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Closing the Achievement Gap Between Boys and Girls

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by

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or university course or degree.

Helen Finley

Signature: Helen Finley Date: 4/11/2011

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Abstract

The critical role of accountability on schools has intensified the need to understand the impact of intervention strategies and best practices on literacy. Of particular concern is the underachievement of boys and identifying the learning differences between boys and girls. Examined in this quantitative study were the strategies and practices implemented by Blue Ribbon and Gold Star school educators to increase the literacy skills of primary-aged boys. Strategies and practices were determined through a Likert scale survey distributed to six Missouri Blue Ribbon and Gold Star schools and an equal number of schools that were not meeting Adequate Yearly Progress. The survey was designed to collect information regarding the strategies and practices perceived as effective in improving the achievement of fourth grade boys in literacy and discover the underlying reasons boys underachieve in this area. Recipients were prompted to choose the top 10 strategies and practices, in the area of communication arts, from a list of several criteria. Then, the respondents chose five criteria, from the top 10, as the most effective in developing the literacy skills of boys. A bar graph was formulated to report this information. To overcome the limitations of a small sample, outcomes of the Hawley and Reichert (2009) and the Cleveland (2011) study were compared to the survey responses. Similar results within the three studies were the variety of assessment techniques to inform instruction; ongoing collaboration between teachers and administration; and working with students in small groups which provide boys leadership roles, teamwork, and competition. Nonacademic factors also influenced the academic success of boys. While there are many variables affecting the learning differences between boys and girls, most critical is for educators and parents to become aware of these differences.

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Chapter One: Introduction

Background of the Study

Literacy, which encompasses reading and writing, has become an even higher priority in public schools since No Child Left Behind (NCLB) was enacted in 2001. School districts suffer from the heavy burden of accountability to the public for performance outcomes and adequate yearly progress (AYP) on state-wide standardized tests (Missouri Department of Secondary and Elementary Education [MODESE], 2010). The test results are expected to be disaggregated by sub-groups, gender, race, and other criteria to determine where achievement gaps exist (MODESE, 2010). Many conversations, questions, and concerns have been expressed regarding achievement gaps, since school districts are mandated to meet standards related to the increased accountability (Whitmire, 2010).

In addition to the increased accountability measures placed on school districts, the curriculum at the state and district level has been revised (Whitmire, 2010). What was once the first grade curriculum has become the kindergarten curriculum (Whitmire, 2010). Those at the state and district level aware of the increased expectations at each grade level never realized how the standards would negatively influence the achievement of boys (Whitmire, 2010).

Increased accountability measures placed on school districts have forced educators to examine assessment results, analyze subject area deficiencies, and critique specific objectives (Whitmire, 2010). Consequently, data indicate girls surpass boys in

performance on literacy-related tasks and tests (Whitmire, 2010). Moreover, boys more often have been identified as poor or struggling readers (Chiu & McBride-Chang, 2006; Rutter, et al., 2004).

Sax (2005) contended, "boys are increasingly alienated from school" (p. 8). Sax (2005) suggested, "a dramatic drop [has occurred] over the past twenty years in boys' academic performance in American schools" (p. 8). Whitmire (2010) asserted, "boys lack the literacy skills to compete in the Information Age" (p. 5).

According to the United States Department of Education (U.S. DOE, 2000), "the average eleventh-grade American boy now writes at the same level as the average eighth-grade girl" (p. 18). Discoveries concerning boys' achievement levels in other countries throughout the world have also been reported. Weaver-Hightower (2003) found, internationally, boys scored lower on many standardized assessments in literacy. Mullis, Kennedy, Martin and Sainsbury (2007) discovered "girls had higher achievement than boys in all the participating countries and provinces except Hungary and Iran" (p. 63).

Neu and Weinfeld (2007) asserted, "when reviewing a variety of statistics from virtually any state, any school district, and nearly every individual school … [there was] evidence of the problems boys are experiencing in our schools" (p. 1). Froese-Germain, a researcher with the Canadian Teachers' Federation (CTF) in Ottawa and co-editor of the CTF publication, *Professional Learning Perspectives*, challenged simplistic notions that schools are failing boys (Martino, 2008). Froese-Germain supported, "the need to temper the rhetoric with research-based knowledge that considers which boys aren't doing well" (as cited in Martino, 2008, p. 1). Additionally, "Froese-Germain contended what is required is an understanding about the context of the 'boy crises,' in which all

boys are assumed to be experiencing problems or underperforming in school" (Martino, 2008, p. 1).

In 2007, only 33% of all fourth-graders and 31% of all eighth-graders could read at the proficient level (National Center for Education Statistics [NCES], 2007a). Furthermore, the Alliance for Excellent Education (2009) declared, "among low-income eighth graders, just 15% read at or above a proficient level … [and] proficiency rates of economically disadvantaged students range from 11 to 33% lower than those of more affluent eighth graders" (p. 2). Sax (2007) concurred, "critics of American education often point out, quite accurately, the United States spends more money per pupil than most other developed countries and yet accomplishes less" (p. 20).

Kafer (2007) submitted the achievement gap in reading and writing between boys and girls was alarming, but even more disconcerting was the vast amount of boys falling behind in school. These boys, according to Kafer (2007), are becoming involved in detrimental behavior and eventually dropping out of school altogether. Illiteracy is becoming a problem amid middle-class boys with college-educated parents (Britt, 2006).

Gurian and Ballew (2003) asserted a boy who fails in the early primary grades rarely will catch up with his classmates. Boys are not faring well in classrooms all over the United States, according to reading and writing scores, as the following facts collected by Zambo and Brozo (2008) revealed:

- In elementary school, boys received more Ds and Fs than girls (Braun, 2006).
- Between the ages of five and 12, boys were 60% more likely to have been retained (Braun, 2006).
- Boys were referred to special education four to one over girls (NCES, 2000).

- Boys made up the majority of students in remedial classes (NCES, 2000).
- About 2% and 5% of American children between the ages of 6 and 16 were diagnosed with attention-deficit hyperactivity disorder (ADHD), and of these, 80% are boys (Rothenberger & Banaschewski, 2004).
- Of the estimated 500,000 to 1,000,000 students who annually dropped out of U.S. schools, more than 55% are boys (NCES, 2000). (p. 3)

These statistics revealed there is a pressing need to rescue the "educational, social and emotional lives of boys" (Zambo & Brozo, 2008, p. 3). Low self-esteem is a result of young boys unable to read and keep up with their class in reading (Zambo & Brozo, 2008). Gurian and Stevens (2005) asserted low self-esteem, under motivation, and underperformance left unchecked in a young boy can become "the basis for his sense of worth as a man in adult society" (p. 248). Lack of motivation and chronic underperformance may lie in one of four areas: the boy's brain, the school system, family dynamics, and other social stressors (Gurian & Stevens, 2005). Gurian and Stevens (2005) defined under-motivation as, "an under functioning of a person's prefrontal cortex and emotion centers, as well as of the neural connectors between them" (p. 247). Gurian and Stevens (2005) maintained the most common areas of delay appear in the Broca and Wernicke areas of the brain. According to Zambo and Brozo (2008), "boys can be motivated to read and write when they encounter literature and assignments that pique interests and affirm their needs" (p. 3).

Gurian (Gurian & Stevens, 2007) explained his own struggle in school, and consequently, Gurian believed the educational system was not well briefed on four crucial elements:

- the male learning style;
- the potential mismatch of that male learning style with many current education practices;
- the complete role parents and communities need to take, in any generation and in any culture, to ensure the education of sons;
- new methods, strategies, and teaching techniques that have been proven to work in schools and classrooms that educate boys. (Gurian & Stevens, 2007, p. 9)

Tyre (2008) acknowledged meeting with principals from schools ranging from the lowest socioeconomic sector to the highest socioeconomic sector. These principals admitted their frustration with underachieving males (Tyre, 2008). The principals disclosed a boy crises and the need to do whatever was necessary to address these gender-specific needs (Tyre, 2008). Unfortunately, many educators, to date, have not been willing to address boys' underachievement even though the alarm has been sounding for some time (Tyre, 2008).

The first step toward making changes is to have a common understanding of the problems boys face and an understanding of the possible causes of those problems (Neu & Weinfeld, 2007). Tyre (2008) found abundant evidence supporting the fact boys from all levels of society are struggling. Tyre (2008) asserted, after talking with principals from impoverished inner-city schools in Chicago and from affluent private schools outside Philadelphia, "I've found they are asking variations on the same question: What is it about males that makes them achieve less in school than females achieve" (p. 12)? The "social capital of a black boy raised in poverty in Chicago, for instance, is very

different from that of a fair-haired, football-playing boy attending a private school in one of the city's affluent suburbs" (Tyre, 2008, p. 12).

Nature and Scope of the Study

In this study, the learning problems boys experience in the area of literacy was explored. Additionally, intervention strategies used in an attempt to raise literacy scores for boys in Blue Ribbon and Gold Star schools in Missouri were identified through a survey. The literature review centered on socioeconomic status (SES), brain-based learning, and learning styles to determine how each can affect achievement levels. The studies conducted by Hawley and Reichert (2009) and Cleveland (2011) were discussed and compared to the survey responses. Data from the Missouri Assessment Program (MAP), which measures students' progress toward mastery of the Show-Me Standards (MODESE, 2010), were utilized. Data gathered from the MAP were used for additional information to support the study. The MAP is a grade-level assessment given each year to all students in grades three through eight in Missouri (MODESE, 2010). The MAP assessment includes multiple choice "sections from the *TerraNova* survey, a national norm-referenced test, which is used to compare how well students are performing compared to their peers across the country" (MODESE, 2010, p. 1). Constructed response and performance event questions are also included:

> Constructed response items require students to supply an appropriate response rather than making a selection from a list of choices. Performance events are longer, more demanding tasks requiring students to work through problems, experiments, arguments, or extended pieces of writing (MODESE, 2010, p. 1).

Conceptual Underpinnings

The recent discovery of Burman (2008), suggesting language processing is more sensory in boys and more abstract in girls, provided the framework for this study. Burman (2008) stated, "Although researchers have long agreed that girls have superior language abilities than boys, until now no one has clearly provided a biological basis that may account for their differences" (para. 1). For the first time, researchers have evidence to support what was suspected all along (Burman, 2008).

Researchers from Northwestern University and the University of Haifa measured the brain activity of 31 boys and 31 girls using functional magnetic resonance imaging (fMRI) (Burman, 2008). These researchers concluded the language regions in the brain worked harder in girls when attempting a language task (Burman, 2008). Additionally, according to Burman (2008), "boys and girls rely on different parts of the brain when performing these tasks" (para. 1). Burman (2008) further acknowledged, "findings which suggest that language processing is more sensory in boys and more abstract in girls could have major implications for teaching children and even provide support for advocates of single sex classrooms" (para. 3). If this insight can be repeated in language processing, researchers believe it could inform teaching and testing methods (Burman, 2008).

Burman (2008) likened boys to possessing a bottleneck as part of their sensory processes that delay their visual or auditory system and interfere with information reaching the language areas in the brain. Also, boys make meaning from words by creating associations simply by hearing or seeing the word (Burman, 2008). Burman (2008) indicated for primitive men to survive, these sensory associations may have given them the ability to perceive danger quickly by associating sights and sounds.

Researchers are still searching for the reason girls receive information abstractly in the brain and boys receive information in the sensory areas of the brain. (Burman, 2008). Some researchers speculate it could explain the reason women verbalize more abstractly than men (Burman, 2008):

> Ask a woman for directions and one may hear something like: 'Turn left on Main Street, go one block past the drugstore, and then turn right, where there's a flower shop on one corner and a cafe across the street.' Such information-laden directions may be helpful for women because all information is relevant to the abstract concept of where to turn; however, men may require only one cue and be distracted by additional information. (para. 15)

Gurian, Stevens and King (2008) supported this argument and explained the language processing areas in boys and girls, are such that "[boys] tend to have these areas centralized in the left hemisphere, [whereas girls] have multiple language processing areas in both hemispheres" (p. 5). The result is girls have "more access to verbal resources than [boys] and therefore, develop language earlier" (Gurian et al., 2008, p. 5). Gurian et al. (2008) explained girls more often can access verbal resources when they begin school and throughout their lives when compared with boys. In fact, according to Gurian et al. (2008), girls will use twice the number of words boys use in conversation, reading, and writing.

Gurian et al. (2008) supported the opinion girls find it easier to read and write in the early primary grades—kindergarten and first grade. Girls, according to Gurian et al. (2008), also find conversation effortless and speak twice as many words during the day as boys. Gurian et al. (2008) asserted, "because literacy is the foundation of learning,

this early difference often results in gender gaps that show up early in elementary school and persist throughout middle and high school" (pp. 5-6). Burman (2008) suggested, "boys may be more effectively evaluated on knowledge gained from lectures via oral tests and from reading via written tests" (para. 8); however, these different methods would appear unnecessary when evaluating girls.

Statement of the Problem

Results from the 2009 MAP indicated girls outscored boys in the area of literacy achievement in grade four (MODESE, 2010). According to other research discoveries (Chiu & McBride-Chang, 2006; Rutter, et al., 2004), boys are more likely to be identified as poor or struggling readers when compared to girls. These results are also true according to local, state, and national sources (Mullis, et al., 2007). Accumulated data are limited in the United States when looking at the achievement gap between genders (Sax, 2005).

Purpose of the Study

The purpose of this study was to examine the intervention strategies and best practices used by Blue Ribbon and Gold Star school educators to increase the literacy skills of primary-aged boys. Past research advocated achievement differences may occur between boys and girls; however, the reason these differences occur has not been fully explicated (Whitmire, 2010). Therefore, in this study, a synthesis of previous studies on the underlying reasons primary-aged boys underachieve in the area of literacy was conducted.

Research Questions

The following research questions guided this study:

1. What intervention strategies are perceived to be effective in improving the achievement of fourth grade boys in the area of literacy?

2. What are perceived to be the underlying reasons boys underachieve in the area of literacy?

Significance of the Study

Intervention strategies and best practices demand a closer examination given the underachievement of boys and the critical role of accountability NCLB has placed on the schools based on standardized testing. Because of the escalating demands in literacy, an understanding of the learning differences between boys and girls could prove beneficial for educators and parents. Additionally, the strategies most effective in increasing the literacy skills of boys will aid teachers and parents in providing appropriate learning experiences.

Limitations

Demographics. This study was limited to an examination of achievement levels of boys and girls in the fourth grade who attended Blue Ribbon and Gold Star schools in Missouri. The designation of Blue Ribbon and Gold Star is awarded to schools achieving at a high level or making significant progress in closing achievement gaps (MODESE, 2009). Also, this study was limited to a review of the achievement levels of fourth grade students from an equal number of schools not meeting AYP.

Instrument. Survey bias may occur when a population has the tendency to be over or under represented (Stat Trek, 2011). It was assumed everyone answered the questions on the survey honestly.

Sample size. The foremost limitation in this study was the use of perception data. Only a small group represented the general population lending this study to survey bias. Of the eight Blue Ribbon and Gold Star schools, only six responded to the survey.

Definition of Terms

For the purposes of this study, the following terms are defined:

Advanced. "Reading—Students make complex inferences and comparisons; evaluate simple information; infer cause/effect and word meaning; interpret figurative language; identify author's purpose; identify complex problems/solutions; explain complex main ideas. Writing—Students consistently use the rules of Standard English. MAP score range: 691–820" (MODESE, 2007, p. 5).

Basic. "Reading—Students identify appropriate details; use context clues; make obvious inferences; select vocabulary using context clues. Writing—Students write simple letters with an awareness of an intended audience and purpose; generally use the rules of Standard English. MAP score range: 612–661" (MODESE, 2007, p. 5).

Below basic. "Reading—Students locate information in text; recall stated information; draw obvious conclusions; make simple comparisons and descriptions. Writing—Students write simple letters, minimally uses the rules of Standard English; attempt to organize information. MAP score range: 470–611" (MODESE, 2007, p. 5).

Broca's area. A region of the brain behind the left temple that is associated with speech production, including vocabulary, syntax, and grammar (Sousa, 2005, p. 219).

Functional magnetic resonance imaging (fMRI). The fMRI "measures blood flow to the brain to record areas of high and low neuronal activity" (Sousa, 2005, p. 221).

Magnetic resonance imaging (MRI). The MRI "uses radio waves to disturb the alignment of the body's atoms in a magnetic field to produce computer-processed, high-contrast images of internal structures" (Sousa, 2005, p. 287).

