

A COMPARATIVE STUDY ON THE IMPACT OF A COMPUTER ENHANCED
READING PROGRAM ON FIRST GRADE AFRICAN AMERICAN MALES IN AN
URBAN SCHOOL DISTRICT IN SOUTHEASTERN VIRGINIA

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ABSTRACT

This study examines the effects of the Breakthrough to Literacy (BTL) reading program on first grade African American males in two urban elementary schools in southeastern Virginia. The BTL computer enhanced reading program includes computer assisted instruction as a major component that research from the National Reading Panel (NRP) indicates is beneficial in the education of African American males (NRP, 2000).

This is a comparative study utilizing quantitative methodology to report the reading outcomes of African American males in grade one and their teacher's perceptions of the BTL program. The study measures reading outcomes as well as teachers' perceptions of the BTL program. The treatment group consisted of the first grade populations from schools A and B who received the BTL treatment in kindergarten (2006-2007) and first grade (2007-2008). The treatment group was compared to schools C and D, the control group, who received the BTL treatment in kindergarten (2006-2007) only. The data were gathered to determine if there were mean gains from the treatment and control groups through pre and posttests. Frequency, mean, and standard deviation were calculated for each variable. Inferential statistics were used to determine mean differences and comparisons among both groups' reading results. To determine if there was a difference in the reading outcomes of African American males who received the

BTL treatment as compared to other racial/ethnic groups and gender, ANOVAs were utilized.

Overall results indicated higher level performance by the treatment group. The study also incorporated survey methodology to determine the utility of the BTL program on first grade students in the year 2007-2008 from a teacher's perspective. The teachers in the BTL treatment group were administered the Children's Software Evaluation Instrument Surveys (Children's Software Review, 2008). Out of a 5-point Likert scale, teachers rated the overall value of the BTL program as good (Overall rating 4.0). The teachers also gave overall ratings of good (4.0) and excellent (5.0) in the following areas: Childproof; Ease of Use; Entertaining; Design Feature; and Educational.

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CHAPTER I

INTRODUCTION

African Americans are reading significantly below grade level. The results of the National Association of Educational Progress (NAEP) study reveal that there continues to be significant achievement gaps between African American students and children from other racial and ethnic groups (Snyder & Tan, 2005). Other studies have shown that African American males drop out of school more often, perform lower on reading assessments, and experience severe behavior problems. Research suggests that third grade students who cannot read well begin a downward spiral of frustration and school failure (Hart, 2006). To further highlight the struggles of reading achievement in African American males, studies on the 4-Block Balanced Reading Program (Diamond & Onwuegbuzie, 2000) and the Street Academy Program (Vanderhaar & Munoz, 2006) have similar findings, stressing a continuous, significant gap in reading achievement of African American males.

Overview of the Study

The researchers in this study investigated the reading outcomes of first grade students who participated in the Breakthrough to Literacy (BTL) program in kindergarten and first grade and those students who participated in the Breakthrough to Literacy program in kindergarten only in an effort to determine the effectiveness of the program in improving reading outcomes, especially for African American males. The study looked at the 2007 – 2008 reading outcomes of first grade students at four elementary schools in

an urban school division in Southeastern Virginia. Two of those schools used the Breakthrough to Literacy (BTL) program in kindergarten (2006-2007) and first grade (2007-2008) and two used the BTL program in kindergarten (2006-2007) only. School administrators can utilize the data gathered in this study to: evaluate the effectiveness of the school division's current reading program; assess the use of technology and reading achievement as it relates to closing the achievement gap; and to receive feedback from administrators, classroom teachers, and others who teach or support reading on the BTL's program effectiveness.

Statement of the Problem

There has been much written about the achievement gap between African American male students and other racial, gender, and ethnic groups (Mubenga, 2006; Beglau, 2005). The themes continue to be consistent in that African American males lag behind in reading and mathematics as compared to White students. Also, African American males continue to drop out of school at a significant rate. According to Hart (2006), in a national report commissioned by the Bill and Melinda Gates Foundation, about one million students drop out every year and nearly half of African Americans fail to graduate. There is a strong correlation between poor academic performance in reading and poverty, crime, and unemployment (Hart, 2006). According to research by the Teachers College at Columbia University (2005), by the end of fourth grade, African American, Hispanic, and poor students of all races are two years behind their wealthier, predominantly White peers in reading and math. By the eighth grade, they have fallen three years behind and by the twelfth grade, four years behind.

The impact of limited reading proficiency can spill over into other areas. Statistics cited by professors at Columbia University, in 2005, indicated that the following continue to be a concern: African American students are three times more likely than White students to be placed in special education programs and are half as likely to be in gifted programs in elementary and secondary schools; one in three African American males will be incarcerated in state or federal prison at some point during their lives; the incarceration rate is significantly higher for African American men who do not finish high school; and African American students are only half as likely as White students to earn a bachelor's degree by age twenty-nine (Teachers College at Columbia University, 2005).

It is important to continue to develop new strategies for building literacy acquisition skills for all African American students, especially African American males. The National Reading Panel Report (2000) cited a combination of reading comprehension techniques such as the use of computer technology for reading instruction as promising in improving the reading outcomes of African American students. Flowers (2007) acknowledged that there is limited research on studying the reading outcomes of African American males. This study will add to the research on improving reading outcomes of African American males by investigating the use of a specific computer enhanced reading program. Administrators can evaluate the use of computer enhanced reading programs to determine if they need to invest more money in purchasing new technology. Also, the data obtained from this study can be used by administrators to help determine whether on-site professional development and training sessions are needed.

Purpose of the Study

The purpose of this study is to determine whether or not the African American males who participated in the interactive reading software of Breakthrough to Literacy (BTL) in kindergarten (2006-2007) and first grade (2007-2008) increased reading achievement when compared to those African American males and other racial/ethnic groups as well as gender who participated in the BTL program in kindergarten (2006-2007) only. Furthermore, input from former first grade teachers who taught the BTL program (2007-2008) in first grade in the treatment schools was obtained to analyze their perceptions of the utility and effectiveness of the program.

The McGraw-Hill Study (2002) indicated that the primary areas to be addressed in the BTL reading program are alphabet knowledge, phonological/phonemic awareness, vocabulary, and word recognition. These skills are taught by providing students with hands-on learning and positive feedback. Flowers (2007) suggested that further studies are needed to show whether or not African American males need a cutting edge approach in reading intervention in order for them to succeed.

The literature also indicated that administrators, as instructional leaders who implement and monitor computer enhanced reading programs, should fully support any reading program they have chosen to implement in order to accurately assess results in closing the achievement gaps (Flowers, 2007). Having accurate information related to the effectiveness of a literacy program within a school setting should help administrators understand and lend their full support to the program.

Significance of the Study

Closing the achievement gap is a major component of the 2001 No Child Left Behind (NCLB) Act, with an emphasis on closing the achievement gaps among major ethnic and racial groups, economically disadvantaged students, students with disabilities, and students with limited English proficiency (Educational Commission of the States, 2007). If closing the achievement gap in reading is a focus, then elements of effective reading programs need to be considered.

Pioneering studies reported by the NRP and the NAEP promote the use of computer-based instruction to improve student reading achievement (NRP, 2000). The National Reading Panel reviewed 21 studies on computer instruction as it relates to literacy acquisition in the following areas: word recognition, vocabulary, speech, comprehension, spelling, general and other. Of the 21 studies reviewed in NRP, the overall findings of each indicated that utilizing computer instruction for literacy acquisition yielded positive results. Computer enhanced reading programs such as the Simi Star Project and studies sponsored by International Business Machines (IBM) tested the effectiveness of computers in the classroom and the effects of integrating technology in the curriculum. The results revealed that students using these programs averaged at least two levels higher than those in the control classroom (Casey, 2001).

