  
   - _____ Doctorate

5. Did you have a major, minor, or special emphasis in any of the following subjects as part of your undergraduate coursework? Write one check mark on each line.  
   - a. Reading/language arts/literacy  
   - b. English  
   - c. Other related language arts  

6. Did you have a major, minor, or special emphasis in any of the following subjects as part of your graduate coursework? Write one check mark on each line.  
   - a. Reading/language arts/literacy  
   - b. English  
   - c. Other related language arts  

7. Are you National Board Certified?  
   - _____ Yes  
   - _____ No
Part II: Classroom Organization

The following questions ask about the organization of your classroom for the 2009-2010 school year. If you taught more than one fourth-grade class, please choose your homeroom class as the basis for answering the questions about classroom organization.

1. For the 2009-2010 school year, what type of classroom setting did you teach in?
   _____Single-Gender   _____Coeducational

2. If you taught in a single-gender classroom, how many times have you attended professional development regarding brain-based learning/instruction and how each gender learns?
   _____Zero   _____One   _____Two   _____Three   _____Four   _____Five or more

3. For the 2009-2010 school year, how many students were in your class?
   _____15 or fewer   _____16-18   _____19-20   _____21-25   _____26 or more

Part III: Reading Instruction and Assessment

The following questions ask about your reading instruction in general during the 2009-2010 school year. If you taught more than one fourth-grade class, please choose your homeroom class as the basis for answering these questions.

4. About how much time in total did you spend with this class on language arts instruction in a typical week? Language arts refers to reading, writing, literature, and related topics.
   _____Less than 3 hours
   _____3 – 4.9 hours
   _____5 – 6.9 hours
   _____7 – 9.9 hours
   _____10 or more hours

5. On what basis did you create instructional groups for reading in this class?
   _____I did not create groups for reading in this class.
   _____Ability
   _____Interest
   _____Diversity
   _____Other
6. How often did you practice the following strategies as part of reading instruction with this class? Please circle your response.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>1 = Never or hardly ever</th>
<th>2 = Once or twice a month</th>
<th>3 = Once or twice a week</th>
<th>4 = Almost every day</th>
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</thead>
<tbody>
<tr>
<td>a. Ask students to read aloud</td>
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<td>b. Use grade level reading textbooks</td>
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<td>c. Ask students to write about something they read</td>
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<td>d. Give students time to read books they’ve chosen themselves</td>
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<td>e. Watch movies, videos, filmstrips, or television</td>
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<td>f. Incorporate hands-on activities or learning centers</td>
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<td>g. Ask students to work in reading workbooks or on a worksheet</td>
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<td>h. Ask students to write about personal experiences</td>
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<td>i. Use trade books to integrate other subjects into reading</td>
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<td>j. Listen to tapes, compact discs (cds), or records</td>
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<td>k. Present information in small chunks</td>
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<td>l. Place students in reading groups</td>
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<td>m. Help students understand new words</td>
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<td>n. Ask students to talk with each other about what they read</td>
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<td>o. Use computer-based reading activities</td>
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<td>p. Ask students to read silently or independently</td>
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<td>q. Pair low-achieving readers with high-achieving readers</td>
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<td>r. Ask students to complete reader theater or role play activities</td>
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<tr>
<td>s. Ask students to do a group activity or project about what was read</td>
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</table>
7. During the 2009-2010 school year, did you observe one delivery method or strategy for reading instruction to be more effective with boys?___________

Please explain your answer:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

8. During the 2009-2010 school year, how often did you use each of the following to assess students’ progress in reading? Please circle your response.

<table>
<thead>
<tr>
<th>Assessment Method</th>
<th>1=Never or hardly ever</th>
<th>2=Once or twice a month</th>
<th>3=Once or twice a week</th>
<th>4=Almost every day</th>
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<tbody>
<tr>
<td>a. Self-evaluation</td>
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<td>b. Teacher-student discussions</td>
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<tr>
<td>c. Provide helpful and guiding comments</td>
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<td>d. Provide immediate responses for assignments and promptly return homework</td>
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<td>e. Reading portfolios</td>
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<td>f. Teacher observation</td>
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<tr>
<td>g. Oral reading assignment</td>
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<tr>
<td>h. Paragraph length written responses about what students read</td>
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<tr>
<td>i. Multiple choice tests</td>
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<td>j. Short-answer tests</td>
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<tr>
<td>k. Individual or group projects or presentations</td>
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</table>
VITA

Chrystal Michelle Hodges was born on September 12, 1978 in Tupelo, MS. She graduated from Tupelo High School in May 1997. Upon graduation, Chrystal attended the University of Mississippi. She received a Bachelor of Arts degree in Elementary Education, with Mathematics and English concentration areas, in May 2002. In June 2005, she reentered the University of Mississippi and received her gifted education endorsement in July 2005. She reentered the University of Mississippi and received a Master of Education in Elementary Education with Reading and Language Arts emphasis areas in August 2006. Later, she reentered the University of Mississippi and earned an Education Specialist degree in May 2007. She began the Doctoral Program for Curriculum and Instruction in August 2007 at the University of Mississippi. In the year 2008-2009, she received the award of Outstanding Doctoral Student in Elementary Education in the School of Education from the University of Mississippi. In May 2011, she received a Doctor of Education degree. She is also a member of Kappa Delta Pi Honor Society.

Chrystal is presently employed at the University of Mississippi Tupelo Center as an instructor for elementary education. Prior to her present employment, she worked as a second grade teacher, Special Population Coordinator, and gifted education teacher. She holds educator licensure in Mississippi.

Chrystal lives in Tupelo, MS with her husband, Corey Sr., and their two sons, Corey Jr. and Camryn.