Language Arts Achievement of Fourth Grade Students with Regard to Gender, Ethnicity, and Socioeconomic Status

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Language Arts Achievement of Fourth Grade Students with Regard to Gender, Ethnicity, and Socioeconomic Status

A dissertation
presented to
the faculty of the Department of Educational Leadership and Policy Analysis
East Tennessee State University
In partial fulfillment
of the requirements for the degree
Doctor of Education in Educational Leadership

by
Paula Coldwell Davis
May 2013

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Dr. William Flora
Dr. Donald Good
Dr. Karin Keith

Keywords: Gender, Ethnicity, Language Arts Achievement, Socioeconomic Status, TCAP
ABSTRACT

Language Arts Achievement of Fourth Grade Students with Regard to Gender, Ethnicity, and Socioeconomic Status

by

Paula Coldwell Davis

This study was conducted to see if a difference exists in the language arts proficiency levels of 2,080 fourth grade students with regard to gender, ethnicity, and socioeconomic status from 2010 through 2012 on the Tennessee Comprehensive Assessment Program. Specifically, this study considered the possibility that a difference existed in language arts proficiency levels between males and females.

A quantitative study was used to find differences in the language arts proficiency levels from 2010 through 2012 for males and females in the fourth grade in an upper East Tennessee urban school system. A quasi-experimental design was selected because preexisting data were collected on 2,080 fourth grade students enrolled and assessed in 2010, 2011, and 2012 in an upper East Tennessee school system. The language arts proficiency levels from the Tennessee Comprehensive Assessment Program (TCAP) were collected for each of the students in the study.

This study found a significant difference in the language arts proficiency levels with regard to gender, socioeconomic status, and ethnicity on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for 2,080 fourth grade...
students in an upper East Tennessee School district. In general males and females tended to score in the basic and below basic proficiency levels. White males and females generally scored in the proficient and advanced levels while males and females from the other ethnic groups scored in the below basic and basic levels. Students who received free or reduced lunch benefits scored at the below basic and basic levels of proficiency regardless of gender. Students who did not receive the same benefits were generally proficient or advanced on the language arts portion of the TCAP. White students as a group generally scored higher than students from other ethnic groups. Students who received free and reduced lunch benefits generally received lower proficiency scores than their peers who did not receive the same benefits.
DEDICATION

I would like to dedicate this study to:

   My husband, my best friend. Sonny, you have always been my biggest cheerleader. Thank you for your unwavering support, encouragement, and patience. From the time I was an undergraduate student at Carson Newman, you have shared my dream of becoming Dr. Davis. I’m not sure I would be here if it wasn’t for you pushing me and reminding me of a goal set what seems so many years ago. Thank you for not allowing me to settle in the place I was but for reminding me of my dream – our dream - and for being there to help me refocus my vision. I can hardly believe it – WE are actually here!

   My daughters – Natasha and Erika. Yes, I am a proud and grateful mother! What an inspiration you are to me each and every day! You, too, have shared my dream and have walked with me every step of the way. Thank you! I’m so proud of the beautiful young ladies you have become – my daughters, my friends. I love you bunches, heaps, and mounds!

   My grandchildren – Taylor, Hayden, Cole, Cade, and Calli Grace. Yes, I am one proud Nana. You inspire me to continue reaching – to grasp tightly to what is best for you and all other children who desire the very best education in the world! Oh, the places you’ll go! “You have brains in your head. You have feet in your shoes. You can steer yourself any direction you choose. And will you succeed? Yes! You, will, indeed! 98 and ¾ guaranteed.” Today is your day! Your mountain is waiting. So . . . get on your way!” Of one thing you can be sure, I’ll be with you all the way! I love you more than you could ever imagine!
My mother who has been such an inspiration to me – one who has shown me how to persevere through challenges and rise above obstacles that sometimes try to deter or even prevent success. Mom, you've shown me how to stop and pray when times get tough. When you literally could not see as blindness took your career and almost your life, you always turned to the One who sees and knows all things. It is on Him, Mom, I have depended throughout this quest.

To my colleagues. From the time I began my journey as an educator you have been an inspiration to me. Together we have tried to make a difference in the lives of children one by one. One thing for sure, you have made a difference in mine.

To each of you – Sonny, Natasha, Erika, Taylor, Hayden, Cole, Cade, Calli Grace, Mom, and my colleagues - you are each part of me - who I am, who I have become. The woman I have become is because of the influence you have been in my life. For you, I am eternally grateful.
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My Lord and Savior, Jesus Christ. From the depths of my heart I know beyond the shadow of a doubt you have given me the grace to endure the challenges of life. You tell us in your word your grace is sufficient. I know that’s true because that promise is proved and tested in my life. It is because of You that I am to this place in my life and my career. My prayer is that I can use the knowledge and experiences You have allowed me to enjoy to magnify your name and reflect your love.

My church family, I know you have prayed for me. I acknowledge those prayers and know they have carried me over humps and through valleys. Thank you!

Dr. Brenda Dean, you have provided many opportunities for me to work outside my comfort zone during the past 4 years. You have trusted me with important responsibilities and decisions. Through these opportunities, I have experienced a professional growth spurt. You have influenced my life in so many ways. Thank you!

My colleagues – the instructional coaches, Tony Dalton, Jill Fishburn, Jaime Greene, and David Freeman. Your encouragement, prayers, and professional advice have always come at just the right time. You’re the best!

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To the Watauga Cohort. We started this program together. We have continued to cheer each other on to the finish line. You have been an inspiration to my personal and professional life. You’ll always be special! I wish each of you the very best life has to offer.
To Dr. Dale Lynch. Thank you, Dr. Lynch, for granting permission for me to conduct my research.

To Gail Rice. Thank you, Gail, for your assistance in collecting my data. Without you, I would not have had access to the information.

Dr. Virginia Foley, you are amazing! From the first time we met at my admittance interview I knew you were one special lady! I’m so grateful for the opportunity to have you serve as my dissertation chair.

My dissertation committee: Dr. Good, Dr. Flora, and Dr. Keith. I am so grateful for your commitment to serve on my dissertation committee. I have the best committee of anyone!! Dr. Good, we go back a long way – back to Carson Newman when my dream of earning a doctoral degree was conceived. Dr. Flora, thank you for the time you spent helping me revise my work and the suggestions you made. Dr. Keith, you were the perfect fit to complete my committee. Your expertise in reading enabled you to make valuable recommendations that helped improved the content of the literature review.

The Boot Camp Committee – Dr. Cecilia McIntosh, Dr. Marie Jones, and Emily Redd. What a difference boot camp made for me! I’m not sure I would be finished by now had it not been for boot camp weekends. A hearty thanks to each of you for the time you freely gave to help each of us as we stumbled through the process, the literature review, the research, APA formatting questions, and the list continues.

My Boot Camp Buddies – Janet Dalton, Krista Crum, Christy Hogan-Young, and B. J. Lowe. You girls made the dissertation process more tolerable! Riding to and from ETSU, laughing all the way – interrupted by brief periods of seriousness. I’m glad I
didn’t have to travel the last stretch alone. I love each of you dearly and wish you the best of the best!!
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>2</td>
</tr>
<tr>
<td>DEDICATION</td>
<td>4</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>6</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>12</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>13</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>16</td>
</tr>
<tr>
<td>Research Questions</td>
<td>18</td>
</tr>
<tr>
<td>Significance of Study</td>
<td>19</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>22</td>
</tr>
<tr>
<td>Delimitations</td>
<td>23</td>
</tr>
<tr>
<td>Overview of the Study</td>
<td>24</td>
</tr>
<tr>
<td>REVIEW OF RELATED LITERATURE</td>
<td></td>
</tr>
<tr>
<td>Historical Perspective</td>
<td>27</td>
</tr>
<tr>
<td>Biological Differences</td>
<td>29</td>
</tr>
<tr>
<td>Literacy Pedagogy</td>
<td>32</td>
</tr>
<tr>
<td>Males and Literacy</td>
<td>35</td>
</tr>
<tr>
<td>The School Experience for Males</td>
<td>38</td>
</tr>
<tr>
<td>Family Influence</td>
<td>52</td>
</tr>
<tr>
<td>Socioeconomic Impact on Literacy Achievement</td>
<td>53</td>
</tr>
<tr>
<td>Ethnicity, Literacy Development, and Achievement</td>
<td>58</td>
</tr>
</tbody>
</table>
### Summary

- RESEARCH METHODOLOGY .............................................................. 63
  - Research Questions and Null Hypotheses ......................................... 63
  - Population ..................................................................................... 65
  - Instrumentation ............................................................................ 66
  - Data Collection ............................................................................. 66
  - Data Analysis ................................................................................ 67
- ANALYSIS OF DATA .......................................................................... 69
  - Analysis of Research Questions ....................................................... 69
  - Research Question 1 ...................................................................... 69
  - Research Question 2 ...................................................................... 71
  - Research Question 3 ...................................................................... 76
  - Research Question 4 ...................................................................... 80
  - Research Question 5 ...................................................................... 83
  - Summary ....................................................................................... 85
- SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS .......... 86
  - Introduction ................................................................................ 86
  - Research questions and findings .................................................... 87
  - Recommendations for Practice ....................................................... 94
  - Recommendations for Further Study ............................................. 97
  - Chapter Summary ......................................................................... 98
- REFERENCES .................................................................................. 99
APPENDICES

Appendix A: Letter from the Hamblen County Director of Schools..................109
Appendix B: Approval from the IRB.................................................................110
Vita..................................................................................................................111
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cluster Bar Graph for the Distribution of Proficiency Levels by Gender</td>
<td>70</td>
</tr>
<tr>
<td>2. Cluster Bar Graph for Male Proficiency Levels by Ethnicity</td>
<td>72</td>
</tr>
<tr>
<td>3. Cluster Bar Graph for Female Proficiency Levels by Ethnicity</td>
<td>75</td>
</tr>
<tr>
<td>4. Cluster Bar Graph for Male Proficiency Levels by Socioeconomic Status</td>
<td>77</td>
</tr>
<tr>
<td>5. Cluster Bar Graph for Female Proficiency Levels by Socioeconomic Status</td>
<td>79</td>
</tr>
<tr>
<td>6. Cluster Bar Graph of Fourth Grade Proficiency Levels by Ethnicity</td>
<td>81</td>
</tr>
<tr>
<td>7. Cluster Bar Graph of Fourth Grade Proficiency Levels Socioeconomic Status</td>
<td>83</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

Language arts skills and literacy development are critical to success in school and career (Pressley, 2002). There is concern that an achievement gap exists in literacy between males and females. Females have stronger literacy skills than males (Coley, 2001; Gambell & Hunter, 1999; Phillips, Norris, Osmond, & Maynard, 2002). Gurian and Stevens (2005), Gurian and Ballew (2003), and Sax (2005) acknowledged an achievement gap between males and females with reports that on almost all standardized assessment tests males consistently scored lower than females in nearly every demographic group. Conversely, there are research studies that show little to no achievement gaps in literacy achievement with regard to gender (Davies & Brember, 1999; Entwisle, Alexander, & Olson, 2007). In a report published by the Organization for Economic Cooperation and Development (2004), gender is only one of the factors affecting literacy achievement in males. Ethnicity and socioeconomic status are strong indicators of low academic success among males, particularly Hispanics and Blacks in large metropolitan inner-city school districts. In contrast, white middle and upper class males perform at or above their female counterparts and have demonstrated consistent improvement in achievement over the past 30 years. Additionally, males’ and females’ scores on benchmark tests have increased with females improving slightly more (Barnett & Rivers, 2006; Corbett, Hill, & St. Rose, 2008; Mead, 2006).

Male achievement and rate of academic growth is affected by multiple variables (Cleveland, 2011; Sax, 2005). Maccoby (1990) suggested there is delayed cognitive
development in males compared to females. Ready, LeGerfo, Burkam, and Lee (2005) used a nationally representative data sample compiled by the U.S. Department of Education and reported a gap in both literacy skills at the beginning of the year and the range of growth at the end of the year in kindergarten males and females.

Cultural expectations are sometimes blamed for a literacy achievement gap between males and females (Sommers, 2001). The gap increases when ethnicity and socioeconomic status are considered. The achievement of poor, Black, and Hispanic males is significantly low compared to their white, wealthier counterparts (Tatum, 2006; Watson, Kehler, & Martino, 2010). In a meta-analysis of gender differences in cognitive abilities, verbal or nonverbal communication, and several other constructs, Hyde (2005) found effect sizes close to zero between genders. However, the gap increased significantly when ethnicity and socioeconomic status were variables considered in the analyses.

Critical factors influence males’ level of engagement in academic activities, how they learn best, and ultimately, their overall achievement. Some research indicates the hormone differences in the brains of males and females cause them to learn differently. Gurian and Stevens (2005) and Sax (2005) suggested part of the reason for male underachievement is because of pedagogical practices in the classroom being misaligned with prominent male learning styles.

Another causal factor of the underachievement of males is thought to be the central role of identity. Gender development begins as early as 6 months of age when infants are observed with the ability to discriminate between the voices of males and females. By the age of 9 months, babies demonstrate the ability to detect correlations
between faces of males and females and gender-related items. Gender roles are thought to influence beliefs, attitudes, and behavior, all of which affect the self-confidence of males thus having an effect on their academic achievement (Martin, Ruble, & Szkrybalo, 2002). Gurian and Stevens (2005) suggested the achievement gap begins with a misalignment in gender expectations. Females are encouraged to excel and demonstrate academic equity with males. Cleveland (2011) referred to William Pollock’s *Boy Code* as detrimental to males’ academic achievement, social acceptance, and emotional well-being. The Boy Code is a set of culturally accepted and expected stereotypical attributes assigned to males: crying is a sissy action; males should never run from danger; never tarnish pride by asking for help; do not sing or cry as a sign of happiness or sadness; show no affection toward close friends; and never partake in displays of tenderness or love. Parents’ beliefs about their children’s abilities may affect their achievement (Jacobs, Davis-Kean, Bleeker, Eccles, & Malanchuk, 2005). Many males will not voluntarily choose to participate in activities they perceive to be labeled as feminine. Reading and writing activities often chosen by female teachers may include deep emotions, female characters, and feminine experiences – all in direct conflict to the male code of ethics. The subtle acceptance by parents, the media, and other institutions of a boy code may encourage males to see reading and writing as a feminine activity (Gurian & Stevens, 2005).