Carol A. Brown (2001) highlighted the use of computer-based instruction as well as thinking maps to increase reading achievement. Brown's study focused on a computer reading program called Accelerated Reader® (AR). This computer enhanced reading program encouraged students to read by assigning points for selected books. Books were assigned points based on reading levels and students answered comprehension questions

utilizing the computer. Students were motivated to read as many books as possible since they must achieve a certain score to win prizes. This study emphasized that the AR® program should not be used alone, but with a multitude of strategies that expand students' higher level thinking skills (Brown, 2001).

The BTL program also uses computer-based instruction to improve reading outcomes. This study provides an in-depth analysis of the outcomes for first grade students who used the BTL treatment in kindergarten (2006-2007) and first grade (2007-2008), with specific attention to the outcomes of African American males. Administrators who are introduced to the results of this study will be able to make educationally sound decisions that may positively affect reading outcomes among African American males. Administrators can use the data to decide the effectiveness of computer enhanced reading programs in closing the achievement gap between African American males, other racial/ethnic groups, and genders in their schools.

Definitions of Terms and Acronyms

Brain-based research refers to current research in brain-based learning to support and develop improved teaching strategies (Association for Supervision and Curriculum Development Website, 2008).

Breakthrough to Literacy is a large-scale, comprehensive, computer-based reading program, Prekindergarten through second grade, published by the Wright Group/McGraw-Hill (McGraw-Hill Education, 2002).

Computer-enhanced reading programs are computer reading programs that assist with enhancing either reading comprehension, fluency, vocabulary, phonological/phonemic awareness, and alphabet knowledge.

DRA is an acronym for the Developmental Reading Assessment, an assessment that measures a student's reading level and fluency skills (Beaver, 2001).

Fluency is the ability to read accurately and quickly. When fluent readers read, they recognize words automatically (Putting Reading First-The Research Building Blocks for Teaching Children to Read, 2008).

Generative learning strategies are based on a theory that involves the active integration of new ideas with the learner's existing schemata (Brown, 2001).

Learning styles are simply different approaches or ways of learning (Virginia Department of Education Website, 2008).

Multi-sensory teaching is teaching simultaneously with visual, auditory, and kinesthetic-tactile strategies to enhance memory and learning (International Dyslexia Association Website, 2008).

PALS is an acronym for the Phonological Awareness Literacy Screening, which is a screening, diagnostic, and progress monitoring tool for measuring the fundamental components of literacy (University of Virginia Website Outreach Virginia Database Program Details, University of Virginia Website, 2008).

Phonological/Phonemic awareness is the ability to hear, identify, and manipulate the individual sounds (phonemes) in spoken words (Putting Reading First-The Research Building Blocks for Teaching Children to Read, 2008).

Reading achievement is the current reading comprehension and fluency levels of a student (Putting Reading First-The Research Building Blocks for Teaching Children to Read, 2008).

Reading comprehension is the ability to understand written text (Putting Reading First-The Research Building Blocks for Teaching Children to Read, 2008).

Reading outcomes are the measures of young children's knowledge of important Literacy fundamentals: phonological awareness; alphabet knowledge; knowledge of letter sounds; spelling; concept of word; word recognition in isolation; and oral passage reading (University of Virginia Website Outreach Virginia Database Program Details, 2008).

Title I is the largest federally funded educational program. This program, authorized by Congress, provided supplemental funds to school districts to assist schools with the highest student concentrations of poverty to meet school educational goals (U.S. Department of Education Website, 2008).

Theoretical Framework for Brain-based Learning

In building the conceptual framework for this research study, one should begin to understand how children learn. A review of brain-based literature, learning styles, and other strategies can assist in determining if instruction is aligned with each child's unique learning style. Understanding children's learning styles can help school divisions, throughout the country, revise their instructional practices to improve the effects that early literacy programs have on students' reading outcomes.

Gardner (2006) contended that all children learn differently and come to the classroom with different sets of developed intelligences. Each child has his or her own set of intellectual strengths, weaknesses, and learning styles. Learning styles may take on the characteristics of Gardner's Theory of Multiple Intelligences. Using biological and cultural research, Gardner developed the concept of seven intelligences: (1) logical-

mathematical intelligence, (2) linguistic intelligence, (3) spatial intelligence, (4) musical intelligence, (5) bodily – kinesthetic intelligence, (6) interpersonal intelligence, and (7) intrapersonal intelligence (Gardner, 2006). Gardner asserted that these intelligences seldom operate independently and that teachers should think of all the intelligences as equally important. Further, he suggested that teachers should structure materials and lessons in a way that engages most or all of the intelligences. Lastly, Gardner recommended that teachers show students how to use their more developed intelligences to assist in understanding subjects that use their weaker intelligences (Gardner, 2006). The Breakthrough to Literacy (BTL) program uses a variety of multi-sensory strategies that coincide with Gardner’s work and support the learning of reading. This structure is consistent with Gardner’s work. The use of the BTL program may be helpful in an effort to increase the reading outcomes and close the achievement gap among African American males.

Hale (1986) first examined the learning styles of African American students through examining historical research and conducting many interviews with African American and White families. Her historical research involved looking at family dynamics and rearing practices as key factors in determining how African American children learn. According to her review of research, African American children were exposed to a high level of stimulation from the creative arts, music, and dance. They were exposed to such creative expressions as: visual arts; posters; paintings; radio; and television (Hale, 1986).

To further analyze learning styles of African American children, Hale conducted an interview study of 30 African American and 30 White grandparents. This population

was chosen because Hale wanted to see generational influences on child-rearing practices and how these practices translate in the education setting for African American students. These grandparents were aged 55-95 and there was no difference in the educational levels or economic incomes of these cohorts. Hale utilized a 183 item coded survey that examined topics such as: discipline; preferences in music; visual arts; fashion arts; family roles; and religious orientation. From the survey results, Hale found these results to be significant: African American children walk at an earlier age as compared to their White counterparts; music and dance are encouraged as part of recreation and leisure; freedom of movement for all children is frequent; and African American children are raised to be more verbally expressive and assertive. The White grandparents surveyed expressed interest in more classical, country and western music, and were more structured in their rearing practices (Hale, 1986).

Hale (1986) argued that these child-rearing practices transfer into the classroom setting in that African American children are placed in a structured setting and have to conform to a variety of rules. Hale emphasized that African American children, especially African American males, are not rewarded for outward expression. She argued that teachers should incorporate strategies that encompass many of the child-rearing practices given by the African American grandmothers such as: more storytelling; chanting; opportunities for oral expression; and movement (Hale, 1986).

Hale (2001) furthered examined models of teaching that reflect culturally appropriate pedagogy in teaching African American children, especially males. Hale argued that African American children are constantly exposed to a home environment that is rich in activity level. There were interactions between family members and

friends, and movement and dance were not only encouraged but fostered. According to Hale (2001) African American children, especially boys, were generally more kinesthetic than White children. Hale's study promoted a curriculum that incorporated movement in every activity. In literature, African American children should have opportunities for oral presentations, high emphasis on phonics, read-alouds, and performances (Hale, 2001).

Kunjufu (2005) examined learning styles of African American males reviewing studies on brain-based learning. He reviewed brain-based studies from Gardner's Multiple Intelligences (2006) as well as Freed's (1997) studies on children with right brain dominance. Through observations in schools and reviewing research on brain-based learning, Kunjufu emphasized that African American males are raised to be more right-brain oriented with a focus on expression, emotion, and creativity (Kunjufu, 2005). African American children, especially males, were more kinesthetic than White children. Also, African American males were more motor driven and had difficulty sitting for longer periods of time. Kunjufu stressed that teachers should incorporate more music and movement activities in literature, math, science, and social studies content areas. Kunjufu (2005) encouraged more cooperative learning, and team building strategies to help foster African American children's' academic development.