Positron emission tomography (PET). This is "a process that traces the metabolism of radioactively-tagged sugar in brain tissue, producing a color image of cell activity" (Sousa, 2005, p. 222).

Proficient. "Reading—Students make simple inferences; recall, identify, and use relevant information; draw conclusions; explain figurative language and main idea; use context clues to select vocabulary; identify character traits, sensory details, and simple cause and effect. Writing—Students show organization and awareness of an intended audience and purpose; use the rules of Standard English; use a writing process to revise, edit, and proofread. MAP score range: 662–690" (MODESE, 2007, p. 5).

Schema theory. This theory suggested, "mental structures resulting from our experiences help us interpret and predict new situations" (Sousa, 2005, p. 223).

Wernicke's area. This is "the region of the brain, usually located in the left hemisphere, thought to be responsible for sense and meaning in one's native language" (Sousa, 2005, p. 224).

Summary

Neu and Weinfield (2007) suggested a relationship may exist in the literacy performance between boys and girls. In the early years, boys develop at the same pace as girls, but by the fourth grade, boys are often two years behind (Neu & Weinfield, 2007).

Burman (2008) suggested, “language processing is more sensory in boys and more abstract in girls” (p. 1), a concept that provides a lens to investigate why boys are underachieving and determine practical interventions to increase the literacy skills of boys (Whitmire, 2010).

Those who reject the problem facing boys are choosing to ignore the changing world, while girls charge ahead and boys lag behind (Tyre, 2008). Tyre (2008) contended the cost of boys’ underachievement is steep. Boys have slumped into a learned helplessness and have become content to move aside and allow girls to lead (Tyre, 2008). Teachers and administrators need real-time information about closing the achievement between boys and girls (Tyre, 2008).

Instructional practices, which have increased student achievement in Blue Ribbon and Gold Star schools, may help teachers and administrators plan curriculum and lessons and better meet the needs of struggling boys. Sax (2005) recommended teachers “need to become more aware of the new research” (p. 261) available regarding struggling boys. Sax (2005) also affirmed, “teachers must understand that girls and boys learn differently, [and] teachers must be given more opportunities to learn how to use gender-specific teaching strategies to get the best out of every student” (p. 261). When teachers become aware of the best practices, Sax (2005) proposed, the “odds are good that we’ll have more girls who excel in math and science, and more boys who love to read” (p. 261).

Gurian et al. (2008) affirmed, “schools [can change] the way they do the business of education” (p. 11). This information will help close the achievement gap between boys and girls by “helping at-risk students, helping students with learning disabilities, and creating classroom stability” (Gurian et al., 2008, p. 11). An understanding of these

differences is the first step in closing the gap (Gurian et al., 2008). Implementing the best practices found successful in Blue Ribbon and Gold Star Schools will help teachers, administrators, and parents to close the achievement gap between boys and girls.

In Chapter Two, literature by other researchers associated with the current study were identified and examined. The methodology was detailed in Chapter Three. The research questions that guided this study and a description of the sampling instrument were presented. Also included were the data collection and data analysis procedures. In Chapter Four, the description and results of the data were described. The summary, conclusions, and recommendations were offered in Chapter Five.

Chapter Two: Review of Related Literature

Historically, girls have scored higher on literacy assessments than boys (Marsh, Smith, & Barnes, 1985). Alloway and Gilbert (1997) discovered from their research compelling evidence more boys than girls participate in remedial literacy classes. The United States is not the only country interested in the gap between boys and girls (Alloway & Gilbert, 1997). Articles from Britain and Australia materialized in the 1990s concerning this issue (Alloway & Gilbert, 1997).

Connell (1996) declared that in Australia, "after much media conflict concerning boys' academic failure in comparison to girls', a parliamentary inquiry into boys' education was launched in 1994" (p. 1). Connell (1996) also found in Germany the number of educational programs dealing with gender issues has multiplied for boys. Late in the 1960s, "a minor panic was prevalent in the United States about schools' destroying boy culture and refusing boys their literacy rights" (Connell, 1996, p. 207). Additionally, Connell (1996) believed this developed from "the dominance of women teachers and the feminine, frilly content of elementary education" (p. 207). Connell (1996) discovered, "schools launched programs for boys without the proper training" (p. 207).

Conceptual Framework

Based on the discoveries of Burman (2008), girls are superior in language abilities as compared to boys. To date, according to Burman (2008), no one has supplied a biological basis distinguishing the differences between the two. Burman (2008) revealed discoveries from a study conducted by researchers from Northwestern University and the University of Haifa. These discoveries, as reported by Burman (2008), "show both that areas of the brain associated with language work harder in girls than in boys during

language tasks, and that boys and girls rely on different parts of the brain when performing these tasks" (para. 1). Burman (2008) further reported, "our findings, which suggest that language processing is more sensory in boys and more abstract in girls, could have major implications for teaching children and even provide support for advocates of single sex classrooms" (para. 1).

Cognitive psychology not only teaches what is important to know personally, but also that it is important to know how others think (Woolfolk & Nicolich, 1980). Theorists have different points of view regarding the structure of development and the argument of individual versus environment (Woolfolk &Nicolich, 1980). The work of Piaget projects a cognitive structural approach to cognitive psychology as opposed to the learning-environmental approach projected by the behaviorists (Woolfolk & Nicolich, 1980). The common ground all developmental theorists agree on, according to Woolfolk and Nicolich (1980), included:

- people develop at different rates
- development is relatively orderly
- development takes place gradually. (p. 74)

The biologist, Piaget, believed, as expressed by Huitt and Hummel (2003), "behavior is controlled through mental organizations called schemes that the individual uses to represent the world and designate action … this adaptation is driven by a biological drive to obtain balance between schemes and the environment (equilibration)" (p. 1). Piaget referred to this adaptation as assimilation and accommodation (Huitt & Hummel, 2003). In essence, Piaget believed people generate their own knowledge by

acting on objects, people, ideas, and then observing the consequences (Woolfolk & Nicolich, 1980). The four stages Piaget believed young people pass through are:

1. Sensorimotor stage (Infancy). In this period (which has 6 stages), intelligence is demonstrated through motor activity without the use of symbols. Knowledge of the world is limited (but developing) because it's based on physical interaction /experiences. Children acquire object permanence at about 7 months of age (memory). Physical development (mobility) allows the child to begin developing new intellectual abilities. Some symbolic (language) abilities are developed at the end of this stage.
2. Pre-operational stage (Toddler and early childhood). In this period (which has two sub stages), intelligence is demonstrated through the use of symbols, language use matures, and memory and imagination are developed, but thinking is done in a nonlogical, nonreversible manner. Egocentric thinking predominates
3. Concrete operational stage (Elementary and early adolescence). In this stage (characterized by 7 types of conservation: number, length, liquid, mass, weight, area, volume), intelligence is demonstrated through logical and systematic manipulation of symbols related to concrete objects. Operational thinking develops (mental actions that are reversible). Egocentric thought diminishes.
4. Formal operational stage (Adolescence and adulthood). In this stage, intelligence is demonstrated through the logical use of symbols related to abstract concepts. Early in the period there is a return to egocentric thought.

> Only 35% of high school graduates in industrialized countries obtain formal operations; many people do not think formally during adulthood. (Huitt & Hummel, 2003, p. 2)

Bruner, as well as Piaget, were primary originators of cognitive psychology (Woolfolk & Nicolich, 1980). Bruner observed knowledge was derived within a social context rather than in isolation, and a child learns through actively engaging socially (Woolfolk & Nicolich, 1980). Bruner viewed the role of the environment in three stages: the "enactive stage (representation through actions), the iconic stage (representation through images), and the symbolic stage (representation through symbols)" (Woolfolk & Nicolich, 1980, p. 75). Language is very important in Bruner's model and not limited by what is learned at a person's level of thinking (Woolfolk & Nicolich, 1980).

Teachers in Ontario described differences between boys' and girls' scores in both achievement and attitude in literacy and writing (Bodkin, 2004). The researchers from Ontario Ministry of Education (Finlay, 2005) revealed boys are more apt to take "more time when learning to read, read less, assess their literacy abilities to be lower than girls, more likely classify themselves as a 'non-reader', express less enthusiasm about literacy, and do not regard literacy as a worthy activity" (p. 3). The Progress in International Literacy Study (Mullis et al., 2007) yielded data showing on average girls scored 32 points above boys in literacy in the years 2000, 2003, and 2006, and boys have more problems in language and learning. Strathclyde University discovered in Scottish schools, girls exceeded boys in all areas (Condie, 2006). Raymond (2008) acknowledged boys professed to be non-readers and were more likely to be high school dropouts. Most distressing is the Progress in International Literacy Study ((Mullis et al., 2007), which

substantiated the serious gender gap in literacy and writing in every country. After endeavoring to reform the literacy gap between boys and girls in the country of Wales, the Welsh Assembly Government commissioned a report containing Estyn's (2008) findings after investigating the school systems in Wales. Estyn (2008) revealed:

> The most crucial factor in explaining the greater difficulty that some boys have in coping with the demands of learning and teaching in school is that fewer boys than girls acquire the level of literacy necessary to succeed. This is especially the case in relation to writing and, to a lesser extent, to literacy. Literacy is critical for educational success at school. Because more boys have trouble with literacy than girls they also have problems in accessing the wider curriculum. This difficulty affects progress not only in subjects that are highly language-based, such as Welsh or English and history, but across the whole curriculum, because literacy and recording skills are important in all subjects. By the age of 14, a significant minority of boys cannot keep pace with much of the work at school and experience an increasing sense of frustration and failure as a result. (p. 4)

A large amount of attention and money in the past few years have been placed on high-quality education for the United States to continue to compete in the international economy (Dufour & Eaker, 1998). However, accomplishing this goal requires attention to the diversity of boys and girls with their own special experiences, talents, skills, and needs (Smith & Wilhelm, 2006). This goal also suggested educators focus on the best practices for boys and girls from high performing schools in order to close the achievement gap (Smith & Wilhelm, 2006).

Blue Ribbon and Gold Star Schools

In this study, a survey was sent to Blue Ribbon and Gold Star Schools to determine best practices used in these high performing schools. There are two ways to achieve the honor of Blue Ribbon and Gold Star School (U.S. DOE, 2010). The first is to be a high performing public or private school, and the second way to become a Blue Ribbon and Gold Star School is to have significantly improved student achievement (U.S. DOE, 2010). The Department of Education has been identifying and disseminating "knowledge about best school leadership and teaching practices" (U.S. DOE, 2010, para. 1) since 1982. The objectives of the Blue Ribbon and Gold Star School Program were intended to encourage schools and communities to raise the bar in school achievement (MODESE, 2009).

Hindrances to Learning

Socioeconomic status. Longlands (2008) asserted boys may find it difficult to acquire a quality education due to many reasons; however, one reason is low socioeconomic status hinders boys from developing the skills and knowledge needed to reach their potential. In the richest countries, it is often the boys living in low socio-economic areas most apt to fail in the educational system (Longlands, 2008). Martino (2008) shared, "socio-economic status … and poverty affect the educational performance and participation of specific groups of … boys" (p. 1). Discoveries submitted by the American Association of University Women (2008) were reported, "On standardized tests such as the NAEP, SAT, and ACT, children from the lowest-income families have the lowest average test scores, with an incremental rise in family income associated with a rise in test scores," (Thomas, 2008, para. 14). Another study conducted at the

University of South Carolina found, “data from the study confirmed that the socio-economic status of the student body of a school had a significant association with academic achievement” (Stevenson, 2006, p. 1). Cruickshank, Jenkins, and Metcalf (2003) proclaimed 75% of student success can be linked to socioeconomic status, family relationships, and cultural backgrounds.

The socioeconomic status of students is an important factor when investigating student success. Gershoff (2003), a Senior Research Associate, reported by the time children from low-income families begin formal schooling, they will already lag significantly behind their more affluent peers academically, socially, and physically. Gershoff (2003) maintained the higher the family income, the more academically stable the children were both physically and socially. Moreover, many children who come from low-income families suffer from high stress situations on a regular basis. Willis (2006) gleaned information from a Magnetic Resonance Imaging (MRI) scan and described what happens when the limbic system becomes over-stimulated by stressful events. The information at the time of a stressful event will not go into the long-term memory; rather, these brain centers fail to show metabolic activation on Positron Emission Tomography (PET) scans (Willis, 2006). These children need help in filtering out environmental stimuli that distracts or interferes with their attention, connection, and memory retention (Willis, 2006).

In an article produced by the National Center for Education Statistics (2003), examination of the figures revealed students in schools with 50% of the students qualifying for free or reduced price meals had lower scores when compared to students in schools with 25% or fewer. This study examined student achievement relative to the

poverty level of the school as measured by the percentage of students eligible for the free and reduced price meal program (NCES, 2003). It was discovered through this study when the percentage of students qualifying for free or reduced price meals increased, the academic scores decreased (NCES, 2003).

A study (Betts, Rueben, & Danenberg, 2000) conducted in California revealed, "student [socioeconomic status] SES as measured by the share of students receiving free or reduced-price lunches bears an astonishingly high correlation with student achievement at the school level" (p. xx). Betts et al. (2000) "divided schools into five socioeconomic status (SES) groups based on the proportion of students receiving free or reduced price lunches" (p. xv). One of the most important discoveries was "inequities in school resources apparent in the statewide data replicate themselves to some extent within districts" (Betts et al., 2000, p. xviii). In other words, the schools with the most economically disadvantaged students are most likely to have the least highly educated and least highly experienced teachers (Betts et al., 2000). This study neither alleged teacher quality nor curriculum as the strongest predictor of test scores but rather the percentage of socioeconomic disadvantaged students attending the school (Betts et al., 2000).

The Harvard University Gazette (2000) published an article commissioned by the Civil Rights Project at Harvard University. In the article, the results of two studies were summarized, "so-called high stakes testing policies that require students to pass standardized tests deepen educational inequity between whites and minorities and widen the educational gap between affluent and impoverished students, according to two studies of education reform in Texas" (Harvard University Gazette, 2000, para. 1). Texas is often

classified as a national leader in raising academic performance. The Texas Assessment of Academic Skills (TAAS) is administered to children in grades three through 10, and "requires that schools maintain minimum passing rates on the TAAS test in reading, writing, and math; a 94% attendance rate; and a maximum dropout rate of 6%" (Harvard University Gazette, 2000, para. 3). This information is "used to rate schools and accredit districts" (Harvard University Gazette , 2000, para. 1). If a school does not meet the minimum standards, the school is subject to public hearings and perhaps is even taken over by the state (Harvard University Gazette, 2000). If a school is one of the top scoring schools, a cash bonus is rewarded (Harvard University Gazette, 2000).

Orfield, a professor at the School of Education and co-director of the Civil Rights Project at Harvard, reported, "Texas is frequently heralded as a successful model for the nation of how tests can improve the academic performance of students, particularly poor and minority students" (as cited in Harvard University Gazette, 2000, para. 4). Orfield (2000) argued, "these studies, however, raise serious questions about the wisdom of putting so much at stake on one measure" (as cited in Harvard University Gazette, 2000, para. 4). The University of Texas conducted a study on "the impact of TAAS on the quality of instruction, curriculum, and classroom practices in Texas schools, focusing on those schools that serve large numbers of minority and economically disadvantaged populations" (Harvard University Gazette, 2000, para. 5). The results of this study questioned the wisdom of placing so much emphasis on one test, proposing it has reduced many high-poverty schools to nothing more than test preparation with many subjects being abandoned (Harvard University Gazette, 2000).

Payne (2005) determined poverty appears to be on the rise in the United States, and is considerably high when compared with other rich industrial countries. In the mid-1980s, poverty rates were: "1.6% - Sweden; 2.8% - Germany; 4.6% - France; 7.4% - United Kingdom; 9.3% - Canada; [and] 20.4% - U.S.A" (p. 156). Payne (2005) indicated child poverty has increased dramatically because of the number of single parents–due either to divorce or children being born outside of marriage. Employment insecurity and low earnings for fathers are also prime determinants of the levels and trends of childhood poverty (Payne, 2005). Ultimately, Payne (2005) suggested, "children who spend more time in poverty are less likely to graduate from high school, obtain fewer years of schooling, and earn less" (p. 158).