Cleveland (2011) reported that underachievement of males is intricately complex with a daunting pile of causal factors. Children go to school with attitudes and preconceived beliefs that determine how they respond to the social and academic culture of school. Students with high self-regulatory and learning-related skills
have higher literacy scores and are more successful students (Matthews, Kizzie, Rowley, & Cortina, 2010). Understanding how to help underachieving males may be found in social and academic factors within the classroom.

Statement of the Problem

The purpose of this study was to examine the research on a potential language arts achievement gap with fourth grade students with regard to gender, ethnicity, and socioeconomic status. Reform efforts in the United States have targeted two types of achievement gaps: the achievement between subgroups within American students and the achievement gap between the United States and other countries. Approximately 70% of inner city fourth graders read below grade level; thus, perform below basic on language arts proficiency. Thirty percent of high seniors are unprepared to meet the literacy demands of higher education and must enroll in remedial courses (Zhao, 2009). A longitudinal study completed by the Department of Education illuminated a problem. Progress was not demonstrated in the differentials in reading scores between racial and ethnic groups or between socioeconomic groups. The gap was present among these groups in kindergarten remained through fifth grade. Males are more likely to be diagnosed with a reading disability than females (Rutter et al., 2004). When comparing fourth graders, 40% of whites demonstrated proficiency in reading while only 12% Black and 16% Hispanic respectively did so. From 1975 to 1990, the achievement gap was reduced between Blacks and Whites by 50%; however, there has been little change since 1990 (USDOE, 2012). Similarly, an achievement gap has existed between males and females on the National Assessment of Educational Progress (NAEP) test since the
early 1970s. NAEP is a project of the National Center for Education Statistics (NCES) authorized by Congress. In 2011, 28% of males in the eighth grade scored proficient or above in the reading section of the NAEP test while 37% of the females demonstrated proficiency. When comparing writing scores the gap was much wider; 22% of the males demonstrated proficiency compared to 43% of the females. In all racial and ethnic groups, females outscored males on the NAEP reading and writing tests (USDOE, 2012).

These achievement gaps are of significant importance in light of the goals of the No Child Left Behind Act (2001), a law embedded with extensive accountability measures intended to provide for the literacy needs of all students and to close the achievement gaps among the subgroups. The NCLB required local education agencies (LEAs) to gather, collect, and analyze data to demonstrate adequate yearly progress (AYP) in language arts and math for students in grades three through eight. Punitive consequences resulted for schools that did not show adequate yearly progress (Zhao, 2009). In 2002 the U.S. Department of Education explained the logic of the NCLB and the rationale for the accountability, more rigorous standards, and testing requirements. Zhao (2009) quotes former President George W. Bush:

Accountability is an exercise in hope. When we raise academic standards, children raise their academic sights. When children are regularly tested, teachers know where and how to improve. When scores are known to parents, parents are empowered to push for change. When accountability for our schools is real, the results for our children are real. (p. 5)
Research Questions

Research Question #1

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males and females?

Research Question #2

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males and females with regard to ethnicity?

Research Question #3

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males and females with regard to socioeconomic status?

Research Question #4

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade students with regard to ethnicity?

Research Questions #5

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade students with regard to socioeconomic status?
Significance of the Study

Literacy achievement impacts students’ performance in all other subjects, extracurricular activities, and social relations. As students become older, reading disabilities become more evident by a lack of reading enjoyment, vocabulary development, and acquisition of knowledge. Studies indicate a high correlation between homeless youth, adolescents who struggle with depression, and young people who commit suicide (Lipka, Lesaux, & Siegel, 2006).

To satisfy rules set forth by the U.S. Office of Management and Budget for collecting and reporting data on ethnicity, NAEP began collecting additional demographics in 2011 on students’ ethnicity. As a result, NAEP assessment data are recorded for six racial-ethnic subgroups: White, Black, Hispanic, Asian-Pacific Islander, American Indian-Alaska Native, and two or more races (multiracial students). Reading results for Hispanic students were first recorded in 1975; there is not enough recorded data for Asian-Pacific Islander students to be included in long-term trend studies. There have not been enough tested American Indian-Alaska Native students to make statistically reliable comparisons. Prior to 1998 no testing accommodations were allowed for special education students or English language learners. All allowable accommodations accepted on other standardized tests are permitted on the NAEP with the exception of one. A portion of the reading test assesses students’ ability to decode words; thus, read-aloud is not an allowable accommodation on the NAEP. The percentage of students with disabilities (SD) and English language learners (ELL) included in the NAEP results varies from state to state due to policy variations on
inclusion and the use of accommodations. Since 2010 the inclusion rate goal set by the governing board is 85% of students identified as SD or ELL.

NAEP results provide a longitudinal lens through which to examine the progress of students in fourth, eighth, and 12th grades. All 50 states, the District of Columbia, and Department of Defense schools have participated in the test since 2003. In 2011, 9-year-old female students scored 7 scale score points higher than males (down from 13 in 1971) on the reading achievement portion of the NAEP test. Historically this is not a significantly large gap; yet, beginning with 1992 data, the gap still remains. In no tested year at any test grade level on the NAEP assessment have males outscored females (USDOE, 2012).

Reading comprehension scores remained unchanged in fourth grade in 2011 from 2009. There was a slight increase in the scores of students from high- and low-income families. At grade 8 there was a significant increase of one point in reading scores. Whites, Blacks, and Hispanic students represented the increase in scores while there was no significant change in the scores for Asian-Pacific Islander or American Indian-Alaska Native students. Neither was there a significant change in the gap between Whites and Blacks between 2009 and 2011. The achievement gap between males and females on the 2011 NAEP assessment was 7 scale score points for fourth graders down from the largest reported gap of 13 in 1971 and 9 points for eighth graders down from 11 points in 1971 and the largest reported gap of 15 in 1994 (USDOE, 2012).

The percentages of students eligible for free or reduced lunch varies widely in the states and jurisdictions tested by the NAEP. Seventy-four percent or more of the fourth
graders whose scores were at or below the 25\textsuperscript{th} percentile were eligible for free or reduced lunch compared to 23\% eligible fourth grade students whose scores were at or above the 75\textsuperscript{th} percentile. The percentage of students eligible for free and reduced lunch has risen since 2003.

Seventy-five percent of the fourth graders tested nationally on the NAEP in 2011 scored at the below basic or basic proficiency levels on the reading test. Of the fourth graders who scored below the 25\textsuperscript{th} percentile, 25\% were Black, 33\% were White, 35\% were Hispanic, and 8\% were Asian. Nine-year-old black students demonstrated the most academic growth in reading since 1971. This increase was more than any other racial-ethnic subgroup at 34 scale score points. Hispanics were next with a 25-point gain. Thirteen-year old and 17-year old black students demonstrated a 25- and 28-point gain respectively. When comparing achievement scores among socioeconomic groups and racial-ethnic groups, the gap widens significantly. For fourth graders, the gap between whites and blacks has decreased from 44 points in 1971 to 2 points in 2008. The gap between Blacks and Whites at age 13 decreased from 39 points in 1971 to 21 points in 2008. By far the largest decrease in achievement gaps between Blacks and Whites occurred in 17-year-olds who saw a decrease from 53 points in 1971 to 29 points in 2008. Although the achievement gap between Hispanics and Whites is less than when first compared in 1975, growth by Hispanic students varies by age. Additionally, there has been no significant change since 2004. The gap between Hispanics and Whites has dropped by 13 points, 4 points, and 15 points among 9-, 13-, and 17-year-old students respectively.
Comparative data from the NAEP assessment for eighth graders reveal similar results. Seventy-four percent of the Tennessee eighth graders who tested in 2011 scored below basic or basic on the reading section of the NAEP compared to 68% nationally. There has been some growth in all racial-ethnic groups and students who qualify for free or reduced lunch and those who do not; however, the achievement gaps remain, including males and females. The gap between male and female eighth graders in 2011 was 9 points reflecting no change from 2009 yet down from 15 points in 1994.

Students from public, private, and Catholic schools take the NAEP test. Data are disaggregated by the three categories of schools. Historically, students from public schools score lower than those in private or Catholic schools. The gap widens from fourth grade to eighth grade. In 2011 there was a 14-point gap between public and private school fourth graders and a 15-point gap between public and Catholic school fourth grade students. Among eighth grade students the gap widens to 18 points between public and private schools and 19 points between public and Catholic schools.

**Definition of Terms**

The following terms are important in this research, the findings, and the recommendation for practice and further study.

1. *Ethnicity*

   Hispanic or Latino may include persons from Cuba, Mexico, Puerto Rico, South or Central America, or other Spanish culture or origin. Black includes people whose origin is any of the Black racial groups of Africa. People who maintain tribal affiliation to the original groups of North or South America may be identified
as American Indian or Alaska Native. Any person having origin in the Far East, Southeast Asia, or the Indian subcontinent is labeled as Asian. Native Hawaiian or Pacific Islander includes people who have origins from Hawaii, Guam, Samoa, or other Pacific Islands (U.S. Census Bureau, 2012).

2. **Literacy**

   Literacy is a collection of skills and communicative practices shared among individuals in society. It is the ability to comprehend and accurately apply the written language forms necessary in society. Literate individuals have mastered the ability to use cognitive processes to comprehend, apply, and reflect on written text (USDOE, 2009).

3. **Socioeconomic status**

   Students who qualified for the free or reduced lunch program supported by the U.S. Department of Education comprise the low socioeconomic subgroup for this study.

### Delimitations

This study was delimited by the following factors. No limitations were identified.

1. A delimitation of this study is that it did not include teacher attitudes toward the students included in the study.

2. The study included all students who were tested on the Tennessee Comprehensive Assessment Program achievement test (TCAP) in 11 elementary schools in an upper East Tennessee school district. The study included students with any allowable test accommodations. These may have included extended time, auditory aids, Braille or large print, multiple testing sessions, flexible
scheduling, or the test read to the student. The study does not include students who were administered the Modified Academic Achievement Standard Assessment (MAAS).

3. Data were limited to 2010 through 2012 due to the revision of the standards in 2009 set forth in the American Diploma Project. As a result, the TCAP was also revised.

4. Race and ethnicity present a challenge when examining the data gathered for this study. In 2011 the classification specifications changed for ethnicity. Hispanic or Latino may include persons from Cuba, Mexico, Puerto Rico, South or Central America, or other Spanish culture or origin. Black includes people whose origin is any of the Black racial groups of Africa. People who maintain tribal affiliation to the original groups of North or South America may be identified as American Indian or Alaska Native. Any person having origin in the Far East, Southeast Asia, or the Indian subcontinent is labeled as Asian. Native Hawaiian or Pacific Islander includes people have origins with people from Hawaii, Guam, Samoa, or other Pacific Islands (U.S. Census Bureau, 2012).

Overview of the Study

Chapter 1 presents the introduction to the dissertation topic, the statement of the problem, the research questions, the significance of the study, definition of terms, and delimitations.

Chapter 2 provides the literature aligned with the dissertation topic; it is arranged by theme. Each theme is significant to the research questions. Topics included are the history of a potential literacy achievement gaps between males and females, the
biological and physiological differences in genders, a discussion on literacy pedagogy, 
the male experience with literacy including language development, research on males’ 
school experiences, research on the effect of socioeconomic status on literacy, 
research on the effect of ethnicity, and research on the impact of family on literacy 
achievement.

Chapter 3 includes the research questions, the role of the researcher, the source 
of the data, the data collection method used, the data analysis method, and ethical 
considerations. The methodology included the gathering of data for the (TCAP) for 
fourth grade students tested from 2010-2012 in an upper East Tennessee school 
system. All students who were tested with the TCAP in fourth grade were included in 
the study.

Addressed in this study was issue of whether or not there is a significant 
difference in the language arts achievement as a measurement of proficiency levels of 
fourth graders with regard to gender, socioeconomic status, and ethnicity. Language 
arts proficiency levels on the Tennessee Comprehensive Assessment Program (TCAP) 
results from 2010 through 2012 were the focus of the study. Comparisons were made 
between subgroups: gender, socioeconomic status, and ethnicity. Fourth grade was 
chosen because there appears to be a decline in language arts achievement scores 
among fourth graders across the nation. Included in this chapter are: The Research 
Design, Population, Data Collection, Data Analysis, and Research Questions.

A quantitative framework was used to examine the possible relationships among 
gender, socioeconomic status, ethnicity, and fourth grade language arts scores. A
historical ex post facto design was selected because the data already existed and collecting additional data was unnecessary.
CHAPTER 2
REVIEW OF RELATED LITERATURE

Historical Perspectives

Literacy is considered to be one of the valid indicators to measure positive academic achievement and is of particular importance to policymakers. The concern of an achievement gap between males and females dates back to the early 1900s. Gurian and Ballew 2003, Hunsader 2002, and Sax 2005 suggest there is a significant achievement gap in reading between males and females. Based on the National Assessment of Educational Progress (NAEP) reading scores, the reading achievement of males consistently lags behind that of females, a universal pattern since 1971 (Viadero, 2006). A significant aspect of the No Child Left Behind Act of 2001 suggested compelling new applications of educational assessments that would provide data useful for driving instructional decisions and for improving student language arts achievement. NAEP is a congressionally mandated test conducted by the U.S. Department of Education each year. This research has tracked U.S. students’ performance in reading since the early 1970s; females have consistently scored better than males in reading.

In a comparison of four large scale epidemiological studies, Rutter et al. (2004) reported that reading disabilities are significantly more common in males than females. In these studies the sample sizes were large, the attrition rate was low, the sample was representative of the general populations, and standardized test results were used. The results of four earlier studies completed in inner London on the Isle of Wight and two large studies of U.S. students supported their findings of more reading disabilities in
males than females. Results taken from the Program for International Student Assessment (PISA) were used to assess students in 32 different countries. Although the range of the achievement gap between males and females varied considerably throughout the English speaking world, males demonstrated more reading deficiency than females (Rutter et al., 2004). Viadero (2006) reported that in only one out of 41 countries did males outscore females on a reading test in literacy. She further stated the gap is narrower for fourth graders but widens by 14 points in high school seniors. Rotberg (2008) argued that PISA data may be skewed due to the higher percentage of low socioeconomic students tested in the United States compared to other countries where poor students are not as apt to stay in school. China and India do not participate in the PISA; a large number of their students drop out of school before they are 15 years of age.