While Kunjufu's study examined other works, his observations in classrooms support Gardner's recommendations for active learning. Kunjufu (2005) and Hale (2001) agreed that there should be more focus on what strategies work best with African American children. Also, they agreed that child-rearing and cultural factors have an influence on how children learn.

Melear and Richardson (1994) conducted surveys in four counties in North Carolina to determine how African American males perceive themselves in learning settings. They compared the perception of several hundred African American male students from sixth grade, eleventh grade, and college with their White counterparts on how students perceive their own learning styles. The Myers-Briggs Type Indicator (MBTI) survey was used which measures indexes such as feelings, thinking, judging, and perceiving. Each item response was rated and results were used to categorize children as either extraverted (more expressive) or introverted (analytical). Results indicated that sixth grade African American males perceived themselves as more emotional or expressive learners than their White counterparts. Melear and Richardson (1994) labeled this type of perception and learning style as *Relational*. This style emphasizes self-centeredness; the student is emotional, over-involved in all activities, has a short attention span, and possesses colorful expression. At eleventh grade and college, African American and White males perceived themselves as more analytical. The author acknowledged that more pressure to conform to society and prepare for students in the workforce could be a factor in the change of perception. However, the earlier perceptions suggested the need for a variety of strategies in multiple modalities to provide effective reading instruction for African American students (Melear & Richardson, 1994).

Understanding that students learn in a variety of ways is important in determining the effectiveness of specific programs in the teaching and learning process. African American males are experiencing less success in reading than other student groups. Additionally, there is some evidence of learning style preferences among African American males that may need to be considered when providing services to them. The

BTL program provides multiple strategies for teaching and reinforcing reading that might impact its effectiveness to African American males. Also, the BTL program uses multi-sensory strategies that may benefit African American males' reading outcomes.

Research Questions

The overarching research question is: What is the difference between the use of the BTL program and the reading outcomes of African American males and other racial/ethnic groups and gender in grade one?

Research Question One

Phonological Awareness Literacy Screening (PALS)

Question 1: What is the difference between the use of the BTL program and reading outcomes of African American males and other racial/ethnic groups and gender in grade one with respect to growth on the PALS assessment?

1A: Is there a statistically significant difference between the treatment and control groups with respect to growth on the PALS assessment?

1B: Is there a statistically significant difference between race/ethnic groups (White or African American) with respect to growth on the PALS assessment?

1C: Is there a statistically significant difference between gender with respect to growth on the PALS assessment?

1D: Is there a significant interaction between treatment and control groups and race/ethnic groups (White or African American) with respect to growth on the PALS assessment?

1E: Is there a significant interaction between race/ethnic groups (White or African American) and gender with respect to growth on the PALS assessment?

1F: Is there a significant interaction between treatment and control groups and gender with respect to growth on the PALS assessment?

Research Question Two

Developmental Reading Assessment (DRA)

Question 2: What is the difference between the use of the BTL program and reading outcomes of African American males as compared to racial/ethnic groups and gender in grade one with respect to growth on the DRA?

2A: Is there a statistically significant difference between the treatment and control groups with respect to growth on the DRA?

2B: Is there a statistically significant difference between race/ethnic groups (White or African American) with respect to growth on the DRA?

2C: Is there a statistically significant difference between gender with respect to growth on the DRA?

2D: Is there a significant interaction between treatment and control groups and race/ethnic groups (White or African American) with respect to growth on the DRA?

2E: Is there a significant interaction between race/ethnic groups (White or African American) and gender with respect to growth on the DRA?

2F: Is there a significant interaction between treatment and control groups and gender with respect to growth on the DRA?

Research Question Three

Teacher Perceptions

Question 3: What are teacher perceptions about the utility and effectiveness of the BTL's reading program as it relates to use with their first grade students?

3A: How do teachers rate the individual components of the BTL program?

3B: How do teachers rate the overall value of the BTL program?

Delimitations of the Study

The following variables were controlled: (1) Students who transferred from another local school system or state in the first grade were excluded from the study (2) Students who did not have a 90% or higher attendance rate from October through May of the school year were excluded from the study (3) Those students who had been previously retained in kindergarten or first grades were excluded from the study, and (4) Those students with missing PALS and DRA scores were excluded from the study.

This study included first graders who had received the BTL treatment in kindergarten (2006-2007) and first grade (2007-2008) at two elementary schools as compared to first graders who received the BTL treatment in kindergarten (2006-2007) only at two elementary schools.

Organization of the Study

Chapter I introduces the study with an overview, a statement of the problem, a statement of the purpose, and the significance of the study. It also provides the definition of terms and acronyms, and it explains the brain-based learning framework that is fundamental to the BTL program. Finally, it introduces the research questions. In Chapter II, the Review of Literature focuses on five areas: reading achievement gaps among African American males as compared to other racial/ethnic groups in grade one; national studies on reading that point to the effectiveness of computer enhanced reading programs in increasing reading outcomes; reading programs and their effectiveness with African American students; an overview of the Breakthrough to Literacy (BTL) program

and its components; and the reported results of the BTL program research in both urban and rural school districts related to positive gains for reading outcomes. Chapter III includes: the research design and methodology; population; instrument and data collection; and data analysis. In Chapter IV, the results will be reported and presented including a description, explanation, and summary of the data. Finally, Chapter V will provide a summary of the results, important conclusions drawn from the data, implications for practice, and recommendations for further research.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This chapter gives an overview of the achievement gaps among African American males; national studies on reading; reading programs and their effectiveness; the Breakthrough to Literacy (BTL) program and its components; and research on the BTL program. Some of the highlights of the literature include: the achievement gap of African American males Fashola (2005), Mubenga (2006), NAEP (Snyder & Tan, 2005); components of effective reading programs and practices in reading instruction/ intervention such as the National Reading Panel (NRP) and the National Reading Council (NRC); and computer technology in enhancing reading instruction (National Reading Panel, 2000).

Search Procedures

The following key words were utilized in various databases: achievement gap, computer enhanced reading programs, reading outcomes, African American males, urban school districts, multi-sensory strategies, and Breakthrough to Literacy. These databases were employed to examine achievement gaps with African American males, components of effective reading programs, reading programs and African American students, the Breakthrough to Literacy (BTL) program, and studies on the BTL program. To search for empirical studies on these topics, electronic databases were explored including InfoTrac, ERIC, and electronic dissertations. Books, a telephone interview, Phonological Awareness Literacy Screening (PALS) and Developmental Reading Assessment (DRA) technical reports, dissertations, and peer-reviewed journals were reviewed. From the

research investigated, studies were narrowed to include only those related to reading outcomes of African American males, computer-based reading programs, achievement gaps, and effective early literacy programs.

Achievement Gaps with African American Males

Mubenga (2006) looked at the achievement gap of African American students from a historical perspective and offered some potential remedies. African American students have been stereotyped or singled out as a group of low achievers based on the results of standardized tests. The study, through a meta-analysis approach, reviewed a multitude of research studies that emphasized that there is an increasing and diverse population of students at school who are not expected to bring the same values and attitudes, experiences, and learning styles.