Is there hope for those students growing up in high-poverty homes and high-poverty schools, or are they destined for failure? The state of California conducted a study in 2002 with eight high-performing public schools with a high percentage of their students coming from high-poverty homes (Izumi, 2002). Interviews were conducted with the principals of these eight schools (Izumi, 2002). Their responses were instructive, and a number of lessons were learned; schools can overcome these challenges by focusing on key factors that include:

- Empirically proven research-based curricula.
- Empirically proven research-based methods.
- Comprehensive use of the state academic content standards as goals for student learning, guideposts for teaching, and tools for professional development.

- Use of frequent assessment as a diagnostic tool for identifying student and teacher strengths and weaknesses and for improving student and teacher performance.
- Standards-based professional development that emphasizes subject matter.
- Teacher quality and teacher willingness to use proven curricula and methods.
- Strong discipline policies that emphasize sanctions and rewards.
- Increased flexibility to use available funding and a reduction in bureaucratic rules. (Izumi, 2002, p. vi.)

Gender differences. One of the most frequently quoted studies on gender and sex differences is the landmark research project led by Maccoby and Jacklin in 1974, *The Psychology of Sex Differences.* From 1,600 studies in eight areas of achievement, personality, and social relationships, it was found girls are more social and suggestible, but their self-esteem and motivation for achievement was lower (Maccoby & Jacklin, 1974). Maccoby and Jacklin's (1974) four main conclusions regarding sex differences were:

- Girls have greater verbal ability
- Boys excel in visual-spatial ability
- Boys excel in mathematics
- Boys are more aggressive (pp. 351-352)

This study by Maccoby and Jacklin (1974) revealed differences in achievement levels of both boys and girls in the pedagogical setting.

The 1970s brought educational opportunities initiating attention toward women which attributed to the reauthorization of the Higher Education Act and the Education

Amendments of 1972 (U.S. DOL, 1972) known as Title IX, signed by President Richard Nixon (Tyre, 2008). Title IX intended to give women equal opportunities in the educational system (Tyre, 2008). Sandler (n. d.), a part-time psychology professor at the University of Maryland, "played a major role in the development and passage of Title IX and other laws prohibiting sex discrimination in education and has been associated with Title IX longer than any other person" (Sandler, n.d., para. 3). Sandler is often referred to as the "godmother of Title IX" (Sandler, n.d., p. 1). Title IX opened up many opportunities for women for the first time in history (Sandler, n.d.). It was "the 1974 Women's Educational Equity Act and amendments to the Vocational Education Act in 1976" (Tyre, 2008, p. 39) that added to this new dimension for women. Kohn (2003) reported, "thirty years after the passage of equal opportunity laws, girls are graduating from high school and college and going into professions and businesses in record numbers" (para. 2).

When the American Association of University Women published, *How Schools Shortchange Girls* (1992), the gender gap in math and science became a hot topic and refocused the attention of the American public (Kommer, 2006). Kommer (2006) posited:

> Their schools shortchanged girls in many ways: when questioned in class, girls were less likely to receive a prompt to clarify thinking if they answered incorrectly; boys were more regularly called on, and if not, they were just as likely to shout out an answer, leaving girls to sit quietly. (p. 247)

Tyre (2008), acknowledged her moment of insight regarding boys in crisis came in an interview with the Headmaster of a New York Private School. Tyre (2008) was surprised when the headmaster from this selective, prestigious private school that charges $26,000 a year for tuition exclaimed his concern over the poor performance of his students. The headmaster determined to find the answer, so with the help of a researcher, the headmaster discovered the lowest performing students had one phenomenon in common, and that was the male population (Tyre, 2008). These students were "unconnected from rich extra-curricular life [and] were behavior problems" (Tyre, 2008, p. 4). This activated the agonizing question for Tyre (2008): "Is there something going on broadly across the population that is affecting the performance of young men in school" (2008, p. 5)? Tyre investigated to see how well boys were achieving, and her discoveries indicated they were not achieving well. The following perceptions caught Tyre's (2008) attention:

- Boys get expelled from preschool at nearly five times the rate of girls. In elementary school, they are diagnosed as having attention problems or learning disorders four times as much as girls and are twice as likely to get held back.
- Girls used to lag behind in science and math but lately have all but closed the gap.
- Boys, though, continue to lag badly behind girls in literacy and writing, and this gap is growing and getting bigger, not smaller, as boys move from elementary school through high school.
- Boys' grades are worse than girls'.

- Boys are more likely to report being the victims of violent crime. (pp. 5-6)

Gilliam (2005) found, "boys were expelled at a rate over four and a half times that of girls" (p. 3). Tyre (2008) asserted, "in elementary school, they [boys] are diagnosed as having attention problems or learning disorders four and a half times as much as girls and are twice as likely to get held back" (p. 5). Tyre (2008) argued that in terms of literacy and writing, this gap between girls and boys is getting larger. Taylor and Lorimer (2003) posed the following gender questions with the answer to all questions ─"boys":

1. Who is more likely to drop out of high school?
2. Who is more likely to be sent to the principal's office for a disciplinary referral?
3. Who is more likely to be suspended or expelled?
4. Who is more likely to be identified as a student needing special education?
5. Who is more likely to need literacy intervention? (pp. 68-70)

As a family physician, Sax (2007), observed:

> …hundreds of families where the girls are the smart, driven ones, while their brothers are laid-back and unmotivated. The opposite pattern—the boy being the intense, successful child, while his sister is relaxed, unconcerned about her future—is rare. (p. 4)

Kafer (2007) attested, "the achievement gap in literacy and writing—foundational skills in the information age—between boys and girls is alarming" (p. 2). According to the National Center for Education Statistics (NCES) report in 2007b, gender appeared to be a key determinant in literacy achievement. Kafer (2007) concluded, "the solution to the boy

crisis begins by recognizing the facts" (p. 10). According to Younger et al., (2005b), some possible causes of the gender gap were:

- Brain differences between boys and girls
- Boys' disregard for authority, academic work and formal achievement
- Formation of concepts of masculinity in conflict with the ethos of the school
- Differences in students' attitudes to work, and in their goals and aspirations
- Girls' increased maturity and more effective learning strategies, with the emphasis on collaboration, talk and sharing, while boys are seen neither as competitive nor as team players, unwilling to collaborate to learn
- Teachers' tendency to interact differently with boys and girls. (p. 1)

Challenges boys face. Sax (2005), a family physician and psychologist, admitted, after several years of practice, he had not given gender differences much thought. In the mid-1990s, Sax (2005) began to notice "a parade of second and third grade boys marching into his office, their parents clutching a note from the school" (p. 4) explaining how their sons must have attention deficit disorder. Sax (2005) indicated in most of these cases he found, "what these boys needed wasn't drugs for ADD, but rather a teacher who understood the hardwired differences in how girls and boys learn" (p. 4). Sax (2007) disclosed boys are disengaging from school in every walk of life, "urban, suburban, and rural; white, black, Asian, and Hispanic; affluent, middle-income, and low-income" (p. 5). Sax (2005) declared boys and girls face many challenges no generation before has ever faced. Whereas girls are more apt to indulge in drugs and alcohol today, school is the most recent crises for boys, and boys are progressively becoming estranged from school (Sax, 2005).

Kohn (2003) concurred, “It is not just the boys in the inner cities lagging behind, it is happening in all segments of society, in all 50 states” (para. 4). Kohn (2003) reported, “If statistical trends were to continue at their current rate, the final male college graduate will receive his bachelor’s degree in the year 2068” (para. 16). Historically, boys have achieved better than girls, but in the past 30 years a shift has taken place and Mortenson (2005) acknowledged, “it is occurring at all levels of higher education” (p. 12).

A Changing World

President Johnson sought to help end poverty in the 1960s by asking Congress to pass the Elementary and Secondary Education Act in 1965 (Armstrong, 2007). This was an enormous undertaking instituted by the federal government of the United States (Armstrong, 2007). Over the past 40 years, this Act has become an “$11-billion-a-year Act and has been sending federal assistance to high poverty schools, communities, and to help educate disadvantaged children” (U.S. DOE, 1997, para. 1). In fact, “it has become the granddaddy of all subsequent federal programs in education, including Head Start, the Individuals with Disabilities Education Improvement Act, and the No Child Left Behind Act” (Armstrong, 2007, p. 20). This law greatly influenced the role the federal government played in the educational system (Armstrong, 2007). It was not long after the federal government began allocating funds to public schools that the national assessment system was adopted (Armstrong, 2007).

In 1969, the National Assessment of Educational Progress (NAEP), or the Nation’s Report Card, provided financial support furnished by the Carnegie Foundation, private sources, and the federal government (Armstrong, 2007). The federal government

later assumed full responsibility for its funding and administration (Vinovskis, 1998). Even though the government contributed approximately 10% of the funds, the public schools acquired most of their money from state and local government (Tyre, 2008). Data have accumulated because of the money given by the federal government in an attempt to explain to taxpayers how their money is spent (Tyre, 2008).

Another factor contributing to the changing world at this time, acknowledged Tyre (2008), was in 1973 boys outperformed girls in the area of math. Of course, as Tyre (2008) interjected, society expected girls to fail in math and many theorized about why girls could not keep up. Some scientists proclaimed girls just did not have the "math gene" (Tyre, 2008, p. 29). By the 1990s, though, girls were closing the achievement gap in math (Tyre, 2008).

During this same time, the National Center for Education Statistics revealed boys were trailing behind girls in literacy (Tyre, 2008). If one observed the data accumulated in literacy over time, boys have narrowed the gap but not closed the gap (Tyre, 2008). Tyre (2008) explained, "In 2004, fourth grade boys scored better in literacy but remained 5 points below fourth-grade girls" (p. 25). A further look shows the gap growing wider in middle schools at 10 points and even wider in high school at 14 points (Tyre, 2008). According to Chall, Jacobs, and Baldwin (1990), the scores of boys and girls entering the fourth grade begin to drop in several areas of literacy. Gunning (2005) found through research that students "have particular difficulty defining abstract, more academically oriented words in addition to vocabulary, word recognition, and spelling scores" (p. 535). Gunning (2005) attributed students' scores dropping in fourth grade to vocabulary and more abstract concepts taught in literacy. Chall et al. (1990) affirmed in the primary

grades (grades one through three), children are taught “letters, their sounds, and the relationships between them, and they learn to recognize whole words, and practice using these in literacy stories, poems, and other connected texts for comprehension and pleasure” (p. 45). However, when students enter fourth grade, instruction focuses “on the literacy of unfamiliar texts and on the use of literacy as a tool for learning” (Chall et al., 1990, p. 45). Because of the juggling war between whole language and phonics that has gone on for years, many students miss out on a strong phonics based program (Chall et al., 1990). A good phonics based instruction program teaches reading by stressing the acquisition of letter-sound correspondences and how to use this letter-sound correspondence in reading and spelling (IRA, 2011). The more a reader struggles, the more phonics based reading program the student needs, and early intervention is always the key (IRA, 2011).

Strategies from the Research

Reading First Program. The NCLB Act and Reading First Program of 2001 indicated a strong need for improvement in literacy achievement (U.S. DOE, 2008). The U. S. Department of Education Reading First Program (U.S. DOE, 2008), an integral part of the NCLB law, “focuses on putting proven methods of early literacy instruction in classrooms” (para. 1). Through the Reading First (U.S. DOE, 2008) program, “states and districts receive support to apply scientifically based literacy research—and the proven instructional and assessment tools consistent with this research—to ensure that all children learn to read well by the end of third grade” (para. 1).

Toppo (2008) maintained the “$1 billion-a-year literacy program that has been a pillar of the Bush administration's education plan doesn't have much impact on the

literacy skills of the young students it's supposed to help …" (para. 1). Toppo (2008) further stated, "the new federal study by the U.S. Education Department's Institute of Education Sciences (IES) shows children in schools receiving Reading First funding had virtually no better literacy skills than those in schools that didn't get the funding" (para. 3).

Single sex schools. Magnetic Resonance Imaging (MRI) and Positron Emission Tomography (PET) scans have helped provide information about how the brains of boys and girls are structured differently and how the structural and functional differences affect human learning (Gurian, 2003). When given a MRT or PET scan, technology is such that one can see what parts of a boy's or girl's brain lights up under differing circumstances (Gurian, 2003). These scans revealed boys' and girls' brain construction have differing educational needs, and schools are not meeting the needs of the boys (Gurian, 2003). Jenson (2008) affirmed, "structurally and functionally, our schools fail to recognize and fulfill gender-specific needs" (p. 21). Gurian expressed the feelings of one teacher regarding gender-specific needs:

> For years I sensed that the girls and boys in my classrooms learn in gender-specific ways, but I didn't know enough to help each student reach full potential. I was trained in the idea that each student is an individual. But when I saw the PET scans of boys' and girls' brains, I saw how differently those brains are set up to learn. This gave me the missing component. I trained in male/female brain differences and was able to teach each individual child. Now, looking back, I'm amazed that teachers were never taught the differences between how girls and boys learn. (Gurian & Stevens, 2004, p. 21)

Boys and girls are different because their brains are different (Moir & Jessel, 1992). Research has revealed physical differences between boys and girls brains (Jensen, 2008). This would account for behavioral, developmental, and cognitive processing differences between boys and girls (Jensen, 2008). Because boys and girls learn differently, Tyre (2008) asserted teachers notice immediately once boys and girls are separated that they approach learning differently. Many researchers in the United States find single-sex education making a comeback and making a positive impact (Tyre, 2008). In 2001, Democratic Senator Hillary Clinton and Republican Senator Kay Bailey Hutchison collaborated and constructed new legislation constituting single-sex education in the American public schools (Sax, 2005). Sax (2005) affirmed single-sex education is regaining popularity in other nations around the world.

Gurian and Stevens (2004) addressed the qualities generally more characteristic of boys' brains:

- Because boys' brains have more cortical areas dedicated to spatial-mechanical functioning, males use, on average, half the brain space that females use for verbal emotive functioning. The cortical trend toward spatial-mechanical functioning makes many boys want to move objects through space, like balls, model airplanes, or just their arms and legs. Most boys, although not all of them, will experience words and feelings differently than girls do (Blum, 1997; Moir & Jessel, 1992; Gurian & Stevens, 2004).
- Boys not only have less serotonin than girls have, but they also have less oxytocin, the primary human bonding chemical. This makes it more likely that they will be physically impulsive and less likely that they will neurally combat

their natural impulsiveness to sit still and empathically chat with a friend (Moir & Jessel, 1992; Taylor, 2002; Gurian & Stevens, 2004).

- Boys lateralize brain activity. Their brains not only operate with less blood flow than girls' brains, but they are also structured to compartmentalize learning. Thus, girls tend to multitask better than boys do, with fewer attention span problems and greater ability to make quick transitions between lessons (Havers, 1995; Gurian & Stevens, 2004).
- The male brain is set to renew, recharge, and reorient itself by entering what neurologists call a *rest state.* The boy in the back of the classroom whose eyes are drifting toward sleep has entered a neural rest state. It is predominantly boys who drift off without completing assignments, who stop taking notes and fall asleep during a lecture, or who tap pencils or otherwise fidget in hopes of keeping themselves awake and learning. Females tend to recharge and reorient neural focus without rest states. Thus, a girl can be bored with a lesson, but she will nonetheless keep her eyes open, take notes, and perform relatively well. This is especially true when the teacher uses more words to teach a lesson instead of being spatial and diagrammatic. The more words a teacher uses, the more likely boys are to "zone out," or go into rest state. The male brain is better suited for symbols, abstractions, diagrams, pictures, and objects moving through space than for the monotony of words. (Gurian, 2001; Gurian & Stevens, 2004, p. 21)

Under the direction of the superintendent, Ken Dragseth, the district staff at Edina Public Schools, "decided to work on gaining greater knowledge and training on how boys

and girls learn differently" (Tyre, 2008, p. 17). The initiative to help close the achievement gap between boys and girls spanned a three-year period (Tyre, 2008). In 2002, completed data analysis reported by Dragseth revealed out of the 70 indicators: 1) girls were doing much better in our schools than boys on most indicators, thus we had an overall achievement gap that needed addressing, and 2) there were specific areas of need for girls as well (Gurian, n.d., p. 1).

Dragseth contacted the Gurian Institute (Michael Gurian is Cofounder of the Gurian Institute, which trains education professionals in gender difference and brain-based learning) to "increase our knowledge and training in issues facing boys and girls specifically, including practical applications of instructional strategies that focus on gender differences" (Gurian, n.d., p. 1). Since that time, Dr. Dragseth has been pleased with the significant increase in student performance (Tyre, 2008).