From a male perspective, reading is often perceived as a feminine activity. Other concerns of males’ educational experiences include special education certification, end-of-term grades, and diagnoses of attention deficit disorders. Males are more likely to be diagnosed with attention deficit disorder with an average ratio of 4:1 (Ramtekkar, Reiersen, Todoro, & Todd, 2010). Males are overrepresented in special education classes and are three to five times more likely to be identified for special education services. They also are credited with 70% of report card Ds and Fs, and are 50% more likely for grade level retention (Hunsader, 2002; Viadero, 2006). Additionally, Brozo (2002) revealed that of the students labeled ADD or ADHD 83% are males.

Learning approaches (time-on-task, persistence, eagerness to learn, organization, and learning independence) are important indicators to student literacy.
achievement as found in the study by Ready et al. (2005). Conversely, they found little to no correlation in a gender achievement gap and the stereotypically rambunctious behavior as perceived by teachers although males are more likely than females to be retained due to immaturity or lack of academic success. When males begin kindergarten they may not be accustomed to sitting still and monitoring their impulsive behavior. As a result, their impulsivity may negatively impact their ability to adjust to the structure of school and to make new friends (Ready et al., 2005).

Competent reading is the strongest predictor of school success (Walcryk & Griffith-Ross, 2007). Therefore, it is imperative that all students receive quality reading instruction to foster the strategies and skills needed to make meaning from print and text. Findings from several national and international studies (Council of Ministers of Education, Canada 1999) are of notable interest in understanding how males learn to read. Male achievement based on the results of literacy skills falls short of the reading competency of females in the United States and 31 other countries. There are several theories for the male achievement gap: biological and physical differences, literacy pedagogy, males attitudes toward literacy, the school experience, family influence, socioeconomic impact, and ethnicity (Viadero, 2006).

**Biological Differences**

Over the past 20 years the notion that all children are biologically equal at birth has been questioned. Males and females are now thought to be different. Their interaction with nature and society is notably different. They play differently have different learning styles, fight differently, hear differently, and view the world through a different lens (Gurian & Ballew, 2003; Sax, 2005). Debate around a physiologically and
cognitively based understanding of language arts achievement gaps with regard to
gender continues (Gurian, 2002; Sax, 2009; Tyre, 2008; Whitmire, 2010). Through
magnetic resonance imaging (MRI), researchers have found a vast difference in the
male brain with regard to appearance, developmental rate, and pattern of operation.
Female brains have thicker, denser neurons in the temporal lobe associated with
language development and comprehension. Further, the development of the frontal
lobe governing complexity of thought and impulsivity occurs one to one and a half years
later in males (Viadero, 2006).

Several biological differences in sensory perception are present when comparing
males and females. Females tend to have a greater hearing sensitivity than males;
thus, males do not hear as well as females especially with the higher pitched and softer
sounds. The shape of the inner ear is different in males and females. Further, the
cochlea reacts with the brain stem more quickly in females; thus, males may respond to
questions and directions more slowly (James, 2007). Though not a completely resolved
issue among medical professionals, repeated episodes of otitis media may have an
effect on language development; males are reported to have more episodes of otitis
media (Mody, Schwartz, Gravel, & Ruben, 1999). Dobie and Berlin (as cited in Mody et
al., 1999) discussed the relationship between the damage from varying degrees of
hearing loss in children who suffer frequently from otitis media and speech perception
and language development. Potential deficits in speech perception links to phonological
and reading language difficulties have been observed in children who have experienced
repeated ear infections (Mody et al., 1999). Researchers identified who would learn to
read more easily and who would have difficulty by measuring the extent to which
children had developed phonemic awareness (Share, Jorm, Maclean, & Matthews, 1984).

A number of differences in the optical nerve processes between males and females may alter their learning experience. Males are more likely to be color blind; their perception and awareness of color is not as acute as in females (Iijima, Arisaka, Minamoto, & Arai, 2001). Knez and Kers (2000) found a relationship in the kinds of fluorescent lights preferred by males and females. The preference reflects the variation in color vision. Additionally females’ ability to solve problems was enhanced under the presence of 3000K lights, described as warm and slightly pink. Males were more successful with the cooler, slightly blue, 4000K lights. Similar correlations with the warm and cool lighting were found for long-term recall and mood variations between genders. Males are attracted and recognize movement more readily than females. An example of that keen attraction to movement is that males are drawn to television and video games in which the color is not as bright and motion is an integral part of the experience (Lutchmaya & Baron-Cohen, 2002). Thus, any movement in the classroom may distract male students more quickly than females. Females may also recognize nonverbal cues from their teacher more quickly than males.

Earlier theories regarding differences in reading performance between males and females were linked to environmental influences (Sax, 2005). Researchers who analyzed pictures drawn by males and females discovered a distinct variance in subject choice. Females are more inclined to create drawings of pets or nature. They typically use a variety of warm colors. In contrast male drawings usually represent action-
packed scenes—cars about to crash, aliens in pursuit of prey, and superheroes battling evil. Their drawings typically are comprised of six colors classified as cold (Sax, 2005).

An overwhelming majority of kindergarten teachers are unaware of the biological and physiological differences between males and females. Without understanding their differences males may be expected to sit for long periods of time and create feminine stereotypical drawings with bright colors instead of action-packed illustrations. After a period of time of suppressing the natural energetic desires, males may soon become discouraged and disengaged with the school experience (Sax, 2005).

Neuroscientists conducted studies of human brain development in children and adults from 3 to 21 years of age. They found a significant variance in the rate of development between genders in the section of the brain in which information is transferred from various sensory modalities (Sax, 2009). Conversely, males demonstrated earlier development in the region of the brain that controls spatial perception and object recognition. The frontal and temporal lobes responsible for language development mature earlier in females than in males (Gurian & Stevens, 2005). Thus, cognitive milestones in language development are attained earlier in females (Kindlon & Thompson, 2000). Medical technology has played an instrumental role in proving that cognitive processing differs between males and females (Gurian & Stevens, 2005).

**Literacy Pedagogy**

The 1983 report, *A Nation at Risk*, reported poor academic performance in almost every grade level and warned against an attitude of mediocrity in regard to the American public education system. Children’s reading proficiency, teachers’
effectiveness, and the quality of the American education system were challenged. International test data show America’s students are behind academically when compared to children in other countries. Teacher education programs are graduating teachers untrained to adequately teach children how to read (Allington, 2001).

In the fall of 1998 the Reading Excellence Act, a competitive discretionary grant program, awarded grants to improve kindergarten through third grade reading instruction. The grant targeted students from low-income homes. The goals of the grant included providing poor children with intervention of foundational reading skills (fluency, decoding, phonics, phonemic awareness, and comprehension) upon entry to kindergarten and teaching every student to read on grade level by the end of third grade. Vocabulary support was provided to foster reading comprehension. In an effort to avoid misidentifying students as special education qualified funds were available through the grant to provide early intervention to at-risk students (USDOE, 2000).

There are two primary categories of reading disabilities. The first one is a word recognition challenge that may be caused by a phonemic awareness deficit or a lack of verbal processing skills. The second is the inability to comprehend the text a student is asked to read. These students may have excellent word attack skills yet lack the ability to predict, infer, or summarize (Cain, Oakhill, & Bryant, 2000). While strength in phonemic awareness and phonics has become a strong predictor of literacy success and development, Chall (1983) asserted that there are a number of children whose reading difficulty does not surface until fourth grade. The theory behind Chall’s assertion is that when students are presented with more complex text for comprehension and decoding of more rigorous vocabulary a first-time reading
deficiency appears. Juel (1991) found that in the first few years of school children relied heavily on memorization of high frequency words. His theory is that when the text becomes too complex for this strategy to work, the students encounter their first challenge of phonologically and morphologically complex text. In a study completed by Leach, Scarborough, and Rescorla (2003) on reading disabilities and their patterns of emergence, a significant number of students were identified for the first time in the fourth grade with low reading skills – some with word recognition and comprehension deficits and some with only comprehension challenges. The students’ reading deficits that did not emerge until the fourth grade were just as severe as those in the study who were diagnosed with early-emerging deficiencies. When the fourth grade students’ third grade scores were analyzed, they were nearly as high as the students with no reading deficits (Leach et al., 2003). The results of the study indicate the possibility of late-emerging reading deficiencies. In a longitudinal study completed by Lipka et al. (2006), 36% of the fourth grade population had late emerging reading deficits. Shaywitz, Escobar, Shaywitz, Fletcher, and Makutch (1992) also discovered 46% of their population of fifth graders had reading comprehension problems; they were also late emerging. Leach et al. (2003) support the theory that when students learn to read by sight words and depend on memorization of high-frequency words but do not develop strong phonemic awareness and phonics skills, the potential for late-emerging reading disabilities is possible by fourth or fifth grade. Lipka et al. (2006) use data from their study to support the potential for late-emerging reading deficiencies to surface in children who demonstrated proficiency in literacy skills during the primary grades.
Children in this category may be overlooked due to their early success literacy achievement followed by unexpected decline.

Martino (2008) asserted that there is a relationship between literacy achievement and how males feel it reflects upon their masculinity. Evidence from several studies suggested males are unmotivated in language arts for fear of being labeled as a nerd, gay, or a schoolboy (Brozo, 2005).

Males who struggle academically are often characterized by low self-esteem and apathy and often have no positive male role models (Cleveland, 2011). Thus, schools and teachers who are sensitive to the diverse social, cultural, and ethnic backgrounds of males and plan instructional activities accordingly may reap higher literacy achievement among the male population (Watson et al., 2010). Teachers have often been charged with males’ disengagement in literacy and low scores on language arts segments on national and international assessments. Several studies suggest male-friendly classrooms and instructional strategies are the key to raising literacy achievement in males; however, class interaction, peer collaboration, hands-on activities, problem solving, acting, and learning things relevant to their lives are all activities appealing to males (Cleveland, 2011). Conversely, Younger and Warrington (2005) assert learning styles to be the effect of social norms. They found no relationship between learning styles and gender.

**Males and Literacy**

The definition for literacy in the 21st Century may be somewhat different from what it was in the 20th Century and may be defined as the ability to comprehend and have a command of the written language forms required for success in society.
now relates to a broad set of texts – digital, multimodal, and visual, an extension beyond school textbooks (Sanford, 2005).

Success in school is affected by family and personal factors; prior educational experiences; children’s interaction with other children; and relationship with peers, teachers, and other school staff. Generally, females build stronger relationships with teachers and peers. All these interactions and relationships place a child either in line for success or at risk for failure (Matthews et al., 2010).

Children who develop strong literacy skills early in their educational experience demonstrate greater academic growth, become proficient readers, and show greater competency in math and science (Matthews et al., 2010). Conversely, students who experience early challenges in literacy development may experience negative future effects: placement in academic intervention services (special education, etc.), higher potential for dropping out of high school, lowered self-efficacy, and problems in other academic domains (Pressley, 2002). The PISA assessment measures student performance on two types of text – continuous and noncontinuous. Narrative, descriptive, and expository texts are classified as continuous and intended to be read from beginning to end. Lie, Linnakyla, and Roe (2003) found the gender gap favoring females much greater when comparing performance on narrative text. Conversely, the gap was statistically insignificant when comparing gender performance on expository and descriptive text. Noncontinuous text include graphics, numerical, and spatial content. Noncontinuous text may include charts, maps, and tables. Males typically score well on spatial tasks, thus, demonstrate more success on non-continuous type text than narratives (White, 2007).
Processing speed is important in reading and writing fluency. A recent study found differences between males and female in their processing speeds on moderately difficult tasks. Viadero (2006) cited a study by Camarata and Woodcock from Vanderbilt University in Nashville, Tennessee, in which over 8,000 students from all levels of schooling were evaluated. Lower processing speed in males was discovered to be evident throughout elementary, middle, and high school. Not until adulthood does the gap begin to lessen. Slower processing speed may impact the overall general intelligence ability of males. Slower processing speed coupled with low verbal ability may increase the potential for learning disabilities and other academic implications (Camarata & Woodcock, 2006). Processing speed appears to be directly related to reading and writing fluency and ultimately success in language arts achievement.

Some researchers point to biased pedagogical approaches, teacher expectations, and instructional tasks as causes for reduced literacy achievement and increased gender gaps. Studies have found school activities and behavioral expectations are more aligned to females than males (Gurian & Stevens 2005; Sommers 2001). Sommers (2001) recommended specific gender strategies should be employed in classrooms to prevent an achievement gap between males and females. This body of research supported by King and Gurian (2006) and Noble and Bradford (2000) suggested the use of boy-friendly reading material, technology-based reading activities, single-gender classes, and more male role models and teachers. Generalizing males and attempting to describe what it means to be a “real male” may create a faulty stereotype against males built on essentialist ideas of what it means to be masculine (Anderson & Accomando 2002; Skelton & Francis 2011).
Although the number of males and females who demonstrate reading deficiencies are nearly equal, more males are referred to reading intervention classes (Ready et al., 2005). Teachers have a perception of children’s approaches to learning related to academic ability, thus their perception could have an adverse reaction to students’ academic success (Chiu, 2001). Females tend to employ more constructive learning approaches and positive interpersonal skills than their male counterparts. In a large-scale study by White (2007), females outperformed males on narrative texts however by a very small margin.

When comparing achievement on all educational levels and academic domains, Black males’ performance is the lowest. Several bodies of research reported the influence of socioeconomic status, stereotype threat, oppositional identity, and cultural discontinuity among the most common causes of underachievement of black students, particularly males (Hill, 2005; Steele, 1997). Matthews et al. (2010) suggested the achievement gap can be identified in kindergarten by the students’ social and learning habits.