Mubenga (2006) asserted that an examination of assessments of abilities as it relates to African American learning styles is needed and should include all forms of intelligence, not just linguistic and logical-mathematics. Public schools should go beyond those domains and develop all of Gardner's multiple intelligences (Mubenga, 2006). Mubenga perceived that improper attitudes of teachers towards African American students create an atmosphere of academic peril. Multicultural approaches of instruction were reviewed and Mubenga emphasized that teachers should: demonstrate knowledge of cultural, ethnic, linguistic, and gender diversity in the classroom; use curriculum materials that are culturally diverse and avoid historical bias; institute more collaborative team teaching; and rely on oral and written responses versus traditional test approaches such as multiple choice (p.5). Further, Mubenga stressed that more collaborative approaches are needed institutionally in schools so that schools: can work together with

parents and the community to sustain progress for all students; provide multicultural experiences in all activities; offer mentors from the faculty and the community to help struggling African American students as well as others; use more authentic measures of assessments such as requiring more oral presentations and written responses instead of traditional methods of assessment; and allow students to learn at their own pace instead of weekly and monthly timelines which do not permit mastery or remediation for some students (p.11). Finally, Mubenga indicated that in order for African American students to be successful, an effective reading program must be incorporated. Effective reading programs should be examined as well as trends in demographics of African American students to determine whether or not they have an impact on achievement gaps.

Kain and O'Brien (2000) examined the extent and increase of African American suburbanization in large Texas metropolitan areas and the effect of these trends on the achievement of African American students. The study examined the extent of suburbanization from 1992 and 1997 in Texas' largest metropolitan areas. The study also looked at the racial balance of inner city and suburban schools in the metropolitan areas.

Using the data from the Texas Schools Mircodata Panel (TSMP), a panel database with more than two million students attending public school between 1990 and 1997, achievement scores in reading and mathematics were examined. The assessment that was disaggregated was the Texas Assessment of Academic Skills (TAAS), a criterion-referenced test, which was administered in grades three through seven from 1992 through 1997. Kain and O'Brien (2000) examined seven inner city schools in Texas with two-thirds of the student population eligible for free and reduced lunch. The majority of the

inner city schools had a student enrollment that was more than a third African American. These inner city schools were compared to suburban schools within the same district.

Of the suburban schools, 14 out of 179 suburban districts had no African American students and seven of the 179 suburban districts had more than 2,000 African American third to seventh graders in 1995 (Kain & O'Brien, 2000). In 1997, when looking at all the schools in the study in all four metropolitan areas, nearly half of all third to seventh grade students were African American in both suburban and inner city schools. Half of the African American students attending the public schools in Texas' seven largest metropolitan areas were enrolled in suburban schools; disproportionate numbers remained in low performing inner city school and less frequently in low achieving suburban schools.

Kain and O'Brien (2000) tracked African American students who moved from inner city schools to suburban schools and compared their previous TAAS scores from their enrollment in inner city schools to their scores in suburban schools. According to their analysis of the 1997 scores, African American students in suburban schools increased reading and math achievement as evidenced with the TAAS as compared to African Americans in inner city schools in grades three through seven (Kain & O'Brien, 2000).

This research provided significant evidence that school quality, measured by the mean test scores for individual grades/schools, has a large impact on the achievement of individual students. The results presented in this research indicate that enabling the average African-American student to attend schools of average suburban quality rather than average inner city quality would eliminate between 12% and 30% of the current

achievement gap between African American and White students. Although further studies on African American suburbanization are needed to determine how it affects achievement gaps, longitudinal studies need to be explored.

Roland Fryer and Steven Levitt (2002) examined the Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K), which tracked students from kindergarten through third grade. The national sample consisted of 20,000 students, which began in the fall of 2008 and was administered by the United States Department of Education. Information was gathered from each individual's family background, school, neighborhood characteristics, teacher parent assessments, and test scores.

In the first study, Fryer and Levitt (2002) looked at student scores from the fall of kindergarten through the spring of first grade. These instruments were given: Children's Cognitive Battery (CCB); Peabody Individual Achievement Test-Revised (PIAT-R); Peabody Picture Vocabulary Test-3 (PPVT-3); Primary Test of Cognitive Skills (PTCS); and the Woodcock-Johnson Psycho-Educational Battery-Revised (WJ-R). A "general knowledge" test was also administered. This test was designed to measure student's knowledge and understanding of the social, physical, and natural world and their ability to draw inferences and comprehend implications. Fryer and Levitt (2002) primarily looked at reading and mathematics scores from the assessments listed. The results indicated that there was a relatively small difference between African American and White students. However, the gap increased between kindergarten and the spring of first grade.

In the second study, Fryer and Levitt (2002) followed the sample through third grade. The results of the ECLS-K revealed that African American students fell

progressively behind White students. Although the results of the ECLS-K indicated a widening gap in reading and mathematics, the results did not explain why the gap exists. Fryer and Levitt (2002) concluded that the gap for African American students in the sample over time was due to lower quality schools. When they compared the change in test scores over time for African Americans and White students attending the same school, African American students lost a third as much ground as White students in the overall sample.

The ECLS-K surveys of teachers in the sample revealed a host of problems in the lower quality schools such as: gang problems in school, percentage of students on free lunch, and Parent Teacher Association funding (Fryer & Levitt, 2002). This study examined trends in achievement gaps from kindergarten through grade three. Other studies such as the National Assessment of Educational Progress (NAEP) examined achievement gaps over three decades.

The National Assessment of Educational Progress (NAEP) examined the achievement gaps of African American males. The NAEP is a congressionally authorized project of the National Center for Education Statistics (NCES) within the Institute of Education Sciences of the U.S. Department of Education (National Center for Educational Statistics Website, 2008). For more than three decades, NAEP assessments have been conducted periodically in reading, mathematics, science, writing, U.S. history, civics, geography, and other subjects. Data are collected and reported on student performance at the national, state, and local levels (Lee, Grigg, & Donahue, 2007).

The NAEP monitors the condition and progress of the educational system in the United States. A review of the National Assessment of Educational Progress (NAEP)

results revealed that the gap between African American and White students narrowed in the 1970s and into the 1980s as African American students made considerable gains, while the performance of White students over this same period remained mostly flat (Snyder & Tan, 2005).

However, the trend was reversed during the end of the 1980s and into the 1990s when the performance of African American students remained flat while their White counterparts improved. According to NAEP reading comprehension scores in the year 2007, there was a 27-point gap in reading comprehension scores on the National Assessment of Educational Progress Reading Assessment between White and African American students in fourth grade. African American students continue to lag behind in areas of decoding and comprehension skills (Snyder & Tan, 2005).

Jencks and Phillips (1998) reviewed changes in the African American and White achievement gap in the 1970s and 1980s. The authors argued that parental education, smaller families, smaller classes, and rising enrollment in academically challenging courses might have narrowed the achievement gap. The changes were small for Whites. Jencks and Phillips also reviewed the National Assessment of Education Progress (NAEP) from 1971 through 1984. NAEP assesses students at age nine, thirteen, and seventeen. According to the NAEP, the achievement gap between African American and Whites narrowed for both reading and math at all ages. The authors concluded that African American students improved significantly while White students improved a little (Jencks & Phillips, 1998).

The achievement gap narrowed more for thirteen and seventeen year olds than for nine year olds because African American adolescents' scores increased significantly from

the late 1970s to the late 1980s. By the late 1980s, African American gains were 0.6 to 0.7 standard deviations greater than White gains (Jencks & Phillips, 1998). The authors looked for changes that might raise African American scores without affecting the scores of White students. School desegregation in the South is one reason. Desegregation may have pushed up southern African Americans' scores a little without affecting Whites either way (Jencks & Phillips, 1998).

Media and other pundits are quick to elaborate on reasons why African Americans are consistently falling behind their White counterparts. Many examine African American male student achievement from either a historical, sociological, or economical perspective when determining school success or failure (Fashola, 2005).