Research conducted by the Centre for Longitudinal Studies at the University of London "has been following thirteen thousand individuals born in 1958 throughout their lives with the aim of determining the lifelong consequences of different types of schooling" (Tyre, 2008, p. 218). The information gleaned from this study indicated "people who went to single-sex schools were more likely to study subjects not traditionally associated with their gender than were those who went to coeducational schools (Tyre, 2008, p. 218.).

Researchers from Stetson University in Florida finished a three-year pilot project comparing single-sex classrooms with coed classrooms at Woodward Avenue Elementary School (National Association for Single Sex Public Education [NASSPE], 2010). At Woodward Avenue Elementary School, fourth graders were matched to either a

single-sex or coed classroom (NASSPE, 2010). All relevant parameters were taken into consideration: “The class sizes were all the same, the demographics were the same, all teachers had the same training in what works and what doesn't work” (NASSPE, 2010, p. 1). On the Florida Comprehensive Assessment Test (FCAT), the results were as follows (NASSPE, 2010):

Percentage of students scoring proficient on the FCAT

- boys in coed classes: 37% scored proficient
- girls in coed classes: 59% scored proficient
- girls in single-sex classes: 75% scored proficient
- boys in single-sex classes: 86% scored proficient. (p. 1)

It is important to note, “students were all learning the same curriculum in the same school” (NASSPE, 2010, p. 1). This school "mainstreams students learning-disabled, or who have ADHD, etc.,” (NASSPE, 2010, p. 1). Many of the boys scoring proficient had been previously labeled ADHD or ESE in their coed classes (NASSPE, 2010). According to a 2008 NBC Nightly News update, (NASSPE 2010), Professor Kathy Piechura-Couture from Stetson University, “reported that over the four years of the pilot study, 55% of boys in the coed classrooms scored proficient on the FCAT, compared with 85% of boys in the all-boys classes. Same class size. Same curriculum. Same demographics” (p. 1). Dewsbury (2005) provided factors for success in the single-sex classroom:

- Ensure teachers use a proactive and assertive approach in the classroom that avoids the negative or confrontational, conveys high expectations and a sense of challenge, and uses praise regularly and consistently

- Develop a team ethic to establish a class identity, supported by humor and informality on the part of both teachers and students, to identify with their interests and enthusiasms, but without reinforcing stereotypes
- Ensure teachers use an interactive, lively and clearly structured style based on high levels of their input and moving the lesson on with pace and clarity
- As a senior manager, give a high profile and active support to single-sex classes, and see them as a central plank within the achievement ethos of the school, rather than viewing them as an 'experiment' that might succeed or fail
- Promote the intervention actively to governors, parents, care takers and all staff, so that single-sex classes can be sustained through time. (p. 1)

Brain-based learning. Brain-based learning allows teaching and learning to be "aligned with how the brain naturally learns" (Jenson, 2000, p. 22). Are brains gendered? This has been a controversial question and one many scientists are still investigating (James, 2007). James (2007) asserted when looking at the brain size between boys and girls, it is clear they are different. Although it is true girls have smaller brains than boys, Witelson, Glezer, and Kigar (1995) explained in the area of the brain established for language, girls have a greater density of neurons in the posterior temporal cortex. Because all information enters the brain through one or more of the senses—hearing, vision, touch, smell, and taste—discussion of each system in light of how each affects boys' learning was examined (James, 2007). Sousa (2003) asserted the most powerful way to make meaning and apply brain-based learning is to engage as many of the senses as possible.

James (2007) maintained not only are boys more likely to be colorblind when compared with girls, but boys often do not use color in the same way as girls. Girls frequently use more colors and brighter colors in their work (Iijima, Arisaka, Minamoto, & Arai, 2001). Boys are not as aware of colors as girls, and according to Kimura (2000), boys name colors more slowly. In a biology class, James (2007), asked students to identify wildflowers. Partially based on the differences in color, some students "had trouble discerning between blue and lavender or between gold and yellow" (James, 2007, p. 31). Walk into any department store in the toy section, and it becomes apparent the owners must be aware, "the visual pathways in the brain do not respond the same way for boys and girls" (James, 2007, p. 32). An interesting point discussed by James (2007) brings to the forefront that boys prefer softer lights than girls. James (2007) conceded "girls' ability to solve problems is greater in the presence of 3000K lights, which are described as a warm light—slightly pink…whereas boys' problem solving ability was enhanced in 4000K lights, which are cool—slightly blue" (p. 32). Lutchmaya and Baron-Cohen (2002) added boys see things in motion very well. This may attribute to the reason boys are often attracted to television, video games, and fast cars and why attention problems may ensue for boys if there is too little motion in the classroom (Lutchmaya & Baron-Cohen, 2002).

Even when boys do not have apparent visual difficulties, boys still file information differently when compared to girls, according to Sax (2005). Researchers from Cambridge University conducted a study to discover if "female superiority in understanding facial expressions was innate or whether it developed as a result of social

factors such as parents encouraging girls to interact with other girls while the boys shoot each other with ray guns" (Sax, 2005, p. 19).

Researchers from Cambridge University planned to give babies a choice on the day they were born between looking at a dangling mobile or at a live, young woman's face (Sax, 2005). This young woman could smile for the babies but was not allowed to say anything nor did the mobile make any noise (Sax, 2005). Researchers discovered boy babies were more interested in the mobile, and the girl babies were more interested in watching the young ladies face (Sax, 2005). Sax contended the results of this experiment suggested "girls are born prewired to be interested in faces while boys are prewired to be more interested in moving objects …[which is attributed to] sex differences in the anatomy of the eye" (Sax, 2005, p. 19). This biological difference in boys and girls vision and choices is attributed to the rods and cones—variations in thickness and layering of the retina (Alexander, 2003). The girls' thinner retinas have more P ganglion cells responsive to texture and longer light waves registering brighter colors (Alexander, 2003). The boys have more M ganglion cells responding to shorter light waves registering colors, such as dark green, black, or silver (Alexander, 2003). These differences influence the attention of boys' and their emotions associated with early written expression (Gurian, & Stevens, 2005). It is important for educators to encourage the passions of young boys (Sax, 2005). Unfortunately, because of this lack of knowledge of the differences in boys and girls, educators often misunderstand the actions of boys in the classroom (Sax, 2005).

Interestingly, babies are born with the "ability to hear all the phonemes spoken in the world, and they recognize when spoken sounds change most of the time, no matter

what language is used" (Gopnik, Meltzoff, & Kuhl, 2001, p. 108). According to Kuhl et al. (2006), physical abnormalities can interrupt or cause hearing problems when young children have frequent ear infections, injury, or a lack of environmental stimulation. Neurological problems from these abnormalities can cause problems with speech interpretation, language development, and eventually problems in reading (Kuhl et. al., 2006). The sooner problems are diagnosed and corrected, the less frustrating and discouraging for these young boys (Zambo & Brozo, 2008).

Another ailment to be aware of is otitis media with effusion (Zambo & Brozo, 2008). According to Zambo and Brozo (2008), a boy who contracts an ear infection of this type "for an extended period of time is unlikely… to distinguish words from a stream of speech, hear beginning or ending sounds or be able to pick out individual phonemes in words" (p. 33). It is this type of problem that affects phonological awareness, considered to be one of the top five most influential components of literacy in the preschool and early primary years (Goswami, 1999). Hearing problems that affect the area of phonological processing may disturb a child's foundational literacy skill ultimately interrupting the reading process (Brooks-Gunn, Duncan, & Aber, 1997).

Becoming aware of this health issue is imperative for educators of boys living in poverty because of poor health care (Brooks-Gunn, et al.,1997). Cone-Wesson and Ramirez (1997) submitted even if a young boy does not encounter serious physical problems with hearing, he may still encounter complications due to physiological differences in the way he hears. Cone-Wesson and Ramirez (1997) discovered girls, in contrast to boys, have more brain cells in the area of hearing allowing them an 80% greater acoustic brain response to tones found to be in range of the average human voice.

Sax (2005) implied these hearing differences have ramifications for the classroom and cause even higher referrals of boys with attention problems.

Jensen (2008) recommended keeping the left and right side of the brain connected with movement to keep the brain running at full throttle. Moving and crossing the midline engages both sides of the brain to begin working together (Jensen, 2008). Movement has many benefits for the brain (Jensen, 2008):

- It enhances circulation so that individual neurons can get more oxygen and nutrients. This means a great deal when you're teaching content and you need the brain to be at its best.
- It may spur the production of nerve growth factor, a hormone that enhances brain dopamine, a mood-enhancing neurotransmitter.
- When done in sufficient amounts, we know that exercise enhances the production of new cells in the brain. (p. 38)

Reading skills do not start in pre-school or kindergarten, they begin when still a baby (Jensen, 2008). When a baby crawls, sucks on something, or rolls over frequently, the child is readying the brain for reading (Jenson, 2008). These are movements that also cross the midline and exercise the brain (Jenson, 2008). A study from the University of California, performed by neuroscientists Griesbach, Hovda, Molteni, Wu, and Gomez-Pinilla (2004), found exercise activates the release of brain-derived neurotrophic factors (BDNF) that boost cognition augmenting the ability of neurons to communicate with each other.

The role of taste in learning encompasses eating healthy and staying hydrated (Jenson, 2008). Unfortunately, many children living in poverty tend to either skip

breakfast or have a high carbohydrate breakfast, which does not enhance thinking the way a breakfast consisting of eggs, bacon, and cottage cheese does (Jenson, 2008). Missing the vitamins and important nutrients essential for good health affects the brain and thinking in numerous areas, such as, "alertness, memory, visuospatial ability, attention and planning/organizational skills" (Jenson, 2008, p. 64.)

Often the role of smell is neglected when considering how the three senses, vision, aural, and kinesthetic fit into brain-based learning (Jenson, 2008). Jenson (2008) argued the "air we breathe, and the pollutants around us go unnoticed" (p. 71), but stressed the importance of creating an optimal brain-friendly environment for learners. Jensen (2008) found there is "a direct link between the olfactory glands and the nervous system that sets up a vital connection that can aid learning" (p. 72). Jensen (2008) further exclaimed, "smells in our environment can influence our mood, anxiety, fear, hunger, depression, and learning (p. 72).

Brain-based learning is linked closely to learning styles and multiple intelligences by class instruction, materials, and assessments that coordinate in the best way to serve how a student's brain operates (Erlauer, 2003). A brain-based classroom structured so students have the opportunity to learn using their best mode of learning, then practice with materials appropriate for each individual learning style and preference, work best (Erlauer, 2003). Using brain-based learning, learning styles, and multiple intelligences in the classroom require more preparation time and requires the teacher know and understand the individual learning mode of each student (Erlauer, 2003).

Learning styles. It would be difficult to carry on a conversation with a person speaking German and the other speaking Spanish (Tobias, 1998). The person speaking German could slow his speech, articulate the words more clearly, or speak in a louder or softer tone of voice, but if one did not understand German the chances are remote the person speaking Spanish would understand what the German speaking person was trying to convey (Tobias, 1998). A similar scene happens in the classroom each day in which the teacher may say, "How many times do I have to tell you this? What did I just say? or Didn't you hear what I just said?" (Tobias, 1998, p. 13). Tobias (1998) directed teachers to "recognize and appreciate learning styles [that] can help you [teachers] identify the natural strengths and tendencies each individual possesses" (p. 19). Gardner (1998) affirmed this belief and agreed, "if we can engage all intelligences through the instructional strategies … we reach each student regardless of his or her particular pattern of intelligence, and foster the development of all facets of all intelligences in all students" (p. xx). Learning styles accentuate how information is perceived and processed (Tobias, 1998). Everyone has natural strengths and a blending of different styles (Tobias, 1998). Four leading research models are available to help educators understand and identify a student's natural strengths and tendencies:

1. Mind-styles (Gregorc, 1982b) recognizing how the mind works
    a. Environmental Preferences (Dunn & Dunn, 1978) designing the ideal study environment
2. Modalities (Barbe-Swassing, 1985)
    a. Learning strategies for remembering

3. Analytic/Global Information Processing (Witkin, Moore, Goodenough & Cox, 1977)
    a. Identifying effective methods of learning and study skills
4. Multiple Intelligences (Gardner, 1998)
    a. Identifying seven different areas of intelligences. (Tobias, 1998, p. 142)

Gregorc's "model of individual differences in thought and learning … focused on how information is grasped perceptually" (Gregorc, 1982b, p. 1). Gregorc (1982b) believed, "perception and ordering mediate our relationship to the world, and different minds thus relate to the world in different ways" (p. 1). The learning style model of Dunn and Dunn (1978), demonstrated four perceptual learning channels using one or more of the senses to comprehend and understand experience (Tobias, 1998). The four modalities recommended by Dunn and Dunn (1978) are visual learning, auditory learning, kinesthetic learning, and tactile learning (Tobias, 1998). The Barbe-Swassing (1985) model is a performance-based instrument that tests for recall of sensory data (Tobias, 1998). The analytic and global information processing model, by Witkin et al. (1977) is related to the cognitive style and is used to identify personality traits (Tobias, 1998). Lastly, the multiple intelligence model of Gardner (1998) designated nine types of intelligence: naturalist intelligence, musical intelligence, logical-mathematical intelligence, existential intelligence, interpersonal intelligence, bodily-kinesthetic intelligence, linguistic intelligence, intra-personal intelligence, and spatial intelligence (Tobias, 1998).

Unlocking the secrets of the brain allows educators to examine the issue of learning styles and improve the quality of education (Tobias, 1998). Boys' and girls'

brains are different in many ways, and children learn best when using a variety of learning styles (Gardner, 1998). Many elementary teachers have incorporated learning styles as a part of their daily teaching strategies (Younger & Warrington, 2006). This approach to learning has augmented motivation, engagement, and helped to raise achievement scores (Younger & Warrington, 2006).

A case study involving three primary schools randomly chosen from urban and rural locations was conducted to initiate an "evaluation and dissemination of ideas associated with multiple intelligences among its schools" (Younger & Warrington, 2006, p. 168). Younger and Warrington (2006) found, "where dominance could be identified, there was more of a tendency for girls to favor visual styles of learning and boys' auditory learning" (p. 170). A "high and statistically significant correlation [was found] between the number of different learning styles apparent and the degree of pupil engagement with distracted and off-task behavior falling with an increase in number of learning styles employed by the teacher" (Younger & Warrington, 2006, p. 179). Younger, Warrington, Gray, Rudduck, McLellan, Bearne, Kershner, and Bricheno (2005a) added, "the boys who had experienced the learning styles approach in their primary school were more able to express ideas about what helped them to learn and what made learning difficult" (p. 64).

James (2007) contended all information must advance through the senses for one to learn. If any of the senses are sensitive, this will affect how well one gains information through that particular modality (James, 2007). No single test can forecast a person's intelligence but "everyone can win when given a chance to show how they are smart" (Tobia, 1998, p. 138). Differences exist between the ways boys and girls behave that have

implications for teaching and learning (Tobias, 1998). The Eduguide staff (n.d.) offer 10 ways boys and girls differ in the classroom, and girls are more likely to:

- be good listeners – a trait that serves them well in today's language-rich classrooms;
- print neatly and follow directions carefully;
- sit calmly in their seats;
- gather facts before they draw conclusions;
- need concrete examples when learning abstract principles;
- need to talk about their subject before beginning a writing project;
- work well in cooperative groups;
- entertain themselves during boring parts of the school day;
- pay attention to more than one activity at a time; and
- discuss problems with a teacher.