The School Experience for Males

The school experience may be very different for males and females. Biological differences may account for some of the variables. James (2007) reported several examples of biological differences and their impact in the classroom. Because males’ hearing is not as acute and brain stem responses not as quick, male students are often thought to be inattentive and unresponsive to directions and slow to answer questions. Males are quickly and more easily attracted to movements either inside the classroom, outside the window, or in the hallway. Generally, males are not strong auditory learners
and may be less successful with the lecture-type mode of delivery where large amounts of information are delivered (Gurian & Stevens, 2005). In classrooms where the primary mode of learning is through lecture the students most often found to be off-task by doodling, gazing out the window, or asleep have been males. Males tend to be more successful with hands-on tasks, a fact that may explain their natural attraction to math and science and common challenge with literacy-based activities. Success in hands-on tasks may also reflect the male advantage in visual learning experiences (James, 2007).

James (2007) also outlined several differences in the way the brain works when comparing genders; some appear to have a link to language acquisition and growth and ultimately literacy development. Two differences that seem to have a significant effect on literacy development involve the amygdala, the hippocampus, both located deep within the brain, and the prefrontal cortex, located at the front of the brain. The amygdala, found to be larger in males as they mature, is responsible for connecting sensory experiences with emotion. Conversely, the hippocampus, connected to memories is larger in females. James stated that the amygdala associated with academic strengths in vocabulary, basic math, word identification, and total intelligence quotient. The left hippocampus was related to academic strength in verbal intelligence and language arts skills including spelling and reading, while the right hippocampus is related to success with mathematical calculations. The additional advantage for females is that they use corresponding areas of both hemispheres. Males use both hemispheres when developing spatial skills that may account for the reason males typically have stronger spatial skills and females verbal development. The female
advantage in verbal fluency generally begins when children are toddlers. Females often know and use two times as many words as males. They typically talk sooner and with greater clarity. The early success with verbal fluency may stimulate stereotypes supporting females and stronger verbal skills (Smith & Wilhelm, 2002). Males are more successful at analogies, yet this strength does not appear to extend into other areas of literacy success as more males are diagnosed with verbal learning disabilities and dyslexia and have stuttering issues (James, 2007).

Studies have shown that some males are developmentally ahead of females while the majority are immature, lack impulse control, and do not fit the mold of public education (Kindlon & Thompson, 2000). On average the brain of a 5-year-old male is comparable to that of a 3½-year-old girl. The significance of this finding is the age at which males enter school; they may not be developmentally ready for sit-down, pencil and paper tasks (Sax, 2007). Some researchers have suggested that from 60%-80% of learning disabilities in males would disappear if 8-year-old males were educated with 6-year-old females (Kindlon & Thompson, 2000).

One suggested solution to increasing academic, social, and emotional success for males is to provide opportunities for learning in single-gender classrooms. Single-gender classrooms and schools are thought by some special interest groups to conflict with gender equality provided by Title IX the 1972 legislation. The intent of Title IX was to ensure gender equality in public schools. Single-gender classrooms and schools are hailed as unconstitutional by interest groups such as the American Civil Liberties Union (ACLU). In 2006 then Education Secretary Margaret Mead signed documentation allowing schools to provide single-gender classrooms as an option for greater flexibility
to meet individual needs of students (NASSPE, 2012). Halpern et al. (2011) argue against claims that males and females experience improved academic performance in single-gender classrooms. Conversely, single-gender classrooms increase the opportunity for gender stereotyping and strongly influences sexism. Halpern and her colleagues warn that early advantages may, in fact, diminish when motivation wanes. Single-gender classrooms limit the opportunity for both genders to learn to work and solve problems together and to develop better social skills (Halpern et al., 2011).

Parents who support the option for single-gender classrooms feel coed classes may create a distraction for both genders especially as students move toward adolescence. Advocates for single-gender classrooms suggest they are the solution to gender stereotypes where female students do not feel the pressure of competition with the male students. Additionally, males have the freedom to participate and excel in subjects considered to be feminine such as music, poetry, drama, and reading without fear of being labeled as a sissy. McCallie School, organized in 1905, a private school for males in Chattanooga, Tennessee, has recognized the importance of providing males with positive influences-mentors and peers who can guide them to discover their strengths and empower them to accept responsibility for themselves and the future of their community and world. McCallie School accepts males from all religious, ethnic, racial, and socioeconomic backgrounds. One of McCallie’s core beliefs states that “boys learn in different ways, have different ways of demonstrating abilities and require a variety of instructional approaches and assessment strategies in order to thrive” (http://www.mccallie.org/podium/default.aspx?t=103717). The 2012 graduating class at McCallie scored between 24 and 31 on the ACT compared to a national average of
21.1. The class scored between 560 and 700 on the math portion of the SAT, between 530 and 570 on the SAT reading subtest, and between 520 and 650 on the writing portion of the SAT. These scores are comparably higher than the national SAT average of 514 for math, 497 for reading, and 489 for writing.

Males are not the only ones who have found single-gender classrooms a positive intervention in their educational experience. Females have reported success and increased confidence in the areas of math and science when allowed to move at a pace compatible to their interest and learning style rather than feel pressured to compete with the male students (Stanberry, 2013). Sax (2007), however, warns merely placing males in single-gender classes is not the answer to their academic, social, and emotional woes.

Teachers who promote experience with a rich variety of genres are thought to create more enthusiastic male readers. Librarians also play a key role in providing reading materials that entice males to read (Jones & Cartwright, 2003). The selection of reading material for use inside and outside the classroom may affect males’ interest in reading. Because elementary school librarians are predominantly women, reading choices made for males frequently may not reflect male preferences. Females tend to see reading as a leisurely activity while acknowledging the educational benefits (Coles & Hall, 2002). While females tend to read fiction – adventure, romance, and animal related material, males prefer active reading about sports, fantasy, science fiction, war and spy, and comic books (Coles & Hall, 2002). Males enjoy identifying with characters in reading material, therefore, allowing males opportunities to find reflections of who they are and like in reading material will encourage continuous reading experiences.
(Jones & Cartwright, 2003). They enjoy reading material that reflects their common language as in sports magazines and books that are aligned with favorite television interests. That common language is transferred to conversation among males inside and outside the school setting (Coles & Hall, 2002).

Females tend to adapt to the school curriculum more readily than males because it matches their interests while classroom literacy practices reflect their natural experiences. Females lean toward book choices that help them press through personal feeling and problems while males desire informational text that provides details and accurate facts (Coles & Hall, 2002). Research has shown that increased availability to informational text stimulates the interest of students who enjoy this genre (Duke, 2004).

Schools that demonstrate the marked growth in the language arts skills of male students are those that provide a unified and cohesive emphasis on literacy. These literacy-focused schools have developed a plan of action that include frequent progress monitoring, use research based best practice strategies, and implement an individualized action learning plan (Pollack, 1998). Schools that support professional development on the diversity of males and females with regard to biological differences, physical development and maturity, and cognitive and learning differences produce happier, more successful male students. Males will thrive in a school environment where they feel welcome, are accepted by teachers and peers, and are free to express individuality. They enjoy learning in a setting designed to allow for a diversity of learning styles (Pollack, 1998).

Teachers have different expectations for males and females with regard to reading and writing; they assume females are better readers and thus, better writers.
Thus, a social hierarchy is created around reading (Moss, 2011). While some males perceive reading and writing as a feminine activity and fear their literacy success may tarnish their masculine image, other males are successful in literacy and do not fear loss of their social masculinity (Dutro, 2008; Francis, Skelton, & Read, 2010). Dutro (2008) further emphasized that males at the top of the social hierarchy and emotionally well balanced were those who demonstrated an interest in books traditionally thought for females. The males in Dutro’s study challenged preconceived ideas of masculine and feminine reading material and educational curricula. Dutro found high-achieving, athletic, popular males enjoy reading and writing.

Studies that track students’ development and progress from kindergarten through fifth grade have found that by the time children have completed third grade, a pattern of learning has been established that molds their entire educational experience (Kindlon & Thompson, 2000). By the end of third grade males often feel defeated, have become disengaged and unmotivated, and have decided they do not fit in at this place called school. Many males face daily shame and anxiety throughout their elementary school years. During this time they have developed a poor self-image due in part to the school environment. Emotionally estranged from their life in school, these males are already at risk before they complete their kindergarten year. These results suggest the need for educational reform.

When reviewing the test scores of developed countries, researchers consistently found Finnish students rank in the top percentile. Following a global comparison of instructional practices and educational policy, one significant difference surfaced. In Finland, students begin a formal education at 7 years of age, 2 years later than students
in the United States. Research suggests providing an additional 2 years to mature prior to a formalized literacy program positively impacts students’ academic and social growth. Teenagers in the United States score an average of 50 points lower than teenagers in Finland (Sax, 2007).

In a longitudinal study of a nationally representative sample of 16,883 kindergartners by the U.S. Department of Education Ready et al. (2005) studied females’ advantage in kindergarten literacy achievement. They reported that females not only have stronger literacy skills at the beginning of the kindergarten experience, they also demonstrated greater growth in literacy achievement at the end of the year than males. When interviewed, kindergarten teachers attributed attentiveness and on-task behavior to the higher levels of achievement. Additionally, females were more organized than males. Females tended to stay more focused and demonstrate perseverance toward task completion. Conversely, males are often described to be off task, disruptive, and aggressive. The amount of time spent on a task, perseverance in completing the task, and level of attention were indicative of children’s higher academic achievement (Ready et al., 2005).

Studies reported in the *Journal of the American Medical Association* stated that males rather than females are more frequently diagnosed with a reading disability (Rutter et al., 2004). Allington (2001) suggested that schools fail to meet the needs of all students, particularly those from poor homes and students whose parents are not as involved in their child’s education. An accelerated curriculum may also pose extensive challenges for male students. Over the past 5 years kindergarten curriculum has changed dramatically. Previous kindergarten curriculum once centered on mastery of
social skills in preparation for establishing a foundation for academic content in math and literacy in first grade. (Sax, 2007). There is concern among researchers that there exists a growing gap between the academic expectations and the brain’s rate of development; males seem to be especially vulnerable. Sax reported evidence of discouragement, disengagement, and a waning of motivation by male kindergarteners. Moreover, by third grade, males have often separated their energy from the task of learning, tuned out school, and have decided it is a place where they have experienced little to no success and in which they are no longer interested.

In addition to a developmental mismatch with academic expectations, males may be further stymied as they are required to sit in compliance, complete worksheet assignments, and work on computer programs designed to be academically enriching. Numerous studies over the past 50 years have uncovered the value of multisensory experiences with nature—touching, smelling, tasting, hearing, and seeing. Depriving children of these sensory experiences may lead to developmental impairment.

Kenntnis and Wissenschaft refer to two kinds of knowledge. Kenntnis is knowledge gained through experiences; Wissenschaft is subject specific knowledge. A Stanford University neurology professor found medical students lacking in the basic understanding of mechanical concepts. These students were unable to develop a conceptual understanding of the heart working as a pump because they were not able to make the connection from abstract concepts to real-world application. The students may have had limited hands-on experiences—never siphoned anything, tinkered with lawnmower or car repair, or may not even have hooked up a garden hose. For a whole generation of kids, direct experiences in the backyard tool shed or workshop and in the
fields and woods have been replaced by indirect learning through mobilization. These young people are intelligent. They have had many experiences and have had access to the best technology; however, something seems to be missing (Sax, 2007).

The transition away from hands-on experiences with nature to that of a technology-directed knowledge may be one reason male motivation toward school declines. A deficit in hands-on nature experiences creates an imbalance between Kenntnis and Wissenschaft, thus increasing the risk for suspicion of attention-deficit disorder (Sax, 2007).

Males are often described as impulsive and quick to react without considering the consequences; they are highly active and enjoy physical activities. Further, they are more likely to be involved in fights, become argumentative, and exhibit more external behavior problems (Ready et al., 2005). Males in today’s school environment are often discouraged from their natural highly active behavior. For many males schools become unpleasant environments that often suppress or punish their active behavior. Educators recognize the relationship between time on task and attentiveness to academic success (Ready et al., 2005) and often expect males to overcome their natural tendencies in order to succeed in school. Males may find it difficult to sit still and remain on task with a pencil and paper assignment when they prefer to be up running and playing. Educators may misinterpret male students’ inability to sit for long periods and prematurely refer them to the school psychologist for testing. As a result, the ratio of males to females diagnosed with attention deficit and hyperactivity disorder (ADHD) is three to one; most are males from white upper class families. ADHD and ADD negatively impact students’ memory, learning, and speed of information processing -
skills critical to literacy development and academic success (Tannock, 2007). This tendency of overrepresentation was supported in a Tennessee study of 8,258 elementary children ranging in ages from 5 to 10 years old. From the study, 331 males were diagnosed with ADHD compared to 81 females. A study conducted by Kindlon and Thompson (2000) found that between 1990 and 1995, the number of United States males prescribed Ritalin, a drug prescribed for attention deficit disorder, exceeded one million. Of those prescribed, the majority were males from white upper class families. Studies about the long-term effects of Ritalin and other medication prescribed for ADHD have generated cause for concern (Sax, 2007). Researchers at Harvard Medical School studied the effects of medications used to treat ADHD on male juvenile laboratory animals. Concern among the Harvard colleagues surfaced when as the animals got older there was marked reduction in motivation. Follow-up research indicated that the attention deficit disorder medications may have adverse effects on the nucleus accumbens, the region of the brain that controls the transformation of motivation into action. Results from additional work at Tufts, UCLA, and Brown University support the research done at Harvard (Sax, 2007).

Two very important mental processes, working memory and attention control, develop during the preschool years and are delayed in children who grow up in low-income homes (Noble, McCandliss, & Farah, 2007). Developmental researchers have postulated that working memory and attention control support learning by increasing the capacity to self-regulate behavior and strengthen social competence (Hughes & Ensor, 2007). Further, working memory is important to reading comprehension and fluency in elementary school children (Swanson & Jerman, 2008). Attention control, uniquely
related to reading, enables the child to focus and flexibly shift attention and to respond to task demands. The majority of children with delayed working memory demonstrate elevated rates of inattentive behaviors and high levels of distractibility (Gathercole et al., 2008). The delay in these processes causes long-term learning challenges especially in the acquisition of emergent literacy skills, educational success, and future employment potential (Blair & Razza, 2007; Li-Grinning, 2007). Ryan, Fauth, and Brooks-Gunn (2006) reported substantial achievement gaps in kindergarten between middle-classed children and low-income children. The gap widens as children advance through school.