Fashola (2005) and several other prominent educational researchers boldly address this issue. Fashola's book is divided into several chapters that addressed the following: social, cultural, and historical issues; school reform; early, middle, and high school experiences; structural critiques of masculinity; institutional forms of racism; and extra-curricular activities that help to promote positive self-esteem and critical thinking for African American males. The author stressed the need for new strategies in the educational community that move beyond the traditional methods currently being used.

Fashola and her colleagues offered solutions to this complex problem by creating much-needed discussion that can transform African American males into dependable, responsible, accountable, and successful young men who will become active participants in their communities even under the most difficult of circumstances. Some of these solutions are as follows: instituting extra-curricular activities after school that help promote positive self-esteem and critical thinking skills for African American males;

incorporating new pedagogical approaches to teach African American males in an effective manner; forming mentorship programs which define the roles of African American males; and forming partnerships with educational community stakeholders so that educators and parents have a support system (Fashola, 2005).

Not only are a historical, sociological, and economic perspective important in determining school success or failure for African Americans, an examination of teacher bias towards African American Vernacular English is thought to be needed. Rodriguez, Cargile, & Rich (2004) explored reactions to African American Vernacular English (AAVE) to determine whether more phonological features matter. The authors suggested that those who speak with an accent, believed normal, are inclined to be rated highly on traits related to competence, intelligence, and social status. Abnormally accented speakers are believed to be viewed as less favorable.

In addition, both past research and anecdotal evidence suggested that speakers with strong AAVE accents are stigmatized to a greater degree than speakers with moderate AAVE accents. Rodriguez et al. (2004) conducted their own research and examined the relationship between the strength of speaker accent and subsequent listener judgments about the speaker. The study utilized a 3 x 2 factorial design featuring speaker accent (strong AAVE/moderate AAVE/mainstream U.S. English) and listener ethnicity (ethnic majority/ethnic minority).

The data from the study showed that listeners rated speakers with strong AAVE accents both less appealing and less status-possessing than speakers with moderate AAVE accents. The data also showed that listeners who were rated with strong AAVE accents were rated as less appealing and status-possessing than speakers with typical U.S.

English accents. This study overwhelmingly revealed that the degree of female AAVE used by speakers does influence judgments that listeners make about them (Rodriguez et al., 2004).

Components of Effective Reading Programs

About one million students drop out of school every year and nearly half of African Americans, Hispanics, and Native Americans fail to graduate (Hart, 2006). In a national survey of young dropouts, Hart indicated that nearly 50% of the respondents said they left school because their classes were boring and not relevant to their lives. A majority revealed that schools did not motivate them to work hard and more than half dropped out with just two years or fewer to complete high school. This report brings forth the question, “What are we doing as a nation to combat the dropout epidemic?” Specifically, dropouts are more likely than high school graduates to be unemployed, in poor health, living in poverty, in prison, on public assistance, and have children who also drop out of high school (Hart, 2006).

Kenneth Anderson (2007) examined the effects of reading achievement on problematic behavior, suspensions, and drop out rates of African American males. His study was conducted using data from North Carolina’s Wake County Schools with a student population of 108,000 students. African American male middle school students from grades 6 to 8 were tracked between 2001 and 2004. Research results indicated that as reading achievement increased at the various grade levels, suspensions decreased significantly as well as students dropping out of school. Also, this research concluded that students with multiple suspensions would be likely to continue to be suspended in the subsequent school year (Anderson, 2007). As researchers began to search for answers to

help solve the silent dropout epidemic, it becomes clear that motivational and relevant early literacy programs would be an excellent place to start the nation's educational healing process.

Understanding the relationship that early literacy programs have on African American males' reading outcomes is essential to closing the achievement gap in reading and decreasing the dropout rate in America. In 1998, the National Research Council (NRC) on early literacy in its report entitled, "*Preventing Reading Difficulties in Young Children*," identified four essential prereading skills that all children can learn in order to become successful readers. These skills are as follows: vocabulary, phonological/phonemic awareness, alphabet knowledge, and word recognition skills. Of these skills, phonological/phonemic awareness and alphabet knowledge relate specifically to language structure or the ability to link sounds to symbols, sometimes called mastering the code of print. They are also predictors of reading failure. The NRC suggests that these skills are necessary so that children avoid failure in reading (Snow, Burns, & Griffin, 1998).

In an effort to address the nation's call for schools to produce highly literate citizens, the Director of the National Institute of Child Health and Human Development (NICHD), in consultation with the Secretary of Education, convened the National Reading Panel (NRP) in 1997, to assess the status of research-based knowledge, including the effectiveness of various approaches to teaching children to read. This panel was charged with providing a report to indicate the following: (1) the readiness for application in the classroom of the results of this new research, (2) if appropriate, a strategy for rapidly disseminating this information to facilitate effective reading

instruction in the schools and (3) a plan for additional research regarding early reading development and instruction (National Reading Panel, 2000).

The NRP was comprised of fourteen individuals including leading scientists in reading research, representatives of colleges of education, reading teachers, educational administrators, and parents. The work of the NRP took into account the foundational work of the National Research Council (NRC) Committee on Preventing Reading Difficulties in Young Children (National Reading Panel, 2000). The NRP focused on the following topics for intense study: (1) alphabetic – phonemic awareness instruction and phonics instruction, (2) fluency, (3) comprehension – vocabulary instruction, text comprehension instruction, teacher preparation, and comprehension strategies instruction, (4) teacher education and reading instruction, and (5) computer technology and reading instruction (National Reading Panel, 2000). The final report of the NRP was released December 2000.

The NRP examined research from 1966 to 1997 and reviewed thousands of studies and narrowed them to 78 studies that met the general NRP methodology criteria which were as follows: studies published in English in a refereed journal; studies on children's reading development in the age/grade range from preschool to grade 12; and an experimental or quasi-experimental design with a control group or a multiple-baseline method. Of the 78 studies, only 52 studies satisfied the more specific research methodology criteria which included: characteristics of study participants (age; demographic; cognitive, academic, and behavioral characteristics); study interventions, described in sufficient detail to allow for replication, including how long the interventions lasted and how long the effects lasted; study methods, with sufficient

description to allow judgments about how instruction fidelity was insured; and nature of the outcome measures and whether they were described fully (National Reading Panel, 2000).

From these 52 studies, 96 comparisons of treatment and control groups were derived. Data from these comparisons were then entered into a meta-analysis to determine treatment effect sizes. To maintain effectiveness, the Panel felt it necessary that there be experimental or quasi-experimental studies of sufficient size or number (National Reading Panel, 2000). These procedures assisted in increasing the possibility of reporting findings with a high degree of internal validity.

The NRP assessed the effectiveness of various approaches to teaching children to read and to further indicate the extent to which effective approaches were ready for application in the classroom setting. The work of the NRP was built on existing knowledge about what type of skills children need to acquire to become independent readers. In addition, the NRP identified areas in which significantly greater research effort was needed and indicated that research efforts must improve in order to determine objectively the effectiveness of different types of reading instruction (National Reading Panel, 2000).

The NRP stressed that across all grade levels, systematic phonics instruction improved the ability of good readers to spell. The impact was strongest for kindergarteners and decreased in later grades. For poor readers, the impact of phonics instruction on spelling was small, perhaps reflecting the consistent finding that disabled readers have trouble learning to spell (National Reading Panel, 2000).

The NRP (2000) concluded that guided repeated oral reading procedures that included guidance from teachers, peers, or parents, had a significant and positive impact on word recognition, fluency, and comprehension across a range of grade levels. The NRP was unable to find a positive relationship between programs and instruction that encourages large amounts of independent reading and improvements in reading achievement, including fluency.