Boys, on the other hand, are more likely to:

- do well when using mathematical-logical thinking;
- settle for messy handwriting and disorganized work;
- need space to spread out their materials; move around in that space;
- deduce conclusions from general statements;
- be comfortable with mathematical symbols and general ideas in math;
- lose focus on writing task and spend little time talking about what they plan to write;
- prefer to work alone; argue over who will lead when working in a group;
- act out and disrupt the class when bored;

- find it hard to concentrate on learning when they are upset; and
- act as if they don't care about learning when they are confused or frustrated. (Eduguide, n.d., para. 2)

Younger et al. (2005a) found in their research there was not one approach that worked better over another—there were just different routes to achievement. Younger et al. (2005b) discovered successful schools found strategies appropriate for their context and cultivated ways to implement these strategies. Factors found successful by Younger et al. (2005b) on learning styles were:

- Focus on developing an understanding, with teachers and students, of how learning takes place, through keynote presentations to teachers and students about different modes and styles of learning
- Ensure students understand that, as individuals, they have different learning styles, some of which (such as visual, auditory or kinesthetic) may be more prominent than others, but that to be effective learners, they must be able to access different learning styles at different times
- Ensure teachers know how to plan lessons that encompass different learning styles
- Help teachers to be more creative in their teaching, planning and assessing
- Acknowledge that learning styles are flexible and can change over time in response to different teaching styles and learning opportunities
- Ensure teachers regularly reassess pupils' preferred learning styles, and take action to keep the issue high profile

- Ensure all students are given regular opportunity to develop a better understanding of themselves as learners
- Be aware of the dangers of narrowing teaching approaches to just one learning style for a particular student — this can be detrimental to their achievement in the long term, exacerbating barriers to learning rather than overcoming them. (Younger et al., 2005b, p. 1)

Supporting Research

Interestingly, a study ready for publication in April 2011, deals with guidelines and solutions to the boy crises. Cleveland (2011), "through a survey, asked educators to contrast the characteristics of successful and struggling boys in their classrooms" (p. 1). The survey revealed four clues helpful to educators (Cleveland, 2011). These four clues are as follows: "The influence of nonacademic factors on academic success, factors contributing to boys' experience of school, how competence can enhance persistence and how self-regulation can affect learning" (Cleveland, 2011, p. 1). Another study by Hawley and Reichert (2009), out of a heightened concern regarding how boys were not thriving in many U. S. schools, developed a study in partnership with the International Boys' Schools Coalition. The object of this study was to develop and document the most prevailing features of effective practices (Hawley & Reichert, 2009). In the Hawley and Reichert (2009) international study, "teachers and boys from 18 schools were asked to submit narratives of specific lessons and practices that they deemed especially effective" (p. 1). Some of the 18 schools represented were the United States, Canada, Great Britain, New Zealand, Australia, and South Africa (Hawley & Reichert, 2009). Hawley and

Reichert (2009) determined the successful lessons could be reported in eight categories. More discussion regarding these two studies will follow in Chapter Four.

The theme prevalent throughout these studies was "teachers willing to rethink current methods and respond to the behavioral feedback their students offer daily are in a good position to increase the engagement and ultimate mastery of all of their students—including seemingly unreachable boys" (Hawley & Reichert, 2009, p. 2). Hawley and Reichert (2009) implied too many boys are not thriving in the scholastic setting, and suggested, "the common features of lessons successfully taught to boys of all types in all subjects and in a wide variety of schools offer a promising blueprint for better practice (p. 3). These discoveries are important to the future of boys (Hawley & Reichert, 2009).

Summary

In the early 1990s, the American public recognized the need to close the achievement gap for girls. Now, this same recognition is needed to increase the achievement of boys. Conlin (2003) indicated schools are blamed for not meeting the needs of boys and for not finding ways to close the achievement gap. Gender inequality in education is a complex issue at best. Because of the passing of the NCLB (2002), schools have put much emphasis on student achievement. When schools are held accountable and pressured for all students to achieve at 100% proficiency by the year 2014, the responsibility becomes overwhelming. This study examined best practices used by Blue Ribbon and Gold Star schools that appear to have caused achievement levels of fourth grade boys to improve.

In the following chapter, the methodology of the study was presented. Discussion of the problem and purpose of the study, as well as the instrumentation and description of

the design were examined. A summary of findings, conclusions, and recommendations were discussed in Chapter Five.

Chapter Three: Methodology

Problem and Purpose Overview

According to Klecker (2006), compelling differences exist between an individual's gender and his or her literacy performance. Chiu and McBride-Chang (2006) reported girls outperform boys on literacy related skills and tasks, and boys make up a larger percentage of students identified as poor or struggling readers. The same observations can be found from the results of the 2009 Missouri Assessment Program (MAP) (MODESE, 2010). The statistical data revealed girls scored higher than boys on literacy, based on performance, at grades four through eight. With these conclusions, the current study focused on what intervention strategies were perceived to improve boys' scores in communication arts (MODESE, 2010).

For the education system to create a balance between boys and girls, "it must take seriously the plight of boys by embracing strategies and systems that allow boys and girls to excel—in particular, by encouraging a greater diversity of educational methods" (Kafer, 2007, p. 1). The purpose of this study was to examine intervention strategies that exhibited a significant relationship to high achievement scores in Blue Ribbon and Gold Star schools in Missouri. The acquired information compared an equal number of schools that had not met Adequate Yearly Progress (AYP) targets as mandated by the State Board of Education.

All data from the MAP scores were disaggregated by gender. Kafer (2007) attested, "the achievement gap in literacy and writing—foundational skills in the information age—between boys and girls is alarming" (p. 2). Kafer (2007) continued, "even more disturbing is the number of boys who fall behind in school, become involved in destructive behavior and drop out" (p. 2).

Research Questions

The following research questions guided this study:

1. What intervention strategies are perceived to be effective in improving the achievement of fourth grade boys in the area of literacy?

2. What are perceived to be the underlying reasons boys underachieve in the area of literacy?

Description of Blue Ribbon and Gold Star Schools

The Blue Ribbon and Gold Star School program brings attention to schools whose students are performing at high academic levels or have proven substantial progress in student achievement (MODESE, 2009). In Missouri, Gold Star Schools are selected at the state level based on exemplary performance in student achievement, proven instructional strategies, effective leadership, and successful parent and community programming. The top five Gold Star Schools are nominated for consideration in the Blue Ribbon Schools program, which exists at the national level. The U.S. DOE began the Blue Ribbon program in 1982, which was developed to encourage schools and communities to raise the bar in school achievement (MODESE, 2009). Eligible Blue Ribbon Schools are recognized nationally if they meet one of two of the following criteria (MODESE, 2009):

- *High performing schools:* Schools that are ranked among the state's highest performing schools as measured by state assessments in both reading (English language arts) and mathematics or that score at the highest performance level on tests referenced by national norms in at least the most recent year tested.

- *Improving schools:* Schools with at least 40% of their students from disadvantaged backgrounds that have reduced the achievement gap by improving student performance to high levels in reading (English language arts) and mathematics on state assessments or tests referenced by national norms in at least the most recent year tested. (MODESE, 2009, p. 1)

Research Perspective

Prior to the data collection process, approval for the research project was given by the Lindenwood University Institutional Review Board (see Appendix A). A survey was developed (see Appendix B) and sent via electronic mail to eight Missouri Blue Ribbon and Gold Star Schools, as well as an equal number of schools not meeting AYP. Only six of the Blue Ribbon and Gold Star schools responded; therefore, the sample consisted of 12 schools.. Perceptions were collected via the survey regarding the intervention strategies effective in improving the achievement of fourth grade boys in the area of literacy and the underlying reasons boys underachieve. Administrators and literacy specialists were prompted to share best practices and strategies. Each participant received an Informed Consent Letter (see Appendix C).

From a list of 23 options, recipients of the survey were requested to choose the top 10 considered as the best practices used in the area of communication arts. Then each recipient was prompted to choose five from the top 10 as the most effective best practices with boys. Additionally, a Likert scale was used to allow for further insight of the administrators and literacy specialists regarding effective intervention strategies for fourth grade boys in the area of literacy. A bar graph was formulated to report this information.

Application of the Likert scale served to garner a better understanding of each school's culture and perceptions surrounding the achievement of boys. A Likert scale is a type of psychometric scale and often used in psychology and business questionnaires. Likert developed the principle of measuring attitudes by asking people to respond to a series of statements (Cherry, 2010). Each statement is then rated on a five point scale in terms of the extent to which they agree or disagree, and so tapping into the cognitive and affective components of attitudes (Cherry, 2010). The Likert scale for this study included five anchors: strongly disagree, disagree, undecided, agree, and strongly agree. A bar graph designed to reveal the discoveries was used. The information gleaned from the Likert scale communicated whether:

- teachers were aware that boys scores were lower than girls in communication arts;
- boys developed reading and writing skills at the same age as girls;
- teachers received job-embedded professional development, or training, to implement best practices that were appropriate for boys who were struggling in reading and writing;
- teachers used specific teaching and learning strategies with boys whose scores were below grade level in communication arts; and,
- boys and girls should receive separate reading instruction in a single-gender classroom setting.

Data were gathered from the MODESE website and survey results from Blue Ribbon and Gold Star schools as well as an equal number of schools not meeting AYP.

A quantitative analysis of the data using a *t*-test determined whether a significant relationship existed between boys' and girls' reading scores gathered from the communication arts section of the MAP. From the survey, specific differences between boys' and girls' literacy scores, reviewed for foundational purposes, provided evidence of best practices.

In a similar study through a survey, Cleveland (2011) "asked educators to contrast the characteristics of successful and struggling boys in their classrooms, she [Cleveland] discerned four clues that could help educators arrive at solutions to engage boys struggling to learn" (p. 1). These four clues were: "The influence of nonacademic factors on academic success, factors contributing to boys' experience of school, how competence can enhance persistence, and how self-regulation can affect learning" (Cleveland, 2011, p. 1).

Missouri Assessment Program

The Missouri Assessment Program (MAP) provided some of the data for this study. Data gathered from the MAP were used for additional information to support the research. The MAP "assesses students' progress toward mastery on the Show-Me Standards, otherwise known as the educational standards in Missouri" (MODESE, 2010, p. 1). The MAP is a standards-based test given yearly and measures particular skills, as set by the state of Missouri, with four achievement levels: below basic, basic, proficient, and advanced (MODESE, 2010, p. 1). Students in grades three through eight in Missouri take the grade level assessment with only a few exceptions, as follows (MODESE, 2010):

- Students whose IEP teams have determined that the MAP-A is the appropriate assessment do not have to take the grade-level assessment.

- English Language Learners (ELL) who have been in the United States 12 months or fewer at the time of administration may be exempted from taking the communication arts portion. All other content areas must be assessed.
- Foreign exchange students are allowed, but are not required to take the assessment. This is a district decision.
- Homeschooled students may take part in the assessment at the local district's discretion.
- Private school students are not required to take the grade-level assessment. (MODESE, 2010, p. 1)

Three types of questions comprise the MAP:

- Multiple choice items are composed of selected response questions developed specifically for Missouri/or the survey portion of TerraNova, a nationally normed test.
- Constructed response items require students to supply an appropriate response rather than making a selection from a list of choices.
- Performance events are longer, more demanding tasks requiring students to work through problems, experiments, arguments, or extended pieces of writing. MODESE, 2010, p. 1)

Using the Map Performance Index (MPI) scores, differences were compared between girls and boys. The MODESE (2010-11) reported, "the assessment results in each subject tested for each year are converted to index points, and these index points are used to measure improvement from year to year" (p. 4).

Calculation of the MPI is a single composite number that symbolizes the performance of all students at all levels of the tested subject for a defined grade level (MODESE, 2010-11). The index points "are calculated by first multiplying the percent of reportable students scoring in each achievement level for each subject and grade span …" by predetermined values (MODESE, 2010, p. 4). The grade span MPI for the grade level assessments "is determined by calculating the percent of students in each achievement level for all grades within a span" (MODESE, 2010, p. 5). As an example, "the total number of reportable students in each achievement level in grades 3, 4, and 5 is divided by the total number of accountable students in grades 3, 4, and 5 to determine the percent of reportable students in each achievement level" (MODESE, 2010, p. 5). Then, "the percent Advanced [is multiplied] by 9, percent Proficient by 8, percent Basic by 7, and percent Below Basic by 6. These products are then summed to produce the MPI which ranges from 600-900" (MODESE, 2010, p. 5).

Population and Sample

Population in statistics means "to represent all possible measurements or outcomes that are of interest in a particular study" (Donnelly, n.d., para. 1). Whereas, the sample refers to a portion of the population representing the population selected (Donnelly, n.d., para. 2). For the primary focus, a survey was sent to eight literacy specialists and principals from Blue Ribbon Schools, Gold Star Schools, and eight schools not meeting AYP. Only six of the Blue Ribbon and Gold Star schools responded and reported information for this study. The survey was anonymous so it is unknown whether the literacy specialist or administrator filled out the survey. These groups identified best practices used by their respective school they believed successfully raised

the literacy skills of fourth grade boys. For foundation purposes, fourth grade MAP scores from Blue Ribbon and Gold Star schools were compared to all Missouri schools reporting MAP data. Then, communication arts scores from fourth grade boys and girls enrolled in the Blue Ribbon and Gold Star schools and student scores from an equal number of schools not meeting AYP comprised the sample.

Instrumentation

A survey was developed to gain a better understanding of intervention strategies found effective in improving the achievement of fourth grade boys in the area of literacy. The surveys were distributed to school personnel, included literacy specialists and principals in Blue Ribbon Schools, Gold Star Schools, and schools not meeting AYP. From the first section of the survey, bar graphs were used to display the results regarding the intervention strategies perceived as effective in improving the achievement of fourth grade boys in the area of literacy, as well as the underlying reasons boys underachieve. A five-point Likert scale survey was employed to determine the level of awareness teachers had regarding gender differences. The following anchors comprised the Likert scale: strongly disagree, disagree, undecided, agree, and strongly agree.

There were two studies used as part of the instrumentation to compare results: the Hawley and Reichert (2009) study and the Cleveland (2011) study. The two studies' effective practices paralleled the discoveries of this study. The results of how the studies compared to this study were presented in detail in Chapter Four. For foundational purposes, the MPI scores from the MAP were used to compare differences between girls and boys. Scores were accessed from the MODESE public website.

Descriptive Statistics

Marzano (2003) stated, "if a school can simply identify those variables on which it is not performing well, it can pinpoint and receive the information it needs to improve student achievement" (p. 87). To identify the specific variables, data from the survey were illustrated using a bar graph.

Bar graph. Pusch and Tabor (1997) defined a bar graph as "a visual display used to compare the amounts or frequency of occurrence of different characteristics of data" (para. 1). Moreover, "this type of display allows us to compare groups of data and to make generalization about the data quickly" (Pusch & Tabor, 1997, para. 1). Additionally, "when reading a bar graph there are several things we must pay attention to: the graph title, two axes, including axes labels and scale, and the bars" (Pusch & Tabor, 1997, para. 3). Pusch and Tabor (1996) further explain "since bar graphs are used to graph frequencies or amounts of data in discrete groups, we will need to determine which axis is the grouped data axis, as well as what the specific groups are, and which is the frequency axis" (para. 3). The bar graph will show a count of the data points and a rough approximation of the frequency distribution of the data.

Mean. McAlister (2010) asserted, "In order to find the mean, or average, of these pieces of information, you need to assign each group of data a number and find the average by adding them all together and dividing by the total" (McAlister, 2010, para. 1). This will allow for the discovery of how the range correlates with the average number (McAlister, 2010, para. 1) and identifies the center of the numbers.

Inferential Statistics

A *t*-test was applied to illustrate differences between the two variables. For the purpose of this measurement, $p = < .05$ was considered significant. In this study, the variables were fourth grade communication arts index scores for students in the Blue Ribbon and Gold Star schools and fourth grade communication arts index scores for students in the schools in Missouri that reported data. Then, this study compared *t*-test results between boys and girls in the Blue Ribbon and Gold Star schools to boys and girls in schools not meeting AYP. First, a *t*-test that compared boys versus girls in the Blue Ribbon and Gold Star schools was executed. Secondly, a *t*-test compared boys versus girls in the Missouri school population. Results of the *t*-test were then analyzed.

Surveys were sent to eight Blue Ribbon and Gold Star Schools in Missouri, but only six (75%) of the schools responded. When data were retrieved from the public school districts in Missouri, only 176 schools reported disaggregated data that was gender-specific.

Internal Validity and Reliability

Internal validity is used to measure what is intended to be measured to the truthfulness, correctness, and meaningfulness of the results (Witte & Witte, 2010). In this study, internal validity was important when analyzing intervention strategies effective in improving the achievement of fourth grade boys in the area of literacy, and the underlying reasons boys underachieve in literacy. Although validity is difficult to establish when using a Likert scale, it was assumed the participants responded within a close approximation of the possible choices: strongly disagree, disagree, undecided,

agree, and strongly agree. Reliability was confirmed through the presentation of a standardized format, the survey, to each participant.