Males are often highly motivated by competition. Yet, there seems to be a lack of competitive opportunities for males in schools. Psychologists support the development of male social skills through team competition. Black males especially thrive on competitive activities (Sax, 2007). Jackson (2002) suggests competition may be a negative experience for males who fear losing; thus, causing them to become disengaged or find an alternative way to win. In studies of upper elementary and middle school students, marked differences were observed in males’ and females’ play. While females tended to congregate in small, intimate groups primarily with a social focus, males’ games were highly energetic, complete with rules and goals, and may include most of the males in the class. Males’ activities are most often aligned to a societal code of masculinity—toughness, endurance, winning, and aggression. Females’ interactions typically hinge emotional connection with a focus on building relationships (Adler, Kless, & Adler, 1992).

The teacher-student relationship is one of the most important factors of student self-efficacy and motivation. In a study by Elliott, Malecki, and Demaray (2001) the
ratings teachers gave students on their interpersonal skills were significantly related to their growth in academic achievement demonstrated on standardized tests at the end of the year. Females are often more polite and exhibit better social behavior than males. In their quiet, polite, feminine way, females tend to have a closer more personal relationship with their teachers. Conversely, teachers’ relationships with male students tend to be more discordant (Ready et al., 2005). Female students rather than males tend to develop stronger and closer relationships to teachers (Matthews et al., 2010). The impact of the teacher-student relationships on academic achievement and emotional well-being seems to be more profound in low-income students. Researchers have indicated that other than family closeness, perceived school connectedness was the most significant factor preventing youth from emotional distress, drug abuse, and violence (Pollack, 1998). Some studies have found a correlation between peer-student and teacher-student relationships and the suicide rate. One of the characteristics of students who commit suicide is a disconnected feeling with teachers and peers. A lack of motivation and absence of success or feelings of failure may also be associated with high suicide rates among adolescent males. A concerning statistic is the younger age at which male students commit suicide, which some psychologists warn as signs of an impending epidemic (Kindlon & Thompson, 2000) considering the suicide rate has increased 300% since 1950.

The differentness of males should not be perceived as negative, yet according to interviews with educators it presents a challenge to teachers, to the school culture, and to males themselves. (Kindlon & Thompson, 2000). When a boy’s sense of belonging at school exceeds his sense of differentness, he is free to learn. An academic lag
doesn’t mean males cannot make progress and feel good about their accomplishments as they improve. Teachers are the most influential variable in a male student’s academic experience, especially if the male is at risk. Authentic, specific, and immediate praise are effective strategies to increase male self-esteem in academic growth and literacy success (Kindlon & Thompson, 2000; Whitaker, 2004). Appealing to the natural interests of males and providing reading material aligned with topics is another strategy for increasing proficiency in reading.

Other factors that may influence male literacy achievement are staff gender and teacher quality (Books, 2009; Machtinger, 2007). With regard to staff gender, the population of elementary school teachers is primarily female. According to Gurian and Stevens (2005), the number of female educators is disproportionate to the number of male educators employed in United States schools. This imbalance negatively impacts male students especially at the elementary level where teachers are primarily female. Due to the physiological differences between males and females, females may be less tolerant of males’ active minds and bodies and impulsive behavior (Brozo 2002; Kindlon & Thompson 2000). Males may get discouraged when comparing their own literacy achievement with females who typically excel in reading. Additionally reading is often perceived by males as a feminine activity, thus justifying males to describe themselves as nonreaders. Reading material containing an action-packed plot with male main characters tends to attract male readers. These masculine preferences influence males toward a collection of reading genres—nonfiction and science fiction; comic books, humor, and graphic novels; stories about sports and athletes; and suspense stories (Jones, 2005).
Family Influence

Families play an important role in modeling and promoting positive attitudes toward reading and male literacy. Ready et al. (2005) found that parents report reading to females slightly more often than males. Research strongly supports the value and impact parental involvement has on children’s academic success, particularly in reading. In no other subject does parental support have more impact than it does in reading. The earlier parents become involved in their child’s learning and academic success the better. The impact of parental involvement has no respect of socioeconomic status, ethnicity, gender, or the education level of the parents. Children who grow up with many books in their home reap the benefit of as many as three more years of learning than children in homes with few books (Desforges & Abouchaar, 2003). There is evidence that children reap great benefits including higher IQs and more social mobility when their fathers spent time not only reading with them but sharing other enjoyable experiences. Further, 53% of children whose parents are active readers spend time reading books daily, whereas only 15% of children whose parents read very little reported reading for fun (Desforges & Abouchaar, 2003).

Considering the manner in which families understand and promote masculinity in males is important (Martino, Lingard, & Mills, 2004). Mullan (2010) reported a strong correlation between mother and females’ reading while males’ interest of reading was connected to their fathers’ attitude toward reading, enjoyment, and frequency. A father or other significant male in the home or the child’s life who values reading may have a positive effect on reading and literacy development. Thus, adult males have the capacity to promote the value and importance of a literate life style for other young
males. Parents and guardians can richly enhance the literacy development of their children by building a culture of reading and language appreciation within the home (Gurian & Stevens, 2005). While reading may pose a difficulty for many males, parents and guardians can use read-aloud opportunities as a strategy for encouraging literacy and language development. The partnership and collaboration between home and school extends student learning.

Socioeconomic Impact on Literacy Achievement

The effects of poverty are widespread and impact all of society. When compared with other industrialized countries, the United States has one of the greatest socioeconomic gaps (Burney & Beilke, 2008). Statistics reveal childhood poverty rates in the United States exceed those of any other industrialized country (Parrett & Budge, 2012). The effects of poverty and language arts achievement begin to have very negative implications for United States youth when it comes to interacting globally. In 2010, 47.8% of the students attending public school in Tennessee received free or reduced lunch. Sixty-seven percent of poor Americans are white. Blacks and Hispanics make up approximately 12% to 13% of the population; yet, each group comprises approximately 25% of the low-income population (U.S. Census Bureau, 2012). When married-couple families are compared to single-female-parent families, the later represent 61% of families living in poverty (West Coast Poverty Center, 2010). Studies show poverty has the most long-term impact on blacks (Parrett & Budge, 2012).

Low-income, single parents, and poorly educated mothers are factors that place students at great risk for academic challenges and potential failure (Neuman & Celano, 2001). Students from low-income homes may have fewer opportunities for rich
educational experiences before entering school in kindergarten and beyond. Further, parental support with homework may not be as easily accessible due to the amount of time adults living in poverty spend at work. Adults with low paying jobs work the equivalent of almost two jobs; thus, spend more time at work than their wealthier counterparts. (Gorski, 2008). Lareau as cited by Neuman and Celano (2001) completed a study of parental involvement. What they found was a correlation of social capital with social class. Though the educational goals for their children may be similar, parents with higher incomes had social networks and assets that enabled them to provide more resources and opportunities for their children than parents with low or no income. Further, values and beliefs that direct educational paths are formed from the social and physical culture and environment of which parents and children are part (Neuman & Celano, 2001).

Seventy-five percent of the academic achievement gap is found in students from low socioeconomic backgrounds (Rotberg, 2008). Comparative studies done in the United States and United Kingdom report literacy success among males from middle class families and homes in which parents place high expectations on their children (Mead, 2006). In 2010, 64% of fourth graders performed at or above the basic level, 34% at or above the proficiency level, and 8% at the advanced level. When comparing the results of the 1992 NAEP to the scores on the 2010 NAEP, fourth graders demonstrated growth in three achievement levels (basic, proficient, and advanced). Yet, while 74% of the students who scored below the 25th percentile were students eligible for free or reduced school lunch, only 23% of students who scored above the 75th percentile qualified for free or reduced lunch.
Thirty-seven percent of the children in the state of Tennessee live in homes where no parent has full-time, year-round employment compared to 33% nationwide; 22% of the low-income working families have children compared to 21% nationwide; 13% of children under 6 years old in Tennessee have no working parent; 63% of children in Tennessee have all available parents in the work force compared to 65% nationwide. Thirty-three percent of the families in Tennessee are headed by females and are eligible to receive child support compared to 30% nationwide (Annie E. Casey Foundation, 2012). The median family income for families with children in Tennessee is $43,314; the United States average is $51,914 (U.S. Census Bureau, 2012). The personal per capita income is $26,808, a ranking of 36th in the United States. The poverty rate in Tennessee is about 16% placing the state in the top 10 most impoverished states (Annie E. Casey Foundation, 2012). Not all schools have racial diversity, but all schools have a portion of their enrollment living in poverty (Burney & Beilke, 2008).

The single-most significant cause of an achievement gap among students all over the world is poverty and the inequalities in school resources, particularly schools and districts with large numbers of low-socioeconomic groups (Rotberg, 2008). Students from low-income homes often perform lower academically (Books, 2009). Drukker et al. (2004) reported that school achievement is lower in males living in poverty-stricken neighborhoods. Children who grow up in impoverished conditions are more likely to experience delays in school readiness. Rigorous and engaging academic opportunities are necessary for academic success coupled with background preparation often lacking in low-income homes (Burney & Beilke, 2008). Entwistle et al. (1997)
proposed the faucet theory suggesting a vast difference in the flow of resources available to children living in poverty especially during the summer months. Neuman and Celano (2001) conducted a 3-year study in a large metropolitan city. They compared access to print in four neighborhoods representing a diversity of culture and economic status. What they found was a marked difference in the quantity and quality of resources available to children living in poverty. There were three times the number of stores that sold reading material for children in the middle class neighborhoods while there were no places to purchase reading material for young adults in the two lower class neighborhoods. When Neuman, Celano, and their colleagues counted the number of reading resources available to all four neighbors, there was a vast difference. In the two middle class neighborhoods, there were 18,610 titles for children and young adults compared to 413 titles for children in the lower class neighborhoods. There was no reading material appropriate for young adults available for purchase in the lower class neighborhoods. A limited amount of access to print and minimized opportunities for language arts opportunities and deep thinking experiences narrow literacy development and may increase the achievement gap (Newman & Celano, 2001). Neuman and Celano argue that resources and opportunities easily accessible outside the school setting may have as much impact on language arts achievement as services provided within the school structure.

Children raised in poverty hear approximately 30% of the vocabulary of children compared to those being raised by professional-class parents. Coupled with biological differences, the less verbal stimulation places impoverished males at disadvantage (Gurian & Stevens, 2005). Duke (2004) reported the results of a study of first grade
classrooms where the students were found to spend less than 4 minutes a day reading informational text – reading material highly motivating to males. In schools with a high population of students from poverty-stricken homes, the amount of time spent reading informational text was even less. Coupled with hands-on investigations, informational text provides a deep knowledge base often lacking in students from low-income homes. When teachers include more access to informational text students demonstrated growth on standardized tests on decoding and word identification. Additionally, students who were delayed in sound-letter knowledge showed marked growth with increased exposure to informational text (Duke, 2004).

Many students from impoverished homes have no positive male role model and have fewer opportunities for rich, life experiences. Studies report a benefit of male interaction with other males is a calming effect especially in the school setting (Books, 2009). High poverty schools that have below average academic student achievement are often staffed with inexperienced and ineffective teachers (Machtinger, 2007). The consequences may be disastrous.

Children gain familiarity and practice with exposure to print, creating a reciprocal and increasingly positive relation toward initial and developing reading acquisition. However, those children who lack exposure and experiences with print are less likely to be skilled at the initial acquisition process, less likely to become involved in reading-related activities, and less motivated to read, beginning the spiraling effect of the rich-get-richer, poor-get-poorer phenomenon. Once children are in public schools the problem often becomes exacerbated through remedial instruction that exposes less skilled to fewer interactions with text than their more skilled peers providing them ultimately with the very poorest language and literacy instruction. (Neuman & Celano, 2001, p 24)

Struggling readers need competent teachers and rich literary experiences with text that is relevant to them and quenches their interests (Allington, 2001; Duke, 2004).
Another concern that surfaced from studying schools heavily populated with low socioeconomic students is the disproportionate ratio of males and minorities referred for language arts special education classes (Books, 2009; Burney & Beilke, 2008). The imbalance exists in all 50 states and within all socioeconomic and minority subgroups. The gap is largest among male, minority subgroups (Books, 2009).

*Ethnicity, Literacy Development, and Achievement*

The Statistical Abstract of the United States in 2006 reported 14% whites, 33% blacks, 29% Hispanics, 10% Asians, and 17% of all children under age 18 living in poverty as cited by Burney and Beilke, (2008). As of 2009 students may select multiple racial or ethnic categories on any federally required form; therefore, identifying achievement differences by ethnic or racial subgroups is difficult. A large body of research examines males as a uniform demographic group rather than making within-group comparisons of background that may include ethnicity. NAEP assessment results are recorded for three racial-ethnic subgroups: White, Black, and Hispanic. Reading results for Hispanic students were first recorded in 1975; however, there is not enough recorded data for Asian-Pacific Islander or American Indian-Alaska Native students to be included in long-term trend studies. According to NAEP, the percentage of Hispanic students has increased across all three age groups, while the population of tested Black students has remained stable (USDOE, 2012). Nine-year-old White and Black students demonstrated better reading skills on the 2008 NAEP assessment than all previous assessment years. Yet, a 24-, 21-, and 29-point achievement gap remains in 9-, 13-, and 17-year olds respectively. Hispanic students’ achievement has increased gradually since 1975; however, a 21-, 26-, and 26-point gap is evident at ages 9, 13,
and 17 respectively. In a longitudinal study of almost 17,000 kindergartners, Asian children from an advantaged background made greater academic progress in literacy than their black and white peers particularly when comparing their approaches to learning – attentiveness and on-task behavior (Ready et al., 2005). On the 2011 NAEP test, 33% of fourth graders who scored below the 25th percentile were white, 25% were black; 35% were Hispanic, and 3% were Asian. Fourth graders who scored above the 75th percentile 71% were White, 7% were black, 11% were Hispanic, and 8% were Asian (USDOE, 2012). Since 1992 fourth grade black students have made larger gains contributing to a smaller gap of 25 points in 2011 than in 1992 when the achievement gap was 32 points. The gap of 24 points between fourth grade White and Hispanic students has not been significantly different since 1992. The percentage of Hispanic students tested in 2011 exceeded that of all other ethnic groups. Though not significantly different, the gap between White students and Asian-Pacific Islander students has flipped. In 1992, White students scored 8 points higher, while in 2011 Asian-Pacific Islander students scored an average of four points higher than White students. The largest gap of 28 points lay between American Indian-Alaska Native and White students – a gap that has increased by 18 points since 2000 (USDOE, 2012).