Studies reviewed by the NRP (2000) stressed that vocabulary instruction does lead to gains in comprehension, but methods must be appropriate to the age and ability of the reader. Evidence also suggested that teaching a combination of reading comprehension techniques is most effective. NRP studies reported positive results, suggesting that it is possible to use computer technology for reading instruction. Also, the addition of speech to computer-presented text may be a promising use of technology in reading instruction. There were too few studies done on specific variables to allow the NRP to draw specific conclusions about the content of pre-service education. For conclusions to be drawn about the effectiveness of teacher education, information on both teacher and student outcomes must be reported (National Reading Panel, 2000).

Since technology is ever changing, the study lacked significant literature on the use of the internet in teaching reading. Phonics instruction and phonemic awareness techniques were examined with learning disabled students but not reading fluency and comprehension. Finally, there is limited research on effective teaching methodologies that demonstrate improved student performance.

One of the most compelling strengths of this study is that it is comprehensive in nature. The researchers analyzed the most effective ways in which children acquire

literacy and provided best practices for teaching reading and writing. The results suggested that interactive computer reading instruction is very promising for teaching young readers. This technology provides teachers the ability to address various student-learning styles. Hence, this study gives further credibility to why more research is needed in utilizing computer enhanced reading programs.

Reading Programs and African American Students

Varieties of reading programs were examined which included comprehensive reading programs. Computer enhanced reading programs were reviewed to determine whether or not these programs affect reading outcomes with African American students, especially African American males. Although a review of these programs will determine their efficacy, it is necessary to include comprehensive reading programs.

Comprehensive reading programs involve parents, mentors, and other community stakeholders. These comprehensive programs will further highlight the need to improve reading outcomes among African American males.

We live in a technologically advanced society and a principal factor that has initiated rapid computer usage is the invention and mass production of the microcomputer (Carver, 1994). The microcomputer can be viewed as a gateway to technology that allows its user's access to information available electronically. Carver (1994) stated that due to the general lack of economic, educational, and other societal opportunities available to African American children and other minorities; it appears that they will make up a large segment of the information-poor category. These populations would be at-risk of failure in the Information Age (Carver, 1994). According to Carver, while lack of resources and opportunities will prevent many African Americans from large-scale

involvement in the Information Age, young African American males will be most significantly affected (Carver, 1994).

African American males should be exposed to technology early so that they will not become a part of the technology divide. A landmark report, *A Nation at Risk* (1983), stated that computer efficiency is essential to the curriculum of public schools and that it should be added to reading, writing, and arithmetic for global competitiveness (National Commission on Excellence in Education, 1983). The differences in computer competency between African American and White students create an inherent inequity to access and usage of computers.

Woods (2007) examined a computer-based reading program called READ 180 on the reading achievement of struggling middle school students in a southeastern Virginia school district. Also, she analyzed whether participation in READ 180 would have an effect on later drop-out rates as compared to those students enrolled in a traditional reading program. Her research consisted of 384 students in grades 6 through 8 who participated in READ 180 and traditional reading programs over a three-year span. The racial/ethnic student population was as follows: 50% Caucasian; 44% African-American; 3% Hispanic; and 2% Asian or Pacific Islander (Woods, 2007).

READ 180 is a computer-based reading program that utilizes software to reduce student frustration in reading. The program uses video instruction aligned with the student's reading level. The software provides continuous positive feedback on student performance in reading. The program focuses on reading skills such as: word recognition; phonics; fluency; vocabulary; spelling; and comprehension skills. Activities

in READ 180 are adjusted as students develop mastery of skills and content. Paperback and audio books accompany the software (Woods, 2007).

In this study, students in the control group were exposed to the traditional reading program that involved a 90-minute block schedule in a remedial reading class.

Instruction involved a pull-out model conducted by a reading specialist who provided focused reading instruction for students who struggled in reading skills (Woods, 2007).

Results revealed that there was no significant difference between the treatment and control groups during the first year of READ 180 which was due to software problems. Statistically significant results were achieved during the second and third year of READ 180s implementation. Significant differences in the 2003-2004 Reading 180 cohort in terms of drop-out rates were revealed. The READ 180 cohort did not reveal significant differences in drop-out rates for the 2004-2006 school year (Woods, 2007).

The Simi Star Project, a collaborative grant among six southern California school districts (Simi Valley, Ventura, Oxnard, Santa Barbara, Orcutt, and Point Hueneme) and International Business Machines (IBM), tested the effectiveness of computers in the classroom and the effects of integrating technology in the curriculum (Casey, 2001). Six networked computers were placed in kindergarten and first grade classrooms to test the integration of technology and to measure the effect on students' reading and writing development. The research consisted of observations, interviews, questionnaires, portfolio assessments, as well as reading attitude tests to measure students' reading and writing development (Casey, 2001). The software used was Writing to Read, Stories and More, and Children's Writing and Publishing (Casey, 2001). Teachers were extensively trained, parents were included as partners, and students were given daily access to the

computers for writing and reading. Included in the reading instruction were phonemic awareness and systematic phonic support. The questionnaires and the reading attitude tests were based on a five point rating scale. Portfolios consisted of samples of children's daily writing assignments.

The classrooms that received the treatment were compared to classrooms without computers but with similar teaching approaches. The results revealed that all students using the Writing to Read program averaged at least two levels higher than those in the control classroom. The experimental group had a significantly higher positive reading attitude score than the control group. Casey (2001) acknowledged that the computer became a problem-solving tool when used by the learner to construct his own literacy.

Casey (2001) indicated that monies must be set aside for training to help teachers understand that this is a new way of teaching reading and writing. Students create stories directly from their minds to the computers and have the control to edit and save their own work. Computers, when used with reading and writing instruction, enhance students' learning because of the immediate feedback provided through the programs (Casey, 2001). Further research on computer enhanced reading programs is needed to examine its effectiveness.

A significant strength of the study was its large sample size, which included six southern California school districts. It also incorporated three computer literacy software programs: Writing to Read, Stories and More, and Children's Writing and Publishing. Another strong component of the study was that teachers were provided extensive training on the use of the software to maximize student learning.

Another computer program that motivates student to read and develop reading comprehension skills is the Accelerated Reader® (AR) program. Facemire (2000) examined the effect of the Accelerated Reader® (AR) program on third grade students in a low socio-economically depressed area in West Virginia. The study reviewed the components of AR, the STAR reading program, and how they were used to track students' reading progress. These programs were chosen because they provide teachers with concrete ways to reward students for desired behaviors (Facemire, 2000).

According to Facemire (2000), AR is a computer management, task-level learning system for literature-based reading. The goal of AR is to increase reading practice for students through a point value system. Many educators reward students for obtaining points. Points are assigned based on the reading difficulty and length of the book. Also, educators are provided immediate feedback on students' comprehension levels through the use of a Flesh-Kincaid Readability Index. Each book is assigned a maximum point value by a formula. Student progress is tracked through a combination of points earned and test scores through AR. The students must score at least 60% on the test or higher to obtain AR points (Facemire, 2000).

The STAR reading program, a computerized norm-referenced reading test, was used to assess student's reading comprehension prior to and after the study. STAR tests provide instructional reading levels, percentile scores, and grade equivalents for students. The format of the STAR reading test involves a multiple-choice design as well as timed sessions (Facemire, 2000).

Two separate third grade classrooms within the same elementary school in West Virginia were selected with approximately 40 students. Sixty percent of these students

were eligible for free or reduced lunch. All students were able to read and complete the STAR reading comprehension test. The experimental group (AR participants) was comprised of ten boys and seven girls. Out of this group, only 15 students' data were used for analysis; two students did not pass any of the tests nor did they earn any AR points. The control group consisted of 12 boys and nine girls. The control group was not given the AR program but took comprehension tests using the STAR reading program and was exposed to AR books in the school's media center (Facemire, 2000).