Ethical Considerations

Personal or identifying information was not displayed at any time during this research process. All data results will remain confidential. To protect the anonymity of the school districts and participants, numbers used on the frequency chart represented the school district.

Summary

The differences in boys and girls are more than learned behavior, "they stem from differences in the way we process information" (Eliot, 2009, para. 2). The goal of this study was to determine intervention strategies effective in improving the achievement of fourth grade boys in the area of literacy. In this chapter, the population and sample, instrumentation, data collection procedures, and data analysis processes were explained. In Chapter Four, the results from the survey and the MAP index scores were revealed. Bar graphs were used to provide visual data derived from the survey, and the results from the fourth grade boys and girls MAP index scores were analyzed. Chapter Five included the summary, conclusions, and recommendations based on this study.

Chapter Four: Reporting of the Data

The most important objective of any school is supporting and sustaining students in the development of skills and knowledge (NAESP, 1998). Recent research findings may shed new light on how schools can support the specific academic needs of boys. Burman (2008) explained, "findings which suggest that language processing is more sensory in boys and more abstract in girls could have major implications for teaching children" (para.3). This research could be helpful in a time when girls are outscoring boys in the area of literacy achievement (MODESE, 2010). In Missouri, Blue Ribbon and Gold Star schools set high academic standards for all students (NAESP, 1998). This chapter includes the findings from a survey sent to Blue Ribbon and Gold Star schools and an equal number of schools not meeting AYP. The purpose was to discover the intervention strategies perceived to be successful in raising literacy scores for boys.

Survey Results

Surveys were sent by electronic mail to administrators and literacy specialists in eight Blue Ribbon and Gold Star schools. Of the eight schools contacted, only six schools responded. Bar graphs were developed revealing the results from the six Blue Ribbon and Gold Star schools and six schools not meeting AYP. The first question on the survey prompted the recipients to choose the best practices used in the area of communication arts in their respective school district (see Figure 1).

Participants from the Blue Ribbon and Gold Star schools rated teaching reading for making-meaning, or comprehension (A), and integration of a comprehensive word study and phonics program into reading and writing instruction (C) as the top two

choices. Following closely were the balance of teacher-led and student-led discussions (F), emphasizing important concepts and building background knowledge (G) as strategies conducive to best practices.

Interestingly, the Blue Ribbon and Gold Star schools chose integration of a comprehensive word study and phonics program into reading and writing instruction as very important, while use of literacy groups (D) was selected most often by schools not meeting AYP. It is pertinent to note that the schools not meeting AYP rated the use of literacy groups high even though reading scores were low in these schools.

A. Teaching reading for making-meaning, or comprehension.

B. Use of high-quality literature.

C. Integration of a comprehensive word study/phonics program into reading/writing instruction.

D. Use of literacy groups.

E. Use of multiple texts that link and expand concepts.

F. Balance of teacher-led and student-led discussions.

G. Emphasizing important concepts and building background knowledge.

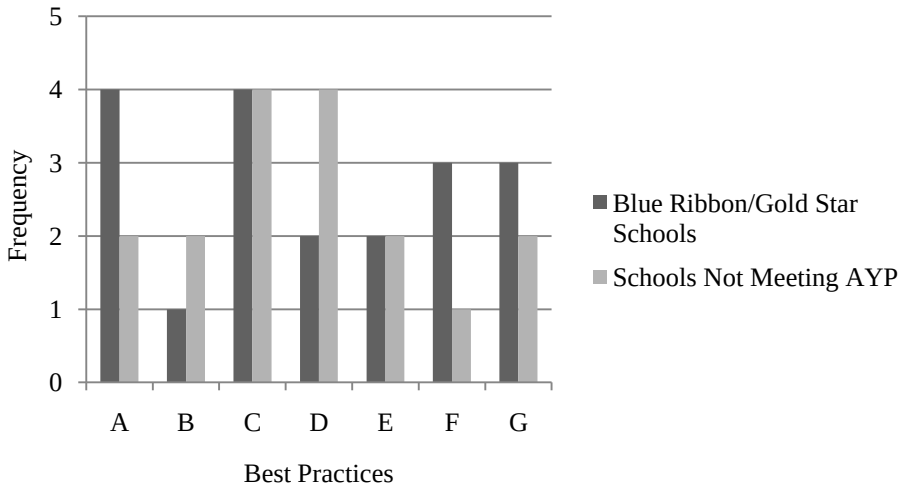

Figure 1. Survey question results A-G: Blue Ribbon and Gold Star schools versus schools not meeting AYP. The numbers represent the frequency of responses, and the alphabetical letters correspond to the best practices used in the area of communication arts in the schools.

Participants from Blue Ribbon and Gold Star schools, as well as schools not meeting AYP, selected three best practices equally: working with students in small groups while other students read and write about what they have read (H), giving students direct instruction in decoding and comprehension strategies that promote

independent reading (J), and using a variety of assessment techniques to inform instruction (L). The schools not meeting AYP chose balancing direct instruction, guided instruction, and independent learning (K) highly, but Blue Ribbon and Gold Star schools did not (see Figure 2). Even though both Blue Ribbon and Gold Star schools, as well as schools not meeting AYP, believed giving students direct instruction in decoding and comprehension strategies that promote independent reading was very important, there was a significant difference between the two on balancing direct instruction, guided instruction, and independent learning.

H. Working with students in small groups while other students read and write about what they have read.

I. Giving students plenty of time to read orally and silently in class.

J. Giving students direct instruction in decoding and comprehension strategies that promote independent reading.

K. Balancing direct instruction, guided instruction, and independent learning.

L. Using a variety of assessment techniques to inform instruction.

M. Using a Literacy library with leveled readers.

N. Allotting teachers and administrators collaboration time to design a school-wide literacy program.

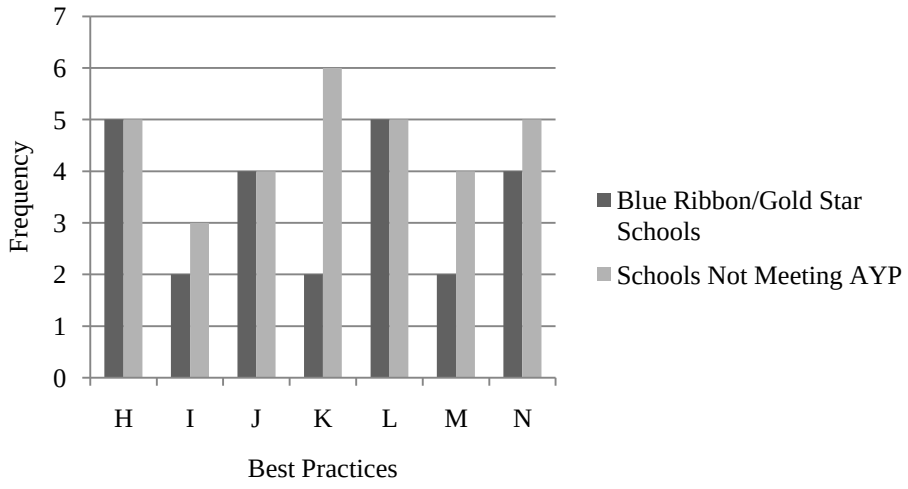

Figure 2. Survey question results H-N: Blue Ribbon and Gold Star schools versus schools not meeting AYP. The numbers represent the frequency of responses, and the alphabetical letters correspond to the best practices used in the area of communication arts in the schools.

Participants from the Blue Ribbon and Gold Star schools recorded collaboration among teachers (R) as essential to best practices. Schools not meeting AYP believed

collaboration is important but did not rate it as highly as the Blue Ribbon and Gold Star schools (see Figure 3). Intriguing, was the fact Blue Ribbon and Gold Star schools considered collaboration among teachers highly effective but scored ongoing collaboration between teachers and administration (V) much lower.

O. Teaching explicit writing instruction.

P. Using movement to enhance learning, such as reader's theatre or music.

Q. Providing students access to print-rich environment.

R. Collaboration among teachers.

S. Integration of phonemic awareness.

T. Scaffolding.

U. Connecting to prior knowledge.

V. On-going collaboration between teachers and administration.

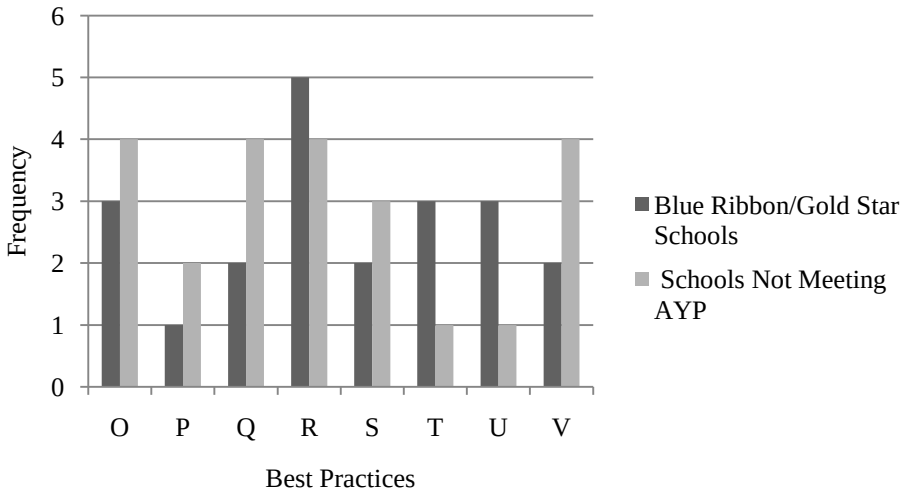

Figure 3. Survey question results O-V: Blue Ribbon and Gold Star schools versus schools not meeting AYP.

A difference in the importance placed on best practices in Blue Ribbon and Gold Star schools versus schools not meeting AYP was discovered. Blue Ribbon and Gold Star

schools placed high importance on working in small groups with students, using a variety of techniques to inform instruction, and collaboration with teachers. Schools not meeting AYP placed highest importance on balancing direct instruction, guided instruction, and independent learning. Interestingly, Blue Ribbon and Gold Star schools ranked this practice low on the survey. Two of the best practices considered of high importance in the Blue Ribbon and Gold Star schools were found as secondary importance in the schools not meeting AYP. These two practices were: 1) working with students in small groups while other students read and write about what they have read, and 2) using a variety of assessments to inform instruction.

The second question on the survey prompted the recipient to choose five best practices from the top 10 of the previous list. This section was not a checklist but rather a space left for those answering the survey to write in their answer. Answers varied on this question with some additions. Though the survey directions were clear (choose five from the top 10 best practices found most effective with boys), some of the recipients chose to add comments. Following is a combined list of responses by participants from the six responding Blue Ribbon and Gold Star schools:

- Allowing boys to make verbal responses
- Allowing boys to read mostly non-fiction books
- Giving boys a specific outcome to achieve and requiring them to meet that standard
- Allowing boys choices when deciding what to write
- Allowing boys to brainstorm ideas with peers

- Direct instruction, phonics, decoding, comprehension instruction, writing instruction, using a variety of assessment techniques, and small group instruction
- On-going collaboration between teachers and administrators.

The additions were: integrate word work into reading and writing instruction, use a variety of texts, connect to prior knowledge, and use of literacy groups to emphasize important concepts and build background knowledge.

When asked this same question on the survey (choose five from the top 10 of the previous list that are effective strategies with boys), the responses from the schools not meeting AYP varied:

- Working with students in small groups using multiple texts;
- plenty of time to read;
- direct instruction in decoding and comprehension;
- integrating word work into reading and writing instruction;
- a variety of texts;
- working with students in small groups;
- teacher collaboration;
- balancing direct instruction, guided instruction, and independent learning;
- connecting to prior knowledge;
- variety of assessment techniques to inform instruction;
- small groups while others read and write about what they have read.
- literacy groups emphasizing important concepts and building background knowledge; and,

- allotting teachers and administrators time for collaboration.

The additional comments shared by schools not meeting AYP were: use a variety of texts, connect to prior knowledge, and form literacy groups to emphasize important concepts and build background knowledge.

Hawley and Reichert Study

Due to the escalating concern boys were floundering in many U.S. schools, Hawley and Reichert (2009) began observing in all-boys' schools to obtain a clearer picture of what practices were effective in teaching boys. Hawley and Reichert (2009) partnered with the International Boys' School Coalition to design an international study named, *Teaching Boys: A Global Study of Effective Practices*. For this study, "teachers and boys from 18 schools representing the United States, Canada, Great Britain, New Zealand, Australia, and South Africa submitted narratives of specific lessons and practices that they deemed especially effective" (Hawley & Reichert, 2009, p. 1). Narratives were submitted to 1000 faculty in middle schools and high schools, as well as a sampling of 1500 boys in each of the schools (Hawley & Reichert, 2009). The objective was to establish common patterns of effective practices and make them applicable to other schools, teachers, and boys (Hawley & Reichert, 2009).

Hawley and Reichert (2009) found "the successful lessons fell into the following eight general categories, each of which expressed a dominant feature of the lesson's reported success" (p. 1):

- Lessons that produced products
- Lessons structured as games
- Lessons requiring vigorous motor activity

- Lessons requiring boys to assume a role or responsibility for promoting the learning of others
- Lessons that required boys to address "open," unsolved problems
- Lessons that required a combination of teamwork and competition
- Lessons that focused on boys' personal realization (their masculinity, their values, their present and future social roles)
- Lessons that introduced dramatic novelties and surprises. (p. 1)

As surveys were analyzed, other elements surfaced, such as … "lightheartedness and good humor were mentioned frequently as qualities that contributed positively to the boys' learning" (Hawley & Reichert, 2009, p. 2). Another finding was boys find it difficult to disengage when there is a relationship with the teacher, and the teacher is consistently fair (Hawley & Reichert, 2009). Teachers reported frustrations at times because adjustments were necessary to what was once thought effective approaches, and adjustments to pedagogy was determined often from feedback (Hawley & Reichert, 2009). Finally, this study discovered, "a quality of transitivity [an element of instruction that piqued the boys' interest] running through the effective practices reported" (Hawley & Reichert, 2009, p. 2).

Comparisons to Hawley and Reichert Study

The Hawley and Reichert (2009) effective practices parallel the discoveries of this study. Following are the results from this study as compared to the Hawley and Reichert study. The Blue Ribbon and Gold Star schools rated working with students in small groups, using a variety of assessment techniques to inform instruction, and ongoing collaboration between teachers and administration as the top best practices. Hawley and

Reichert (2009) believed working in small groups provided boys leadership roles, teamwork, and competition. Using a variety of assessment techniques to inform instruction matched with producing products, structured games, and personal realization. Each of the eight categories identified in the Hawley and Reichert study (2009) related to a variety of assessment techniques.

Surprisingly, collaboration among teachers conveyed a piece of information not noted in the Hawley and Reichert study. This study revealed collaboration among teachers as a very influential factor regarding best practices in Blue Ribbon and Gold Star schools. It is possible, the schools represented in the Hawley and Reichert study may have proven successful from collaboration but not specifically stated the fact. It may be through inference one would make the leap to collaboration. It is obvious, teachers in the Hawley and Reichert study collaborated in order achieve the production of products, structured games, and vigorous motor activity.

The Hawley and Reichert (2009) study findings appeared to lean heavily toward external motivation and positive reinforcement, which were dependent upon the male response to the particular external reward. Ultimately, this reward equals success. On the survey sent to Blue Ribbon and Gold Star schools, the second question asked recipients to rate the top five best practices out of the top 10 best practices already selected. An area was available on the survey so recipients could type in an answer. Among those answers were allowing boys to make verbal responses, allowing boys to read mostly non-fiction books, giving boys a specific outcome to achieve and requiring boys to meet that standard, allowing boys choices when deciding what to write about, and allowing them to brainstorm ideas with peers. These best practices serve to create external motivational

factors for boys and require positive reinforcement from teachers, as noted in the Hawley and Reichert study.