Language arts practices are not only highly gendered but extraordinarily influenced by cultural and ethnic background (Coles & Hall, 2002). Historically, black males from poor backgrounds score lowest on the NAEP tests; the gap widens significantly during adolescence. Black male high school graduates read at the same or lower level than white middle school eighth graders. Many of these black males attended low-achieving schools and were taught by ineffective, underqualified, female
teachers (Tatum, 2006). Tatum further stated that educators and schools have failed to plan to appropriately meet the social, academic, cultural, and emotional needs of black male students. In findings of kindergarten studies, 71% of white students could recognize the alphabet compared to 80% of Asian children; however, only 59% of African-American students and 51% of Hispanic kindergarten children were successful in letter recognition (Coley, 2003). Factors including a lowered level of academic expectation as well as the potential for racial discrimination for black males may account for literacy underachievement (Matthews et al., 2010). The multiplicative risk of the male gender paired with black minority status may result in lower academic achievement. The academic risk for black males may exist very early. Black children do not perform as well on early reading assessments: writing, basic vocabulary, and decoding strategies and skills (Fryer & Levitt, 2005). Students from low-income ethnically diverse subgroups are underrepresented in advanced coursework while the high-achieving white counterparts are overrepresented. High achieving students tend to come from wealthier homes while lower achieving students live in low-income homes (Burney & Beilke, 2008).

Basic literacy skills develop in the same manner in native English speaking students as students who learn English as a second language (ELL) (Swanson, Sáez, & Gerber (2006). However, brain images suggest the brain regions are responsible for reading performance indicating key processing anomalies in bilinguals than in monolinguals (Tan et al., 2003). The academic achievement and literacy development of students who are learning English as a second language (ELL) have received increasing attention from researchers, policymakers, and educators (August &
Shanahan, 2006). The majority of existing research on literacy development is on native English speaking children. Most studies on ELL students have been conducted during the primary grades. Students who must learn English as a second language have a greater challenge in their development of literacy skills than students who are English natives (Lesaux, Rupp, & Siegel, 2007). In a study conducted by Swanson et al. (2006), working memory is a reliable determinant in predicting the level and rate of academic growth in English literacy skills. The impact of working memory on growth in reading became more language specific when students were tracked over a 3-year period. Additionally, ELL students are more likely to have problems with reading comprehension due to a lack of oral language proficiency and relevant background knowledge (Lesaux et al., 2007). Tasks that require short-term retention of sequential information present challenges for students who have difficulty in reading and second-language acquisition (Swanson et al., 2006). Language minority students demonstrate limitations in reading comprehension. Swanson et al. (2006) reported that students demonstrated an imbalance in performance in basic literacy skills and expressed concern that while the native language is Spanish, phonics instruction is in English when students begin school (2006). Limbos and Geva (2001) reported a concern that schools may fail to identify reading disabilities in ELL children because delays may be perceived to be due to phonological processing skills and oral language deficiencies. Delayed identification may be due, in part, to reports of an imbalance in the ratio of ELL students compared to native English speaking students on special education censuses. Postponing assessment for possible reading disabilities limits intervention and remediation (Limbos & Geva, 2001).
Summary

Males' underachievement in literacy is a very complex issue not only in the United States but internationally. Suggested causes include socioeconomic status, home composition, ethnicity, social pressures, stereotypes, biological and developmental differences, disengaging curriculum, home environment, role models, and culture. Educators and policy makers are actively seeking solutions to the challenge of meeting males' academic, social, and emotional needs.
CHAPTER 3
RESEARCH METHODOLOGY

The issue of whether there is a significant difference in the language arts achievement as a measure of the proficiency levels of fourth graders with regard to gender, socioeconomic status, and ethnicity was addressed in this study. The study was focused on the language arts proficiency levels on the Tennessee Comprehensive Assessment Program (TCAP) results. Comparisons were made between subgroups: gender, socioeconomic status, and ethnicity. Fourth grade was chosen because there has appeared to be a decline in language arts achievement scores among fourth graders. Included in this chapter are: The Research Design, Population, Data Collection, Data Analysis, and Research Questions.

A quantitative framework was used to examine the possible relationships among gender, socioeconomic status, ethnicity, and fourth grade language arts scores. A quasi-experimental design was selected because the data already existed and collecting additional data was unnecessary.

Research Questions and Null Hypotheses

The following research questions and corresponding null hypotheses were considered during the study. The independent variables in the respective questions were gender, socioeconomic status, and ethnicity. The dependent variable in each question was the students’ proficiency levels on the TCAP language arts test.
**Research Question #1**

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males and females?

$H_0^1$: There is no significant difference in the proficiency levels on the Tennessee Comprehensive Assessment Program from 2010-2012 for fourth grade students with regard to gender.

**Research Question #2**

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males and females with regard to ethnicity?

$H_0^2$: There is no significant difference in the proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males with regard to ethnicity.

$H_0^3$: There is no significant difference in the proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade females with regard to ethnicity.

**Research Question #3**

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males and females with regard to socioeconomic status?
$H_04$: There is no significant difference in the proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males with regard to socioeconomic status.

$H_05$: There is no significant difference in the proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade females with regard to socioeconomic status.

*Research Question #4*

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade students with regard to ethnicity?

$H_06$: There is no significant difference in the proficiency levels Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade students with regard to ethnicity.

*Research Questions #5*

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade students with regard to socioeconomic status?

$H_07$: There is no significant difference in the proficiency levels Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade students with regard to socioeconomic status.

*Population*

The population was the fourth grade students in the 11 elementary schools in an East Tennessee urban school district. The district is currently at a 65% poverty level.
This study included fourth graders from the district who tested from 2010, 2011, and 2012. The sample size was 2,080 students. Data were gathered from 2010-2012 Tennessee Annual Yearly Progress (AYP) Criterion Reference Test (CRT) Report.

Instrumentation

The instrumentation used for this study was the Tennessee Comprehensive Assessment Program. The TCAP is a collection of assessments that are timed and in a multiple-choice format. They are administered annually in late April to Tennessee students in third through eighth grades. The test measures students’ academic progress and skills in language arts, mathematics, science, and social studies. The language arts subtest assesses six different strands: language and vocabulary, communication and media, writing and research, logic, informational text, and literature. Results are provided with composite scale scores and proficiency levels. Although 4% of the student population representing over 40,000 Tennessee students has limited English proficiency, the TCAP is provided in English only (Tennessee Department of Education, 2012).

Data Collection

I submitted a request to the Institutional Review Board (IRB) for approval to collect TCAP data from an upper East Tennessee school district. The IRB determined my proposed activity did not meet the FDA or the DHHS definition of research involving human subjects; thus, it did not fail under the purview of the East Tennessee State University IRB. The data were collected on the Tennessee Department of Education website. I was also required by the director of schools of the district under study to complete research documentation. I submitted all required paperwork and was granted
permission to complete the research. Proficiency levels of fourth grade students from 2010 through 2012 were included in the study. For access to the previous 3 years of test results, I received assistance from the district Research and Assessment Coordinator and the Director of Schools. Ninety-five percent of all students enrolled in the district, not including special education students with the modification for portfolio assessment on an Individualized Education Program (IEP) are required to take the Tennessee Comprehensive Assessment Program test annually. The research contained no information that might allow someone to align a student to a particular school or teacher. Names were not included in the study. Student names were not matched to the TCAP language arts scores. The study met ethical standards and shielded individuals from any consequences resulting from the conclusions of the study.

Data Analysis

A series of chi-square tests were used to evaluate the significance between the dependent variables (Green & Salkind, 2008). The data were entered into the SPSS program that provided a statistical analysis of the differences between the language arts proficiency scores for fourth grade students with regard to gender, socioeconomic status, and ethnicity. According to Green and Salkind (2008) chi-square tests are appropriate for analysis when the proportions of one group characterized by one value is equal to a hypothesized value. The chi-square test evaluates whether there is a significant difference in the proportions associated with the categories and the hypothesized proportions. The independent grouping variables in this study were gender, socioeconomic status, and ethnicity. The dependent variable was the fourth
grade TCAP language arts proficiency levels for all fourth graders who tested on the TCAP in 2010, 2011, and 2012. All data were analyzed at the .05 level of significance.
Chapter 4 describes the results of the analysis of the research questions identified in Chapters 1 and 3. This study was conducted to determine if a significant difference existed in the TCAP language arts proficiency levels of fourth grade students in an upper East Tennessee school district in 2010 through 2012 on the Tennessee Comprehensive Assessment Program. Specifically, the purpose of this study was to gather evidence of a significant difference in language arts proficiency levels when factors of gender, ethnicity, and socioeconomic status were considered. The dependent variable was the proficiency levels of fourth grade students on the language arts section of the Tennessee Comprehensive Assessment Program 2010 through 2012. The independent variables were the gender, ethnicity, and socioeconomic status of the 2,080 fourth graders. The students’ proficiency levels for the study were collected from the Annual Yearly Progress (AYP) report supplied by the Tennessee Department of Education.

Analysis of Research Questions

Research Question #1

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade males and females?
H₀₁: There is no significant difference in the proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade students as a function of gender.

A one-sample chi-square test was conducted to determine if there was a significant difference in the proportional distribution for language arts proficiency levels of fourth graders on the Tennessee Comprehensive Assessment Program 2010 through 2012 with regard to gender. The results of the test were significant, $X^2 (3, N = 2,080) = 13.01, p = .005$. Therefore the null hypothesis was rejected. The number of fourth grade males who scored at the below basic level (N = 108) and basic level (N = 496) was significantly higher than the expected counts of 94.1 and 474.4 respectively. The number of fourth grade males who scored at the proficient level (N = 330) and the advanced level (N = 96) was significantly less than the expected counts of 348.6 and 112.9 respectively. The number of females scoring at the below basic level (N = 82) and the basic level (N = 462) was significantly less than the expected count of 95.9 and 483.6 respectively. The expected number of females scoring at the proficient level (N = 355.4) and the advanced level (N = 115.1) was significantly less than the actual counts of 374 and 132 respectively. Cramer's V ($V = .079, p = .005$) indicated a small effect size. These results suggest that in general, the distribution of the students' proficiency levels on the Tennessee Comprehensive Assessment Program was significantly different as a function of gender. There was a noticeable negative skew among both males and females toward the basic level of proficiency. Females generally scored higher than males. Figure 1 shows the distribution of the students' proficiency levels by gender.
Research Question #2

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade students with regard to ethnicity?
H0:2: There is no significant difference in the proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade males with regard to ethnicity.

A one-sample chi-square test was conducted to determine whether there was a significant difference in the proportional distribution for language arts proficiency levels of fourth grade males on the Tennessee Comprehensive Assessment Program 2010-2012 with regard to ethnicity. The results of the test were significant, $X^2(9, N = 1,030) = 68.66$, $p < .001$. Therefore the null hypothesis was rejected. The number of Asian, American Indian, and Alaskan Native males who scored at the below basic level ($N = 9$) and the advanced level ($N = 5$) was significantly higher than the expected counts of 3.4 and 3 respectively while the number of Asian, American Indian, or Alaskan Native males scoring at the basic level ($N = 10$) and the proficient level ($N = 8$) was significantly less than the expected counts of 15.4 and 10.3 respectively. The number of Hispanic males who scored at the proficient level ($N = 33$) and the advanced level ($N = 11$) was significantly less than the expected counts of 58.6, and 17.1 respectively. The number of Hispanic males scoring at the below basic level ($N = 24$) and the basic level ($N = 115$) was more than the expected counts of 19.2 and 88.1 respectively. The number of Black males who scored at the below basic level ($N = 15$) and the basic level ($N = 35$) was significantly higher than the expected counts of 6.5 and 29.9 respectively. The number of Black males scoring at the proficient level ($N = 10$) and the advanced level ($N = 2$) was significantly less than the expected counts of 19.9 and 5.8 respectively. The number of White males who scored at the below basic level ($N = 60$) and the basic level ($N = 336$) was significantly less than the expected counts of 79 and 362.6 respectively.
The number of White males scoring at the proficient level \((N = 279)\) and the advanced level \((N = 78)\) was significantly higher than the expected counts of 241.3 and 70.2 respectively. Cramer's \(V\) \((V = .15, p < .001)\) indicated a small effect size. These results suggest that in general, the distribution of the male students' proficiency levels on the Tennessee Comprehensive Assessment Program was significantly different as a function of ethnicity. The data suggest that despite ethnicity most males generally perform at the below basic and basic levels on the TCAP. Figure 2 shows the distribution of male proficiency levels by ethnicity.

*Figure 2. Cluster Bar Graph for Male Proficiency Levels by Ethnicity*
H_{03}: There is no significant difference in the proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade females with regard to ethnicity.