The study showed that the experimental group had a greater gain in reading comprehension compared to the control group. The control group made adequate reading progress and showed a 9% increase in their reading comprehension as compared to a significant increase of 17% in the experimental group (Facemire, 2000).

Although the study showed a significant increase in reading comprehension scores for the experimental group, the scores should be interpreted cautiously. The study involved a limited number of participants and did not provide qualitative data on student's perceptions of AR and whether or not AR motivated them to read more.

Littleton, Wood, and Chera (2006) used computer-based technology in the form of talking books to determine whether typically developing boys who showed lower levels of achievement in phonological processes would show a greater degree of improvement than boys who were demonstrating higher levels of phonological processes. Also, the research examined whether the boys' achievement of phonological awareness would affect how they used the software to support their literacy acquisition. The researchers developed computer-based talking books that integrated different levels of speech feedback to support various ways of engaging students. Students could choose

whether to hear the whole page spoken, hear individual words read aloud or hear words broken down into their components, which were spoken in isolation and then blended back together (Littleton et al., 2006).

The research examined 18 five and six year old boys. Students were given the British Picture Vocabulary Scales II, which showed that both groups were in the average range in receptive language skills with an overall standard score of 107.4 (Littleton et al., 2006). The Phonological Assessment Battery (PhAB), which assessed rhyme, alliteration tasks, fluency, and picture naming, was administered to determine which students had lower phonological processes. Result from the PhAB determined the treatment and control group based on their scores. The treatment group was comprised of nine boys who had lower levels of phonological processing and the control group was comprised of nine boys who had higher levels of phonological processes. Also, the Neale Analysis of Reading Ability-Revised was given at pre-posttest to analyze the student's patterns of reading errors, as these errors were determined as reading strategies that the students were using to decode the text given (Littleton et al., 2006).

The students completed six computer sessions in total using the talking books and each session was no more than 15 minutes long. To assess the first premise of whether the treatment or control group benefited more from using the talking books software than the other group in phonological awareness skills, the pre and posttest results on the PhAB were converted in z-scores. The posttest z-score was subtracted from the pre-test z-score for each phonological awareness measure. The results indicated that the students with the lower phonological awareness skills improved significantly more on the composite phonological awareness measure than the higher attainment group of boys with $p=0.016$

(Littleton et al., 2006). This research suggested that the use of talking books software was beneficial for those boys who initially showed lower phonological awareness skills. Students with higher levels of phonological awareness skills were found to change their reading strategies more than the control group. The control group was engaged in more advanced styles of literacy learning such as increasing their use of mispronunciation errors which are indicative of attempts of decoding strategies. Students in the lower level attainment group benefited more from using the talking books in terms of phonological awareness attainment (Littleton et al., 2006).

Hager (2004) examined the use of technology to narrow the achievement gap between African American and White students. He reviewed the Enhancing Missouri's Instructional Network Teaching Strategies (eMINTS), an educational program that uses technology to enhance communication skills and math. The eMINTS program integrated multimedia technology into open-ended and student-centered learning. Its instructional model provided a research-based approach to organizing instruction and can be implemented in any subject area at any level. This study examined the achievement data for African American and White students in years 2000, 2001, and 2002. The instrument used to measure the achievement gains was the Missouri Assessment Program (MAP). Scores from communication skills, science, mathematics, and social studies were included. The sample population consisted of third and fourth graders in 39 elementary schools in 44 districts across Missouri (Hager, 2004).

A summary of the data indicated that the average performance of African American students enrolled in the eMINTS classrooms in 2001 and 2002 cohorts was considerably higher across all subject areas than the average performance of African

American students not enrolled, while the results of the African American students in 2000 were mixed (Hager, 2004). In the 2001 cohort, African American students showed a gain of 7.6 points higher in communication skills and 19.6 points higher in mathematics than those students who were not in eMINTs classes (Hager, 2004).

The strength of the study was the large sample size across 44 districts in Missouri. Although the study was comprehensive, there were no pretest data available to show how students performed prior to the eMINTs enrollment. Also, there was insufficient information on the instructional practices in the eMINTS classroom that may have had an influence on the scores. As indicated in the literature, eMINTS, as well as other computer enhanced reading programs, have shown positive results in increasing reading outcomes with African American males. In addition to these computer enhanced reading programs, an examination of comprehensive reading programs will help determine if additional resources are needed to improve reading outcomes of African American males.

Vanderhaar and Munoz (2006) examined the Jefferson County Public School district in the state of New York. This is the thirteenth largest urban school district in the country with over 96,000 students. Jefferson County conducted research on the status of African American males and embarked on an aggressive program to address the increasing rates of high school dropouts throughout the county. The county approved the Street Academy Program, which would set the standard for comprehensive programs throughout the state (Vanderhaar & Munoz, 2006).

The Street Academy Program was a three-phase initiative developed to address the needs of African American male students with a holistic, community based approach. Phase One was designed to function on Saturday; Phase Two covered Saturday activities

plus working with students a half day longer in the week at a school setting; and Phase Three was a long term program for serving students at significant risk of school failure in an all African American male residential type setting in the inner city. This study focused on Phase One. The goals of the Street Academy were to assist African American males in grades four through six to attain proficiency in reading, increase school attendance, and reduce negative behavior in school (Vanderhaar & Munoz, 2006).

The focus of the Street Academy Program targeted four components: academic, socio-behavioral, community support, and culture. The academic component involved the District's literacy initiative, the Corrective Reading Instructional Model, which included both decoding and comprehension strategies (word attack, story reading, reading checkouts, workbook, and checking workbook). The instructors were African-American male teachers who emphasized a code of conduct with high expectations. There was a home school coordinator who worked with the parents. The Street Academy Program operated on Saturdays at Wheatley Elementary School. African American male students attended sixteen Saturday sessions. The Street Academy Program served thirty-eight African-American male students in fourth through sixth grades from households in poverty of whom 71% live in single parent homes (Vanderhaar & Munoz, 2006).

According to Vanderhaar and Munoz (2006), the evaluator used a multitude of sources to obtain both qualitative and quantitative data. To assess reading achievement, the students were given the Gates-MacGinitie reading pre-test (start of the program) and post-test (end of the program) as well as the Predictive Reading Series (PRS), a reading assessment. Attendance and discipline data were analyzed using statistics to determine the change occurred in both fields. The control group was students referred to the Street

Academy Program but who did not receive the full treatment due to only attending the program between 6 to 46% of the time. The group that received the treatment attended the program between 56-100% of the time.

When examining the results, the study indicated that there was no statistically significant difference between the treatment and control group at the elementary level. This is likely due to the small sample size (Vanderhaar & Munoz, 2006). At the middle school level, the treatment group gained 5.1 points versus the control group of 1.5 points from pre and posttest data. The treatment group made five times higher gains than the control group. The treatment group experienced a 29% increase in students scoring at the proficiency level. The Gates-MacGinitie assessment showed a statistically significant increase in the area of comprehension for both elementary and middle school students from pretest to posttest (Vanderhaar & Munoz, 2006).

In the area of attendance, there was an increase in attendance of the treatment group but it was not statistically significant. In the area of discipline, the treatment group had a greater increase in referrals and suspensions than the control group. It was noted that this might be due to the fact that the treatment group had a larger sample size than the control group. Also, there is a high recidivism rate with respect to both referrals and suspensions (Vanderhaar & Munoz, 2006).