Cleveland Study Background

Another study regarding best practices for underachieving boys was published in April, 2011, by the Association for Supervision and Curriculum Development, entitled, *Teaching Boys Who Struggle in School: Strategies That Turn Underachievers into Successful Learners,* by Kathleen Cleveland. Following are results of this study as compared to the Cleveland study. Cleveland (2011) "discerned four clues that could help educators arrive at solutions that engage boys struggling to learn" (p. 1). These four clues are as follows:

> Clue 1: The influence of nonacademic factors on academic success. Social confidence, positive attitudes about self and learning, and access to support systems were among the nonacademic factors that successful boys showed. Such characteristics, Cleveland says, may influence the use of key academic skills, such as listening, organizing, focusing, using time well, paying attention to details, reading and writing well, and finishing tasks.
>
> Clue 2: Factors contributing to boys' experience of school. Boys' positive perspective on school revolved around the quality and frequency of interactions with friends. The teacher-student relationship, instructional methods, and classroom setting seemed to affect struggling boys in negative ways.
>
> Clue 3: How competence can enhance persistence. Struggling boys seemed to have significant problems in literacy, so Cleveland wonders if there are ways to

> teach reading, writing, grammar, composition, vocabulary, and so on in ways that convince them to persevere in the crucial area of academics.
>
> Clue 4: How self-regulation can affect learning. Could classroom factors such as lighting, seating, and room arrangement contribute to the negative behaviors we associate with underachieving boys? (Cleveland, 2011, p. 1)

Comparisons to Cleveland Study

In the Cleveland (2011) study, the influence of nonacademic factors on academic success correlated with collaboration among teachers and administrators. The variety of assessment techniques to inform instruction corresponded with the factors contributing to boys' experience of school. As in the Hawley and Reichert (2009) study, one might infer that collaboration among teachers and administrators occurred in the schools studied by Cleveland.

Cleveland's (2011) first clue found nonacademic factors had an influence on the academic success of boys. This same outcome was discovered in this study when recipients of the survey recorded allowing boys to make verbal responses, allowing boys to read mostly non-fiction books, giving boys a specific outcome to achieve and requiring them to meet that standard, allowing boys choices when deciding what to write about, and allowing them to brainstorm ideas with peers. These responses clearly parallel with the nonacademic factors identified by Cleveland.

The second clue discovered by Cleveland (2011) related to factors that strengthened boys' experiences in schools. Even though collaboration among teachers was not explicitly stated, the insinuation could be acquiesced by what was going on in the

classroom. Collaboration among teachers was scored very highly by Blue Ribbon and Gold Star schools.

Cleveland's (2011) third clue addressed the competence of struggling boys. Cleveland (2011) conjectured on different ways to teach reading, writing, grammar, composition, and vocabulary. The Blue Ribbon and Gold Star schools were on track with this clue. Participants from the Blue Ribbon and Gold Star schools considered integration of a comprehensive word study and phonics program into reading and writing instruction and giving students direct instruction in decoding and comprehension strategies that promote independent reading as top solutions for struggling boys.

Clue four, as noted by Cleveland (2011), addressed self-regulation and its effect on learning. The Blue Ribbon and Gold Star schools approach self-regulation indirectly by allowing boys to make verbal responses, read mostly non-fiction books, giving specific outcomes to achieve and requiring boys meet that standard, allowing choices when deciding what to write about, and allowing them to brainstorm ideas with peers.

In the second part of the survey a Likert scale was used to measure the culture of the Blue Ribbon Schools and Gold Star schools compared to the schools not meeting AYP. The anchors used for the Likert scale were: strongly disagree, disagree, undecided, agree, and strongly agree. The data revealed Blue Ribbon and Gold Star schools, along with the schools not meeting AYP, were generally on the same side of the scale, except Blue Ribbon and Gold Star schools were more likely to respond to the statements with more intensity (strong to strongly agree/disagree). Bar graphs were constructed to depict the findings.

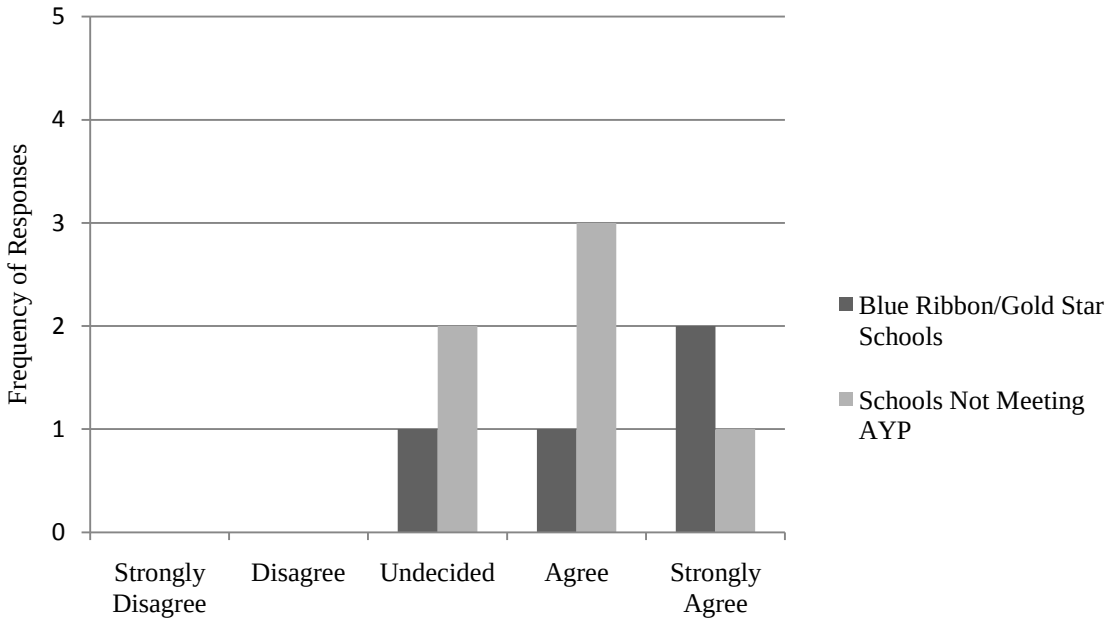

Figure 4. Teachers in my school are aware boys, in general, score lower than girls in communication arts.

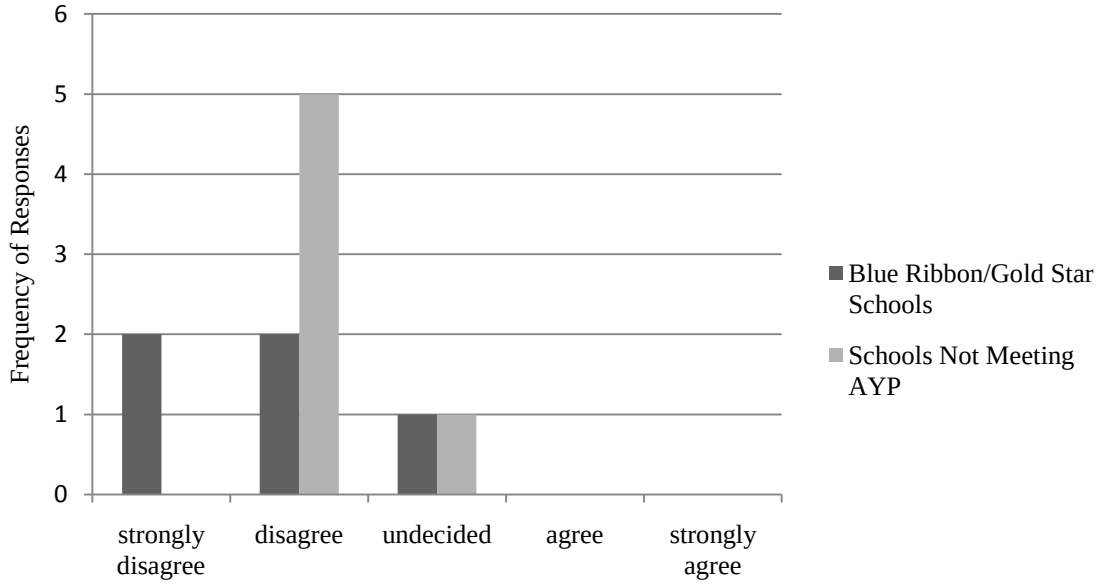

Figure 5. Boys develop reading and writing skills at the same age as girls.

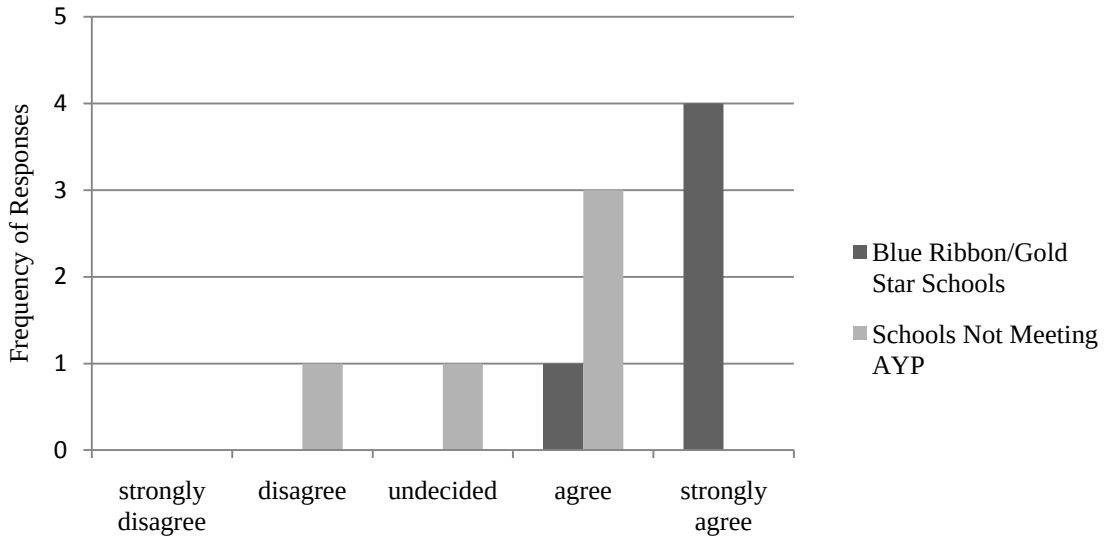

Figure 6. Teachers in my school receive job-embedded professional development, or training, to implement best practices appropriate for boys who are struggling in reading and writing.

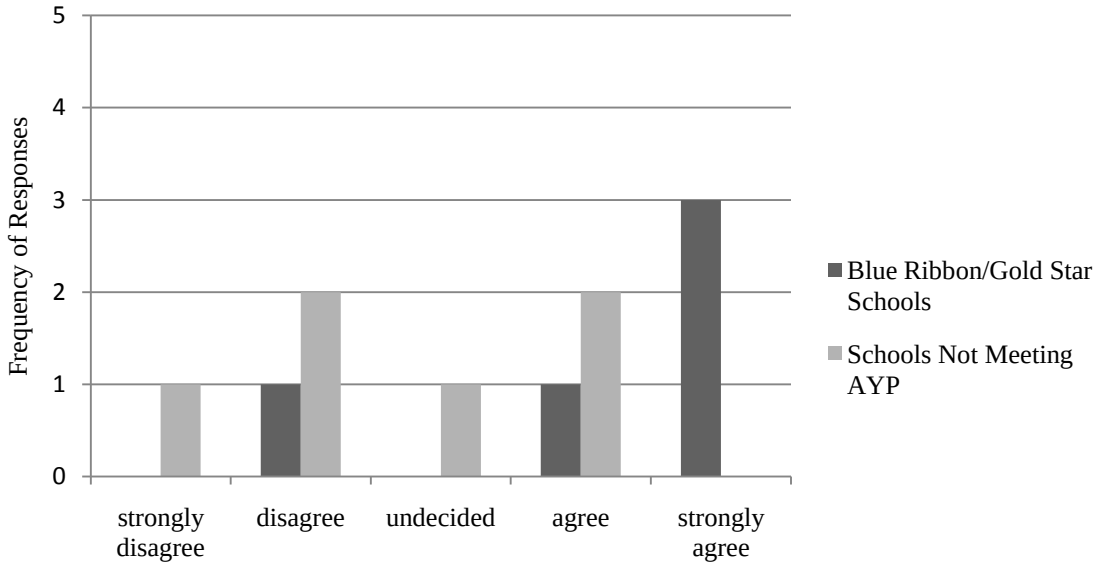

Figure 7. Teachers in my school use specific teaching and learning strategies with boys who score below grade level in communication arts.

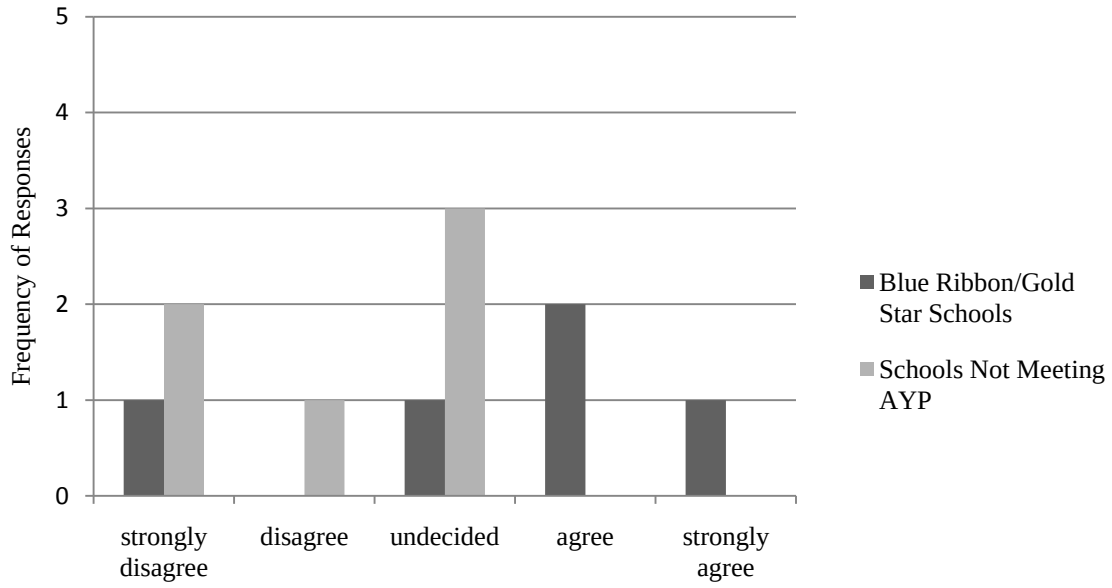

Figure 8. Boys and girls should receive separate reading instruction in a single-gender classroom setting.

Foundational Support Using MAP Scores

Scores from the communication arts section of the MAP were examined to determine if a significant (p = < .05) relationship existed between the literacy achievement of boys and girls. Fourth grade MAP index scores in communication arts were used as foundational material for support. The results of the *t*-test revealed no significant difference when comparing Blue Ribbon and Gold Star schools to all schools in Missouri reporting gender data (*t*-value for 2009 = 1.26841; 2010 = 1.45383). When tallying scores from the Missouri schools, most often, girls scored higher than boys yet not significantly. However, a significant difference was revealed in the scores of boys and girls when the six Blue Ribbon and Gold Star schools were compared to the six schools not meeting AYP (*t*-value for 2009 = .00082; 2010 = .00268).

Summary

While reviewing and comparing the literacy differences between boys and girls, the most prominent issue that emerged is the lagging performance of boys in literacy. Of course, this is not to imply all boys are underachieving in literacy, yet it is indicative of the general population. The findings from this study were consistent with previous studies conducted by other researchers, such as Hawley and Reichert (2009) and Cleveland (2011).

In Chapter Five, discoveries were summarized. The research questions were discussed and conclusions of the synthesized data were drawn. Recommendations for meeting the literacy needs of young boys were described.

Chapter Five: Summary and Conclusions

Summary of the Findings

Reading has become the single most important subject in the eyes of educators, administrators, parents, and stakeholders in every school in the United States (Whitmire, 2010). Educators have always been aware of the importance of reading, but the emphasis placed on reading, fueled from the NCLB Act, has caused increasing concern (Tyre, 2008). High-stakes testing, including assessments of reading proficiency, places demands on children at almost every grade level (Tyre, 2008). Results from the tests allow educators to understand a variety of skills and tasks related to the subject of reading, as well as assess students' current abilities, needs, and deficits (Whitmire, 2010).

The very best schools possess a commitment to education that reaches out to all students (Whitmire, 2010). Some of the highest performing schools and most creative administrators and teachers are found in the Blue Ribbon and Gold Star schools. The designation as a Blue Ribbon and Gold Star school implies creativity and a commitment to high performance, especially among disadvantaged students (MODESE, 2010). Blue Ribbon and Gold Star schools have achieved a high standard of excellence not only because of the high level of achievement attained, but for making significant progress in closing the achievement gaps (MODESE, 2009).