A one-sample chi-square test was conducted to determine whether there was a significant difference in the proportional distribution for language arts proficiency levels of fourth grade females on the Tennessee Comprehensive Assessment Program 2010-2012 with regard to ethnicity. The results of the test were significant, $X^2(9, N = 1,050) = 55.70$, $p < .001$. Therefore the null hypothesis was rejected. The number of Asian, American Indian, or Alaskan Native females who scored at the below basic level ($N = 6$) and the advanced level ($N = 4$) was significantly higher than the expected counts of 1.4 and 2.3 respectively while the number of Asian, American Indian, or Alaskan Native females scoring at the basic level ($N = 7$) and the proficient level ($N = 1$) was significantly less than the expected counts of 7.9 and 6.4 respectively. The number of Hispanic females who scored at the below basic level ($N = 22$) and the basic level ($N = 84$) was more than the expected counts of 12.3 and 69.5 respectively. The number of Hispanic females scoring at the proficient level ($N = 47$) and the advanced level ($N = 5$) was significantly less than the expected counts of 56.3 and 19.9 respectively. The number of Black females who scored at the below basic level ($N = 8$) and the basic level ($N = 39$) was significantly higher than the expected counts of 6.1 and 34.3 respectively. The number of Black females scoring at the proficient level ($N = 24$) and the advanced level ($N = 7$) was significantly less than the expected counts of 27.8 and 9.8 respectively. The number of White females who scored at the below basic level ($N = 46$) and the basic level ($N = 332$) was significantly less than the expected counts of 62.2
and 350.2 respectively. The number of White females scoring at the proficient level (N = 302) and the advanced level (N = 116) was significantly higher than the expected counts of 283.5 and 100.1 respectively. Cramer's V ($V = .13, p < .001$) indicated a small effect size. These results suggest that in general, the distribution of the proficiency levels for females on the Tennessee Comprehensive Assessment Program was significantly different from the expected distribution as a function of ethnicity. The distribution of the data was similar to that of males. The skewed results suggested that White females perform at higher proficiency levels than females from the other ethnic groups. Figure 3 shows the distribution of female proficiency levels by ethnicity.
Research Question #3

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade males and females with regard to socioeconomic status?

$H_0$: There is no significant difference in the proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade males with regard to socioeconomic status.

*Figure 3. Cluster Bar Graph for Female Proficiency Levels by Ethnicity*
A one-sample chi-square test was conducted to determine whether there was a significant difference in the proportional distribution for language arts proficiency levels of fourth grader males on the Tennessee Comprehensive Assessment Program 2010-2012 with regard to socioeconomic status. The results of the test were significant, \( \chi^2(3, N = 1,030) = 122.15, p < .001 \). Therefore the null hypothesis was rejected. The actual number of males who did not receive free or reduced lunch benefits and scored at the below basic level (\( N = 18 \)) and the basic level (\( N = 140 \)) was significantly less than the expected counts of 42.3 and 194.1 respectively while the number of males who did not receive free or reduced lunch benefits and scored at the proficient level (\( N = 174 \)) and the advanced level (\( N = 71 \)) was more than the expected counts of 129.1 and 37.6 respectively. The number of males who received free or reduced lunch benefits and scored at the below basic level (\( N = 90 \)) and the basic level (\( N = 356 \)) was greater than the expected counts of 65.7 and 301.9 respectively. The number of males who received free or reduced lunch benefits and scored at the proficient level (\( N = 156 \)) and the advanced level (\( N = 25 \)) was significantly less than the expected counts of 200.9 and 58.4 respectively. Cramer's V (\( V = .34, p < .001 \)) indicated a medium effect size. These results suggest that in general, the distribution of the males' proficiency levels on the Tennessee Comprehensive Assessment Program was significantly different as a function of socioeconomic status. The skewed distribution of the data for fourth grade males who do not receive free or reduced lunch benefits suggests performance at the higher proficiency levels than their peers who do receive the benefits. Figure 4 shows the distribution of male proficiency levels by socioeconomic status.
Figure 4. Cluster Bar Graph for Male Proficiency Levels by Socioeconomic Status

$H_0$5: There is no significant difference in the proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade females with regard to socioeconomic status.

A one-sample chi-square test was conducted to determine whether there was a significant difference in the proportional distribution for language arts proficiency levels of fourth grader females on the Tennessee Comprehensive Assessment Program 2010-2012 with regard to socioeconomic status. The results of the test were significant, $X^2(3,$
\( N = 1,050 \) = 51.89, \( p < .001 \). Therefore the null hypothesis was rejected. The actual number of females who did not receive free or reduced lunch benefits and scored at the below basic level (\( N = 15 \)) and the basic level (\( N = 149 \)) was significantly less than the expected counts of 31.6 and 177.8 respectively while the number of females who did not receive free or reduced lunch benefits and scored at the proficient level (\( N = 161 \)) and the advanced level (\( N = 80 \)) was more than the expected counts of 144.6 and 50.9 respectively. The number of females who received free or reduced lunch benefits and scored at the below basic level (\( N = 67 \)) and the basic level (\( N = 312 \)) was greater than the expected counts of 50.4 and 283.2 respectively. The number of females who received free or reduced lunch benefits and scored at the proficient level (\( N = 214 \)) and the advanced level (\( N = 52 \)) was significantly less than the expected counts of 230.4 and 81.1 respectively. Cramer's V (\( V = .22, p < .001 \)) indicated a medium effect size.

These results suggest that in general, the distribution of the females' proficiency levels on the Tennessee Comprehensive Assessment Program was significantly different as a function of socioeconomic status. The results suggested that socioeconomic status for females may be positively related to their performance on the TCAP with females who did not participate in the free or reduced lunch program generally performing better. The results for fourth grade females who received free or reduced lunch benefits was skewed in the direction of the below basic and basic levels of proficiency. Figure 5 shows the distribution of female proficiency levels by socioeconomic status.
Figure 5. Cluster Bar Graph for Female Proficiency Levels by Socioeconomic Status

Research Question #4

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade students with regard to ethnicity?

$H_0$: There is no significant difference in the proficiency levels Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade students with regard to ethnicity.
A one-sample chi-square test was conducted to determine whether there was a significant difference in the proportional distribution for language arts proficiency levels of fourth grade students on the Tennessee Comprehensive Assessment Program 2010-2012 with regard to ethnicity. The results of the test were significant, \( \chi^2(6, N = 2,080) = 84.05, p < .001 \). Therefore the null hypothesis was rejected. The actual number of White students who scored at the below basic level (N = 106) and the basic level (N = 668) was significantly less than the expected counts of 141.5 and 713.4 respectively while the number of White students scoring at the proficient level (N = 581) and the advanced level (N = 194) was greater than the expected counts of 524.3 and 169.8 respectively. The number of Black students who scored at the below basic level (N = 23) and the basic level (N = 74) was more than the expected counts of 12.8 and 64.5 respectively. The total number of Black students who scored at the proficient level (N = 34) and the advanced level (N = 9) was significantly less than the expected counts of 47.4 and 15.3 respectively. The number of students from other ethnic groups who scored at the below basic level (N = 61) and the basic level (N = 216) was more than the expected counts of 35.7 and 180.1 respectively. The number of students from other ethnic groups scoring at the proficient level (N = 89) and the advanced level (N = 25) was significantly less than the expected counts of 132.3 and 42.9 respectively. Cramer’s V \( (V = .14, p < .001) \) indicated a small effect size. These results suggest that in general the distribution of the students’ proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 was significantly different as a function of ethnicity. In general the distribution of the proficiency levels for fourth grade students on the Tennessee Comprehensive Assessment Program was significantly different as a function of
ethnicity. The results of the analyses suggested that White students tended to score at the proficient and advanced levels more often than students from the other ethnic groups. Figure 6 shows the distribution of fourth grade proficiency levels by ethnicity.

*Figure 6. Cluster Bar Graph of Fourth Grade Proficiency Levels by Ethnicity*
Research Questions #5

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade students with regard to socioeconomic status?

$H_0$: There was no significant difference in the proficiency levels Tennessee Comprehensive Assessment Program 2010 through 2012 for fourth grade students with regard to socioeconomic status.

A one-sample chi-square test was conducted to determine whether there was a significant difference in the proportional distribution for language arts proficiency levels of fourth grade students on the Tennessee Comprehensive Assessment Program 2010-2012 with regard to socioeconomic status. The results of the test were significant, $X^2(3, N = 2,080) = 161.30, p < .001$. Therefore the null hypothesis was rejected. The number of students who did not receive free or reduced lunch benefits and scored at the below basic level ($N = 33$) and the basic level ($N = 289$) was significantly less than the expected counts of 73.8 and 371.8 respectively while the number of students who did not receive free or reduced lunch benefits and scored at the proficient level ($N = 335$) and the advanced level ($N = 151$) was more than the expected counts of 273.9 and 88.6 respectively. The number of students who received free or reduced lunch benefits and scored at the below basic level ($N = 157$) and the basic level ($N = 668$) was greater than the expected counts of 116.2 and 585.2 respectively. The number of students who received free or reduced lunch benefits and scored at the proficient level ($N = 370$) and the advanced level ($N = 77$) was significantly less than the expected counts of 431.1 and 139.4 respectively. Cramer's $V (V = .28, p < .001)$ indicated a medium effect size.
These results suggest that in general, the distribution of the students’ proficiency levels on the Tennessee Comprehensive Assessment Program was significantly different as a function of socioeconomic status. The data suggested fourth grade students who did not receive free or reduced lunch benefits scored at the proficient and advanced levels more often than their peers who did not receive the income-based benefits. Figure 7 shows the distribution of student proficiency levels by socioeconomic status.

Figure 7: Cluster Bar Graph of Fourth Grade Proficiency Levels by Socioeconomic Status
Summary

A series of one-sample chi-square analyses were run to evaluate the goodness of fit for 1) gender, 2) ethnicity by gender, 3) socioeconomic status by gender, 4) ethnicity, and 5) socioeconomic status. Statistically significant results were reported for all of the variables. In general, males and females tended to score similarly in the basic and below basic proficiency levels. Students who received free or reduced lunch benefits tended to score at the below basic and basic levels of proficiency regardless of gender. Students who did not receive the same benefits were generally proficient or advanced on the language arts portion of the TCAP. White students as a group generally tended to score higher than students from other ethnic groups. Students who received free and reduced lunch benefits generally earned lower proficiency scores than their peers who did not receive the same benefits.
CHAPTER 5
SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

Several studies have found an achievement gap between males and females, among ethnic groups, and between students who receive free or reduced lunch benefits and those who do not. The purpose of this study was to determine relationships between language arts proficiency levels of fourth graders in an upper East Tennessee school system and gender, socioeconomic level, and ethnicity.

This study found significant difference in the language arts proficiency scores for the 2,080 fourth graders who were assessed on the Tennessee Comprehensive Assessment Program (TCAP) in 2010, 2011, and 2012. The dependent variable was the language arts proficiency levels on the TCAP. The independent variables were gender (male or female), socioeconomic level (low or non-), and ethnicity (white, Black, Hispanic, and other). TCAP language arts proficiency levels were gathered from the Annual Yearly Proficiency Report from the Tennessee Department of Education. Language arts proficiency is determined by a measure of mastery on the six subtests language and vocabulary, communication and media, writing and research, logic, informational text, and literature. The statistical analyses were guided by the research questions in Chapter 1 and expanded on in Chapter 3.
Research Questions and Findings

Research Question #1

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males and females?

The results of the chi-square test that compared the number of males and females and their language arts proficiency scores were significant. Females generally scored higher on the Tennessee Comprehensive Assessment Program than males. The number of fourth grade males who scored at the below basic and basic proficiency level was significantly higher than the expected numbers while the number of females scoring at the below basic and basic proficiency levels was significantly lower than the expected numbers. The number of males who scored at the proficient and advanced proficiency levels was significantly lower than the expected numbers while the number of females who scored at the proficient and advanced proficiency levels was significantly higher than expected.

Numerous studies have found an achievement gap between males and females (Coley, 2001; Gambell & Hunter, 1999; Phillips et al., 2002). On nearly all achievement tests females outscore males (Gurian & Ballew, 2003; Sax, 2005). An achievement gap has existed on the National Assessment of Educational Progress test since the early 1970s (USDOE, 2012) in the United States and 31 other countries (Viadero, 2006). Hyde (2005) found effect sizes of nearly zero between genders. The effect size between genders in this study was .07, indicating a large effect size.
Research Question #2

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males and females with regard to ethnicity?

The results from the chi-square test that compared the language arts proficiency levels of fourth grade males and females with regard to ethnicity were significantly different. The number of Asian and American Indian/Alaskan Native males who scored at the below basic and advanced proficiency levels was significantly higher than expected while the number of the Asian and American Indian/Alaskan Native males who scored at the basic and proficient proficiency levels was significantly lower than expected. While the number of Hispanic males who scored at the below basic, proficient, and advanced proficiency levels was significantly lower than expected, the number of Hispanic males who scored at the basic proficiency level was significantly higher than expected. The number of Black males who scored below basic and basic was significantly higher than the expected number. The number of Black males who scored proficient or advanced was significantly lower than the expected counts. The number of White males who scored below basic or basic was significantly lower than the expected number while those who scored proficient or advanced was significantly higher than the expected counts. The data suggest that white males tend to perform much better on the Tennessee Comprehensive Assessment Program than Blacks, Hispanics, Asians, and American Indians/Alaskan Natives.

Poor, Black, and Hispanic males perform significantly lower than their white, wealthier peers (Tatum, 2006; Watson et al., 2010). In all ethnic groups, females have
outscored males on the NAEP reading and writing tests. The results of this study were in agreement with previous national statistics where the majority of students who score at the lowest proficiency levels are Black, Hispanic, and poor.

The results from the chi-square test showed a significance difference when comparing females with regard to ethnicity. Asian and American Indian/Alaskan Native females who scored below basic and advanced was significantly higher than the expected counts while the number of Asian and American Indian/Alaskan Native females who scored basic and proficient was lower than the expected counts. The number of Hispanic females who scored below basic and basic was significantly higher than expected while the number of Hispanic females who scored at the proficient and advanced levels was lower than the expected counts. The number of Black females who scored below basic and basic was significantly higher than the expected counts while those who scored proficient or advanced was significantly lower than the expected counts. The number of White females who scored at the below basic and basic levels was significantly lower than the expected counts while the number of those who scored at the proficient and advanced levels was significantly higher than the expected counts. Cramer’s V indicated a small effect size which suggests that in general the distribution of the proficiency levels for females on the Tennessee Comprehensive Assessment Program is significantly different from the expected distribution with regard to ethnicity.

The distribution of the data was similar to that of males. The positively skewed results suggest that White males and females tend to score significantly higher than males and females from other ethnic groups.
Research Question #3

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade males and females with regard to socioeconomic status?

A chi-square test was conducted to determine whether there was a significant difference in the proportional distribution for language arts proficiency levels of fourth grade males on the Tennessee Comprehensive Assessment Program in 2010 through 2012 with regard to socioeconomic status. The results of the test were significant. The number of males who did not receive free or reduced lunch benefits and scored at the below basic and basic was significantly lower than expected while those who scored at the proficient or advanced levels were higher than the expected numbers. The number of males who received free or reduced lunch benefits and scored at the below basic or basic levels was significantly higher than the expected counts. The number of males who received free or reduced lunch benefits and scored at the proficient or advanced levels was significantly lower than the expected counts. Results from Cramer’s V indicated a medium effect size. These results suggest that in general the distribution of the males’ proficiency levels on the Tennessee Comprehensive Assessment Program is significantly different with regard to socioeconomic status. Males who do not receive free or reduced lunch benefits tend to perform at the higher proficiency levels than their peers who do receive the benefits. This is indicated by the positively skewed distribution of the data.

A chi-square test was conducted to determine whether there was a significant difference in the proportional distribution for the language arts proficiency levels of
fourth grade females on the Tennessee Comprehensive Assessment Program in 2010 through 2012 with regard to socioeconomic status. The results of the test were significant. The number of females who did not receive free or reduced lunch benefits and scored at the below basic or basic levels was significantly lower than the expected counts while the number of females who did not receive free or reduced lunch benefits and scored at the proficient or advanced levels was significantly higher than the expected counts. The number of females who received free or reduced lunch benefits and scored at the below basic or basic levels was significantly higher than the expected counts. The number of females who received free or reduced lunch benefits and scored proficient or advanced was significantly lower than the expected counts. Cramer’s V was run and indicated a medium effect size. These results suggest that in general the distribution of females’ proficiency levels on the Tennessee Comprehensive Assessment Program is significantly different with regard to socioeconomic status; therefore, socioeconomic status for females may be positively related to their performance on the TCAP. Females who did not receive free or reduced lunch benefits generally score better than their peers who receive the benefits indicated by the skewed results in the direction of the below basic and basic levels of proficiency of the group who receive free or reduced lunch benefits.

Research Question #4

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade students with regard to ethnicity?
A chi-square test was conducted to determine whether there was a significant difference in the proportional distribution for language arts proficiency levels of fourth grade students on the Tennessee Comprehensive Assessment Program from 2010 through 2012 with regard to ethnicity. The results of the test were significant. The number of White fourth graders who scored below basic or basic was significantly lower than the expected counts while the number who scored proficient or advanced was greater than the expected counts. The number of Black fourth grade students who scored below basic or basic was significantly higher than expected while the number who scored proficient or advanced was significantly lower than the expected counts. The number of students in the Asian/American Indian/Alaskan Native group who scored below basic or basic was significantly higher than expected while the number who scored proficient or advanced was significantly lower than the expected counts. Cramer’s V was run and indicated a small effect size.

The results suggest that the proficiency levels of male and female fourth graders are significantly different with regard to ethnicity. White fourth graders tended to score at the proficient and advanced levels more frequently than Hispanic, Black, and Asian/American Indian/Alaskan Native fourth graders.

Ethnicity and socioeconomic status are strong indicators of academic success among males especially Blacks and Hispanics (Barnett & Rivers, 2006; Corbett et al., 2008; Mead, 2006). Students who must learn English as a second language have a greater challenge in language arts achievement than children who are English natives due to less oral language proficiency and relevant background knowledge (Lesaux et
al., 2007). Some alarming and sobering data from the NAEP illuminates an increase in the achievement gap from fourth to eighth grade (USDOE, 2012).

Research Questions #5

Is there a significant difference between the language arts proficiency levels on the Tennessee Comprehensive Assessment Program from 2010 through 2012 for fourth grade students with regard to socioeconomic status?

A chi-square test was conducted to determine whether there was a significant difference in the proportional distribution for language arts proficiency levels of fourth grade students on the Tennessee Comprehensive Assessment Program from 2010 through 2012 with regard to socioeconomic status. The results of the test were significant. The number of students who did not receive free or reduced lunch benefits and scored at the below basic or basic levels was significantly lower than the expected counts. The number of students who did not receive free or reduced lunch benefits and scored at the proficient or advanced levels was significantly higher than the expected counts. The number of students who received free or reduced lunch benefits and scored at the below basic or basic levels was significantly higher than the expected counts while the number of students who scored proficient or advanced was significantly lower than the expected counts. The data suggest that students who did not receive free or reduced lunch benefits scored proficient or advanced more often than their peers who receive free or reduced lunch benefits.

Students from low-income homes represent the greatest achievement gap (Rotberg, 2008). Children who grow up in impoverished conditions are those most likely to experience delays in school readiness (Burney & Beilke, 2008). On the 2010
National Assessment Education, 74% of the students who scored in the lowest percentiles were eligible for free or reduced lunch (Annie E. Casey Foundation, 2012). The results from this study demonstrate a significant difference between fourth grade students who did not receive free and reduced lunch benefits and those who did. The number of males and females who were not eligible for free and reduced benefits scored higher than those who were eligible for the benefits.

Access to print rich material and grade level appropriate reading material is not readily available or affordable for children from poverty-stricken homes. Parents of poverty-stricken homes and communities have fewer educational resources from which to draw. Preschool children with minimal or no experience with print and books will most likely begin kindergarten behind their wealthier peers that have had several experiences with text and rich language. Children who begin school lagging behind academically will most likely never catch up to their wealthier peers (Neuman & Celano, 2001).

*Recommendations for Practice*

Competent reading and strong language arts skills are the strongest predictors of school success (Walcryk & Griffin-Ross, 2007). Based on the data from an Upper East Tennessee School district analyzed during this study, there is a significant achievement gap with regard to gender, ethnicity, and socioeconomic status. The results of this study showed the number of females who scored proficient or advanced was greater than the number of males who scored at the same proficiency levels. There was a significant difference in the language arts achievement of the 2,080 fourth grade students with regard to gender, socioeconomic status, and ethnicity. Based on these
findings and the research gathered throughout the study, I make the following recommendations for practice:

1. There must be an awareness of the results of the findings of this study with the district, including all stakeholders.

2. Students, teachers, administrators, central office personnel, politicians, pediatric medical offices, businesses including retail stores, public libraries, civic clubs, and educational foundations may become part of an initiative to make the community print-rich with affordable means of accessibility to all socioeconomic classes and ethnic subgroups (Neuman & Celano, 2001).
   a. Teachers, literacy coaches, and media specialists should be encouraged to inventory book rooms, school libraries, and classrooms for books, magazines, comic books, newspapers, and a variety of information text.
   b. Teachers should be encouraged to provide a reading interest inventory for students so students may be provided with topics and genres in which they are interested (Coles & Hall, 2002).
   c. Teachers should be encouraged to provide a quantity of quality reading material in a variety of genres in their classrooms with a special area of the room designated for reading (Neuman & Celano, 2001).
   d. Funds should be allotted for book rooms and school libraries. Local businesses, professionals, and educational foundations may have the opportunity to make donations.
   e. School libraries should have extended hours in the afternoons, evenings, and throughout the summer (Neuman & Celano, 2001).
f. Efforts should be made for extended school program personnel to work with classroom teachers to extend the accessibility to reading and writing in the afternoons and during the summer.

3. Efforts should be made through the combined efforts of churches, schools, medical professionals, educators, and parents to educate parents on the destructive effects of a societal code of masculinity (Anderson & Accomando 2002; Brozo 2005; Gurian & Stevens 2005; James 2007; Pollack 1998; Sax 2006; Skelton & Francis 2011; Watson et al., 2010).

4. Professional development on literacy, the differentness of males, and how to meet the literacy needs of all males, females, ethnic subgroups, and socioeconomic levels should be provided for all educators (Allington 2001; Duke 2004; Gurian & Stevens 2005; James 2007; Machtinger 2007; Sax 2006).

5. Language arts classes should be heterogeneous so that at-risk readers are exposed to richer interactions with text, conversation, and higher-order thinking (Neuman & Celano, 2001).

6. New parents should be provided with resources on how to provide a language rich environment in the home (Matthews et al., 2010; Pressley, 2002; Viadero 2006).

7. Phonics and phonemic awareness should be a strong focus in the primary grades with periodic progress monitoring throughout elementary school (Cain et al., 2000; Chall, 1983; Juel, 1991; Leach et al., 2003; Lipka et al., 2006).

8. All schools should be made aware of the funding available to migrant and English language learners. Highly trained professionals should be hired to
facilitate ELL classroom learning. Preschool experiences may be provided for ELL (Matthews et al., 2010).

9. Students who are at risk beginning in kindergarten should be closely and regularly monitored with a valid and reliable instrument. Appropriate resources should be provided through an individualized education program by a highly qualified educator (Lipka et al., 2006; Shaywitz et al., 1992).

10. Optional single-gender classrooms may be made available as a pilot study to see if they have a positive impact on students' social, academic, and emotional growth (King & Gurian 2006; Noble & Bradford 2000; Sax 2007; Stanberry 2013).

Recommendation for Further Study

School success and ultimately, college and career readiness may be dependent upon competent literacy skills. Quality language arts instruction necessary to make meaning from text and print is imperative. Easy and affordable access to print-rich text and language experiences should be in place for all children in all communities.

1. This study should be replicated as a longitudinal study of males and females with regard to gender, ethnicity, and socioeconomic status beginning with preschool, Head Start, and those with no prior schooling prior to public school. (Matthews et al., 2010; Sommers, 2001).

2. A longitudinal study should be conducted of males and females and their academic, social, and emotional growth and stability in single-gender classrooms or schools (King & Gurian, 2006; Noble & Bradford, 2000; Stanberry, 2013).
3. This study should be replicated as a longitudinal study of language arts achievement with regard to phonics proficiency levels, gender, ethnicity, and socioeconomic status (Lipka et al., 2006; Shaywitz et al., 1992).

4. A study should be conducted that compares language arts achievement with informational text skills with regard to gender (Coles & Hall, 2002).

5. A study should be conducted in the community where this study took place and evaluate the quality and quantity of reading material for children from birth through high school. Other variables of the study should include the number of locations that offer quality children’s literature including magazines and newspapers. Evaluation of the quality and quantity of the books should include children’s homes, preschools, school and public libraries, pediatric medical offices, convenient stores, and bookstores.

Chapter Summary

There are an increasing number of studies with evidence that suggests a relationship exists between academic achievement and gender, ethnicity, and socioeconomic status. The achievement gap in literacy has existed for many years dating back to John Dewey. The language arts achievement gap is much more significant among males, minorities, and children living in poverty. Even with all the research, policies, laws, and interventions, the gap remains.
REFERENCES


Tennessee Department of Education. Available at http://www.tn.gov/education/reportcard/


Zhao, Yong. (2009). *Catching up or leading the way: American education in the age of globalization*. Alexandria, VA: ASCD.
REQUEST FOR PERMISSION TO CONDUCT RESEARCH
IN HAMBLEN COUNTY SCHOOLS

1. Name and mailing address of the researcher(s):
   [Required information]

2. Telephone number where the researcher(s) can be reached in the daytime:
   [Required information]

3. Position(s) of the principal researcher:
   [Required information]

4. Exact title of the proposed study:
   [Required information]

5. Attach the following items:
   A. Brief description of the proposed study which is not limited to, but must include, (1) purpose; (2) targeted population--who and how many; (3) data collection procedures; (4) estimated time required by Hamblen County Schools participants; and (5) projected value of the study to Hamblen County Schools, if any
   B. Single copies of all questionnaires, surveys, tests, answer sheets, structured interviews, or other instruments that will be used by Hamblen County Schools participants
   C. Single copies of cover letters, copies of instructions, parent permission statements (for student participation), etc.

6. Approximate proposed times for beginning and ending the study:
   July 2012 - April 2013 (Possibly December 2012)

Above material should be sent to:
Dr. Dale P. Lynch, Director
Hamblen County Schools
210 East Morris Boulevard
Morristown, TN 37813
Phone: (423) 586-7700
Fax: (423) 586-7747

APPROVED*: [Signature]
DATE: 6/12

*Prior to approval, a personal interview may be required to clarify information provided.

NOTE: Participation will be at the discretion of the principal and voluntary on the part of students and parents.
Form 68
June 7, 2012

Paula Davis

Dear Ms. Davis,

Thank you for recently submitting information regarding your proposed project “A Study of Gender Differences and Reading Achievement in 4th Grade Students”.

I have reviewed the information, which includes a completed Form 129.

The determination is that this proposed activity as described meets neither the FDA nor the DHHS definition of research involving human subjects. Therefore, it does not fall under the purview of the ETSU IRB.

IRB review and approval by East Tennessee State University is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities are human subject research in which the organization is engaged, please submit a new request to the IRB for a determination.

Thank you for your commitment to excellence.

Sincerely,

Chris Ayres
Chair, ETSUIRB
Personal Data:
Date of Birth: April 13, 1957
Place of Birth: Chattanooga, Tennessee
Marital Status: Married

Education:
Public Schools, Morristown, Tennessee
B. A. Elementary Education, Carson Newman College,
Jefferson City, Tennessee 1992
M.A. Elementary Education, Tusculum College,
Greeneville, Tennessee 2004
Ed.S. Administration and Supervision, Lincoln Memorial University, Harrogate, Tennessee 2010
Ed.D. Educational Leadership
East Tennessee State University 2013

Personal Experience:
Teacher, Whitesburg Elementary School; Whitesburg, Tennessee 1992-2009
Instructional Coach/Core Curriculum Specialist;
Central Office Hamblen County Department of Education, Tennessee 2009-Present

Honors and Awards:
Outstanding Graduate in Education; Carson Newman College
Dr. Shirley Beck Award; Tusculum College
Outstanding Research Project; Lincoln Memorial University
Who’s Who in American Colleges