The purpose of this study was to examine the intervention strategies used by Blue Ribbon and Gold Star school educators to increase the literacy skills of primary-aged boys. Whitmire (2010) suggested achievement differences may occur by gender; therefore, this study was developed to provide a synthesis of previous studies on the

underlying reasons why primary-aged boys underachieve in the area of literacy. Research questions that guided this study were:

1. What intervention strategies are perceived to be effective in improving the achievement of fourth grade boys in the area of literacy?

2. What are perceived to be the underlying reasons boys underachieve in the area of literacy?

The conceptual framework for the study was based on the discoveries of Burman (2008) who suggested language processing was more sensory in boys and more abstract in girls. Burman (2008) maintained his research supported a basis for single-sex classrooms. He used a complex statistical model that accounted for differences associated with age (Burman, 2008).

This study examined intervention strategies perceived as successful in raising communication arts achievement scores in Blue Ribbon and Gold Star schools in Missouri. The acquired information was compared to an equal number of schools not meeting AYP targets. Data from the MAP index scores were disaggregated by gender.

A survey was developed and sent to eight administrators and literacy specialists in Missouri Blue Ribbon and Gold Star schools, as well as administrators and literacy specialists in an equal number of schools not meeting AYP. The survey was designed to collect information regarding the intervention strategies perceived to be effective in improving the achievement of fourth grade boys in the area of literacy, as well as the underlying reasons boys underachieve.

From a list of 23 questions, recipients of the survey were asked to choose the top 10 best practices used in the area of communication arts. Then the recipients were

prompted to choose five from the top 10 effective best practices with boys. This information from the survey served to identify perceptions about the intervention strategies effective in improving the achievement of fourth grade boys in the area of literacy. Bar graphs were formulated to report this information.

Statements were constructed to gain a better understanding of the school culture and how this relates to best practices. The respondents were prompted to rate each statement using a Likert scale with five anchors: strongly disagree, disagree, undecided, agree, and strongly agree. A bar graph was used to show the findings. The information gleaned from the Likert scale communicated whether:

- teachers were aware that boys' scores were lower than girls in communication arts;
- boys developed reading and writing skills at the same age as girls;
- teachers received job-embedded professional development, or training, to implement best practices appropriate for boys who were struggling in reading and writing;
- teachers used specific teaching and learning strategies with boys whose scores were below grade level in communication arts; and,
- boys and girls should receive separate reading instruction in a single-gender classroom setting.

To determine whether a significant relationship existed between boys' and girl's communication arts scores, a quantitative analysis of the data using the *t*-test was conducted. This information was collected from the communication arts section of the MAP. Data were gathered from the MODESE website and survey results from Blue

Ribbon and Gold Star schools, as well as an equal number of schools not meeting AYP. The specific differences between girls' and boys' literacy scores were reviewed for foundational purposes to support evidence of best practices from the survey.

Conclusions

Evidence from this study suggested more boys than girls are experiencing difficulties in literacy. When comparing Blue Ribbon and Gold Star schools to an equal number of schools not meeting AYP, data revealed a significant difference in the literacy achievement gap between boys and girls. Whereas, when comparing all the schools in Missouri reporting gender data, there was not a significant difference in the literacy achievement of boys and girls. While collecting the scores for the students from all the schools reporting data in Missouri, boys scored lower than girls in nearly every school. Evidence revealed boys were trailing girls in literacy, yet not significantly. By understanding the way boys learn and the strategies proven successful in high performing schools, parents, teachers and administrators will be equipped to teach using effective techniques and best practices. Becoming aware of the differences is of utmost importance.

Research Question Number One

1. *What intervention strategies are perceived to be effective in improving the achievement of fourth grade boys in the area of literacy?*

Responses from the survey indicated the Blue Ribbon and Gold Star schools placed a high emphasis on:

- Working with students in small groups while other students read and write about what they have read;

- Using a variety of assessment techniques to inform instruction;
- Collaboration among teachers;
- Teaching reading for making meaning, or comprehension;
- Integration of a comprehensive work study/phonics program into reading/writing instruction;
- Giving students direct instruction in decoding and comprehension strategies that promote independent reading; and,
- Allotting teachers and administrators collaboration time to design and school-wide literacy.

Cleveland's (2011) study coincided with these same findings. Cleveland (2011) suggested, "educators need to address academic underachievement in boys by comprehending how facts … interact to influence a boy as a learner" (p. 1).

Research Question Number Two

2. *What are perceived to be the underlying reasons boys underachieve in the area of literacy?* This question is important because administrators, teachers, and parents must become aware of the specific needs of boys and understand the learning styles of boys. Interestingly, from the survey responses from the Blue Ribbon and Gold Star schools, only 50% of the teachers are aware boys, in general, score lower than girls in communication arts, and 60% of the teachers use specific teaching and learning strategies with boys who score below grade level in communication arts. Furthermore, 40% of the teachers and administrators believed boys and girls should receive separate reading instruction in a single-gender classroom setting. When asked if teachers received job-embedded professional development, or training, to implement best practices found

appropriate for boys struggling in reading and writing, 80% strongly agreed. While 80% responded yes to job-embedded professional development, only 60% report using specific teaching and learning strategies with boys who score below grade level in communication arts.

The studies by Cleveland (2011) and Hawley and Reichart (2009) have attempted to answer the question regarding the underlying reasons boys underachieve in the area of literacy. Each researcher compiled the results of the data and offered recommendations. A common thread found in the research of this particular study was the necessity to understand the differences in the development and language processing abilities of boys and girls, and then implement the best practices and intervention strategies specific to the learning needs of boys.

Recommendations

Based upon the results of the survey received from Blue Ribbon and Gold Star schools, the top best practices were assimilated and recommendations were developed. One salient theme that rings out above all is administrators, teachers, and parents need to become aware of the specific ways boys' learn and the specific needs of boys. Whitmire (2010) suggested, "Obama needs to order the U.S. Department of Education to turn out the kind of report British education authorities released in the summer of 2009, a fact-driven analysis of actual gender learning differences" (p. 185). Other nations have discovered the gender differences in learning and are addressing the needs of boys. Whitmire (2010) determined, "any strategy designed to boost global competitiveness that ignores the boys' problems ends up ignoring the obvious solution" (p. 185). It is a matter,

affirmed by Whitmire (2010), "of doing right by our sons and teachers looking for what works for boys" (p. 185).

Integration of a comprehensive word study and phonics program into reading and writing instruction, working with students in small groups while other students read and write about what they have read, giving students direct instruction in decoding and comprehension strategies that promote independent reading, and teaching reading for making meaning, or comprehension should be discussed in detail. The U.S. Congress approved, in 1997, the creation of the National Reading Panel to examine the most efficacious methods to help children learn how to read (IRA, 2011). The panel released their report in April, 2000 (IRA, 2011). The panel determined:

> Effective instruction includes teaching children to break apart and manipulate the sounds in words (phonemic awareness), teaching that these sounds are represented by letters that can be blended (phonics), having children read aloud while providing guidance, teaching word meanings, and providing comprehension strategies. The panel also found that improvement in teachers' knowledge and practice leads to higher student achievement. (p. 1)

Based on the findings from this study, recommendations include seeking the best explicit, systematic phonics based program for the individual school. School cultures are different, so awareness of the school culture and needs of that respective school are imperative. Professional development is crucial for teachers. A wonderful program may exist and still fail if an understanding and use of the materials are not mastered. This survey concluded Blue Ribbon and Gold Star schools place a heavy emphasis on phonics, a good phonics based program, decoding skills, and comprehension.

Schools should incorporate common formative assessments. Using a variety of assessment techniques to inform instruction was rated high by Blue Ribbon and Gold Star schools. Common formative assessments are designed collaboratively by grade-level teams or department teams and administered to students by the respective teacher several times throughout the year (Ainsworth & Viegut, 2006). Students are assessed for an understanding of the standards teachers have taught during individual instructional times (Ainsworth & Viegut, 2006). Then, teachers collaboratively score the assessments aligned with the large-scale assessments (Ainsworth & Viegut, 2006). Therefore, the assessment has the potential of driving the instruction (Ainsworth & Viegut, 2006). Last, but certainly not least, is the need to provide feedback as early as possible (Ainsworth & Viegut, 2006).

Allotting teachers and administrators collaboration time to design a school-wide literacy program and providing dedicated time for collaboration among teachers also scored at the top of the list for Blue Ribbon and Gold Star schools. Collaboration may mean working together in a classroom to instruct a group of students and at other times to discuss individual students (Ainsworth & Viegut, 2006). Collaboration time can be used to report on the efforts of meeting specific objectives or to discuss formative assessments with other teachers (Ainsworth & Viegut, 2006). It is important for a school to designate a time each week for teachers and administrators to collaborate.

Boys can learn just as well as girls, but boys need help and teachers who understand their hard-wired differences (Sax, 2005). When parents, teachers, and administrators comprehend this and begin to implement best practices perceived to be

successful by highly effective schools, boys will have an opportunity to meet their true potential (Sax, 2005).

In conclusion, literacy has become a high priority in public schools driven by the mandatory high-stakes testing and the commission of the NCLB Act. Great emphasis has been placed on students' literacy skills and abilities in the classroom. To inform educators, politicians, administrators, and other stakeholders about students' abilities, high-stakes tests are administered in every state. In Missouri, the MAP is given in grades three through eight focusing on specific skills students are expected to be taught within a given grade. Based on the results of these high-stakes tests, educators and administrators have the ability to attend to students' areas of strengths and weaknesses, plan, and differentiate instruction. High-stakes testing also allows access to trends and patterns of learning.

This study examined the intervention strategies and best practices used by Blue Ribbon and Gold Star school educators to increase the literacy skills of primary-aged boys. The intent of this study was to discover perceptions concerning the instructional practices that have increased student achievement in Blue Ribbon and Gold Star schools. It was anticipated these best practices could help teachers and administrators plan curriculum, formulate effective lessons, and better meet the needs of struggling boys.

A look at Blue Ribbon and Gold Star schools' best practices were chosen for this study because of the excellence these schools experience. To be a Blue Ribbon and Gold Star school these schools must first be a high performing public or private school and have significantly improved student achievement, especially in regard to the disadvantaged students (U.S. DOE, 2010). The U.S. DOE (2010) has been identifying

and disseminating “knowledge about best school leadership and teaching practices” (para. 1) since 1982. The object of the Blue Ribbon and Gold Star school program was intended to encourage schools and communities to raise the bar in school achievement (MODESE, 2009). Based on findings from this study, a significant difference was found when boys and girls from Blue Ribbon and Gold Star schools were compared to an equal number of unmet AYP schools.

Even though there are many variables that affect the differences between boys and girls, as addressed in this study, the most enduring is for teachers, parents, and administrators to become aware of these differences. Professional development should be mandatory to help identify individual students’ strengths and weaknesses and then incorporate the best practices identified by high-performing schools. Teachers, administrators, and parents need to assure effective intervention strategies and best practices are implemented to accommodate and promote student learning in the schools for all students, regardless of gender.

Appendix A

11-12
IRB Project Number _____

Lindenwood University
Institutional Review Board Disposition Report

To: Mrs. Helen Finley
CC: Dr. Sherry DeVore

The IRB has reviewed the resubmission of your application for research. Your application has been approved.

Ricardo Delgado	10/15/10
Institutional Review Board Chair	Date

Appendix B

Survey (Template)

1) From the list below, what do you consider to be the best practices used in the area of communication arts in your school? Choose the top ten.
   A. Teaching reading for making-meaning, or comprehension.
   B. Use of high-quality literature.
   C. Integration of a comprehensive word study/phonics program into reading/writing instruction.
   D. Use of literacy groups.
   E. Use of multiple texts that link and expand concepts.
   F. Balance of teacher-led and student-led discussions.
   G. Emphasizing important concepts and building background knowledge.
   H. Working with students in small groups while other students read and write about what they have read.
   I. Giving students plenty of time to read orally and silently in class.
   J. Giving students direct instruction in decoding and comprehension strategies that promote independent reading.
   K. Balancing direct instruction, guided instruction, and independent learning.
   L. Using a variety of assessment techniques to inform instruction.
   M. Using a Literacy library with leveled readers.
   N. Allotting teachers and administrators collaboration time to design a school-wide Literacy program.
   O. Teaching explicit writing instruction.

P. Using movement to enhance learning, such as reader's theatre or music.

Q. Providing students access to print-rich environment.

R. Collaboration among teachers.

S. Integration of phonemic awareness.

T. Scaffolding.

U. Connecting to prior knowledge.

V. On-going collaboration between teachers and administration.

W. Other_____

2) Which best practices do you find most effective with boys? (Choose five from the top ten).

A. Teaching reading for making-meaning, or comprehension.

B. Use of high-quality literature.

C. Integration of a comprehensive word study/phonics program into reading/writing instruction.

D. Use of literacy groups.

E. Use of multiple texts that link and expand concepts.

F. Balance of teacher-led and student-led discussions.

G. Emphasizing important concepts and building background knowledge.

H. Working with students in small groups while other students read and write about what they have read.

I. Giving students plenty of time to read orally and silently in class.

J. Giving students direct instruction in decoding and comprehension strategies that promote independent reading.

K. Balancing direct instruction, guided instruction, and independent learning.

L. Using a variety of assessment techniques to inform instruction.

M. Using a Literacy library with leveled readers.

N. Allotting teachers and administrators collaboration time to design a school-wide Literacy program.

O. Teaching explicit writing instruction.

P. Using movement to enhance learning, such as reader's theatre or music.

Q. Providing students access to print-rich environment.

R. Collaboration among teachers.

S. Integration of phonemic awareness.

T. Scaffolding.

U. Connecting to prior knowledge.

V. On-going collaboration between teachers and administration.

W. Other_____

The anchors for the five-point Likert scale are:

strongly disagree, disagree, undecided, agree, and strongly agree.

1. Teachers in my school are aware that boys, in general, score lower than girls in communication arts.
2. Boys develop reading and writing skills at the same age as girls.

3. Teachers in my school receive job-embedded professional development, or training, to implement best practices that are appropriate for boys who are struggling in reading and writing.
4. Teachers in my school use specific teaching and learning strategies with boys who score below grade level in Communication Arts.
5. Boys and girls should receive separate reading instruction in a single-gender classroom setting.

Appendix C

Informed Consent for Participation in Research Activities

"Closing the Achievement Gap Between Boys and Girls"

Principal Investigator Helen Finley

Telephone: 417-848-4427 E-mail: hlf589@lionmail.lindenwood.edu

Participant _____ Contact info _____

1. You are invited to participate in a research study conducted by Helen Finley under the guidance of Dr. Sherry DeVore, Dissertation Chair. The purpose of this research is to explore why boys underachieve in the area of literacy.

2. a) Your participation will involve:

   Completing an on-line survey concerning: Closing the Achievement Gap Between Boys and Girls

   b) The amount of time involved in your participation will approximately 15 minutes.

   Approximately 40 Literacy Specialists and Principals from public schools in Missouri will be invited to participate in this study.

3. There are no anticipated risks associated with this research.

4. There are no direct benefits for you participating in this study. However, your participation will contribute to the knowledge about effective best practices to increase the literacy achievement of boys.

5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.

6. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this study and the information collected will remain in the possession of the investigator in a safe location.

7. If you have any questions or concerns regarding this study, would like a copy of the results, or if any problems arise, you may call the Investigator, (Helen Finley, 417-848-4427) or the Supervising Faculty, Dr. Sherry DeVore (417-881-0009). You may also ask questions of or state concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs at 636-949-4846.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my participation in the research described above.

By completing the survey, you consent to participate in this study.

Thank you for your time,

Helen Finley <date>
Doctoral Student
Lindenwood University

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VITA

Helen is currently the Title I Reading Specialist in grades kindergarten through second grade for Highlandville Elementary School, in Highlandville, Missouri. Teaching experiences have included grades K-12 Music and K-2 Special Reading. Helen has received Multisensory training in the Orton-Gillingham method and Lindamood-Bell reading processes. She has also trained first grade and kindergarten teachers in reading processes.

Educational studies have resulted in an Education Specialist degree in Administration from William Woods University, a Master's of Science degree in Special Reading from Missouri State University, a Master's of Science degree in Music Education from Missouri State University, and a Bachelor's of Science degree in Music Education from Missouri State University.