Vanderhaar and Munoz (2006) recommended that the process of selecting the students should be more refined. The study revealed that more elementary students should be targeted for early intervention due to its success. The study also recommended that there should be more collaboration between program staff and school staff where the participants may assist with more monitoring of the student progress and there should be

more interaction with student's parents and families. Additional recommendations include lengthening the program one full day and providing follow-up on those students who dropped out (Vanderhaar & Munoz, 2006).

Diamond and Onwuegbuzie (2000) reviewed Georgia's 4-Block Balanced Reading Program. In 1998, a school district in Georgia implemented the 4-Block Balanced Reading Program in an effort to improve reading achievement for students in first through fifth grades. Additional programs were started in North and South Carolina as well. The focus was particularly targeted towards African American students. The 4-Block Balanced Reading Program was an intensive reading program that focused on a balanced approach of utilizing both basal and skill instruction. The framework divided the two-hour language arts instructional period into four thirty-minute blocks: basal, self-selected reading, writing, and working with words (Diamond & Onwuegbuzie, 2000).

School One, a large suburban school in North Carolina with a student body of 30% minority students, implemented the 4-Block Balanced Reading Program. First through second grades implemented the Basic Reading Inventory to the treatment group and there was no control group. Half or more of the students read above grade level by second grade. Reports showed 90% of the students in third, fourth, and fifth grades were performing in the top two quartiles with respect to reaching achievement (Diamond & Onwuegbuzie, 2000).

School Two, a suburban district located in South Carolina, had a student body of 25% low socioeconomic status. One-half of all of the teachers in the elementary school implemented the 4-Block Balanced Reading Program. The Basic Reading Inventory was given and treatment students scored at or above grade level at the end of first semester

implementation. Students in classes in the control group scored at or above first grade. Also, students in the treatment group scored statistically higher on the Metropolitan Achievement Test (Diamond & Onwuegbuzie, 2000).

Diamond and Onwuegbuzie (2000) examined School Three, a rural school located in South Carolina. It was rated as one of the worst schools based on achievement. The school included 84% low socioeconomic level students. During the 1995-1996 school year, the school implemented the 4-Block Balanced Reading Program. At the end of the first year, 30% of the first grade students and 38% of the second grade students scored at or above the 50th percentile. By the end of the second year, 46% of the first grade students and 40% of the second grade students scored at or above the 50th percentile. While initial results seemed promising, when this program was implemented throughout the state, a decrease in reading achievement and attitudes was found (Diamond & Onwuegbuzie, 2000).

The Georgia study included 2,127 children who were enrolled in four kindergarten through third grade schools and two fourth-and fifth grade schools in a small inner city school district in Georgia. The findings of the program yielded positive results for African American students. In fourth grade, a statistically significant increase was found in reading achievement as well as in grade five for African American males. Also, the Cognitive Ability Test was compared across grades one through five. In the area of reading attitudes, statistically significant differences were noted in grade two with African American females, grade three with African American females and males, grade four with African American females and males, and grade five with African American males and White females. In all cases, the post-test scores were lower than pretest scores

indicating that the efficacy of the 4-Block Balanced Reading Program is in doubt (Diamond & Onwuegbuzie, 2000).

Diamond and Onwuegbuzie (2000) stated that the overall findings of their study on the 4-Block Reading Method were not promising. Teachers may not have implemented the initiative to its fullest fidelity. Future implementation of this program should take this into consideration. Poor attitudes from some teachers toward the 4-Block Balanced Reading Program may have spread to their students. Also, one year may not have been a sufficient period of time to observe positive gains in reading achievement and attitudes.

Unlike some of the previously reviewed studies, the sample size of this study was one of its strongest components. It compared suburban, rural, and students with low socioeconomic status. More information was needed to examine teacher attitudes towards the 4-Block Reading Method.

Computer enhanced reading programs as well as comprehensive reading programs have shown promising results with African American students. To assist in identifying effective programs for struggling African American readers, a specific computer-enhanced reading program will need to be examined that is aligned with both the NRP and NRC studies on effective reading programs.

Breakthrough to Literacy

The Education Commission of the States published a paper on the Breakthrough to Literacy (BTL) program, which is one such program to help students become more literate. Carolyn Brown and Jerry Zimmerman, professors at the University of Iowa, developed the BTL program in 1981. This document stressed that the BTL program is a

research-based early literacy program that combines interactive software, quality print materials, take-home materials, and staff development to provide individualized reading instruction for students. The BTL program used technology to help children understand the relationship between sound, print, and meaning (Education Commission of the States, 1999).

The major components of the program include: daily story reading with (particular objectives); interactive computer software (with individually tailored lessons through which students progress at their own pace); integrated computer software (with individually integrated print and computer curriculum materials); assessments; print materials for shared, guided, and independent reading and for writing activities; staff development; and take-home materials (children and parents are encouraged to read together at home) (Education Commission of the States, 1999).

Five activities make up the structure of the BTL program. These five activities are as follows: listening to stories, telling stories, exploring words, exploring the alphabet, and painting/field trips. Also, these five activities are centered on the chosen book of the week. The BTL program provides instruction in phonics, vocabulary development, and fluency practice. The daily components related to the BTL balanced literacy program include: whole group reading instruction; completing writing tasks; participation in related class activities; literacy workstations; small group instruction; and 15 to 20 minutes of daily, individualized computer time. The students are expected to be able to read the featured book by the end of the week. The BTL program provides students with multi-sensory activities. Students are given black and white take home

copies of the book for practice at home (Florida Center for Reading Research Website, 2008).

The specific goal of the BTL program is to teach pre-kindergarten through second grade students the relationship that oral language and pictures have to printed words. The program also provides each child, at his or her level of language/literacy development, stories and access to direct and explicit instruction for phonemic awareness through the use of “Big Books,” pupil books, and computer models. The combination of literature-based instruction and instructional technology is intended to help children develop better phonemic awareness, enhance their vocabulary development and promote an understanding of sound-symbol relationships. Children progress at their own pace through daily individual sessions with teachers and computers (Education Commission of the States, 1999).

Since the focus of this study is a comparison of students who received the BTL program in kindergarten (2006-2007) and first grade (2007-2008) to those students who received the BTL program in kindergarten (2006-2007) only, the BTL Kindergarten and First Grade Classroom Instructional Models (CIM) were reviewed. As shown in Figures 1 and 2, the BTL Classroom Instructional Model consists of several areas: whole-group, book-of-the week, oral comprehension instruction for kindergarten, whole-group, featured book, comprehension instruction for first grade, language and literacy centers, small-group instruction, and writing instruction and workshop. The purpose of the CIM is to illustrate the relationship between classroom instruction and classroom management for kindergarten and grade one (McGraw-Hill Education, 2009).

Several independent studies in various school districts have implemented the components of the BTL program with African Americans and other ethnic/racial groups with positive results for reading outcomes. Some of these studies were conducted over one school year and other studies took place over several years. These studies used quantitative and qualitative data.



Figure 1. BTL Kindergarten Classroom Instructional Model (Image included with permission from McGraw-Hill)

Studies on Breakthrough to Literacy (BTL)

The Pulaski County School District in Somerset, Kentucky, conducted its own research on the BTL program. Breakthrough to Literacy was implemented in the Pulaski County School System in 1999. The BTL program in Somerset focused on several essential practices: assuring that each child gets 15-20 minutes each day on the computer curriculum; using a “Book of the Week” language, comprehension, and engagement strategy; sending the “Take Me Home” books home; and providing daily writing

activities that focus on linking oral language to print. Emphasis was also placed on integrating the stories and lesson activities into ongoing classroom activities (M. Mauney, personal communication, July 2, 2008).

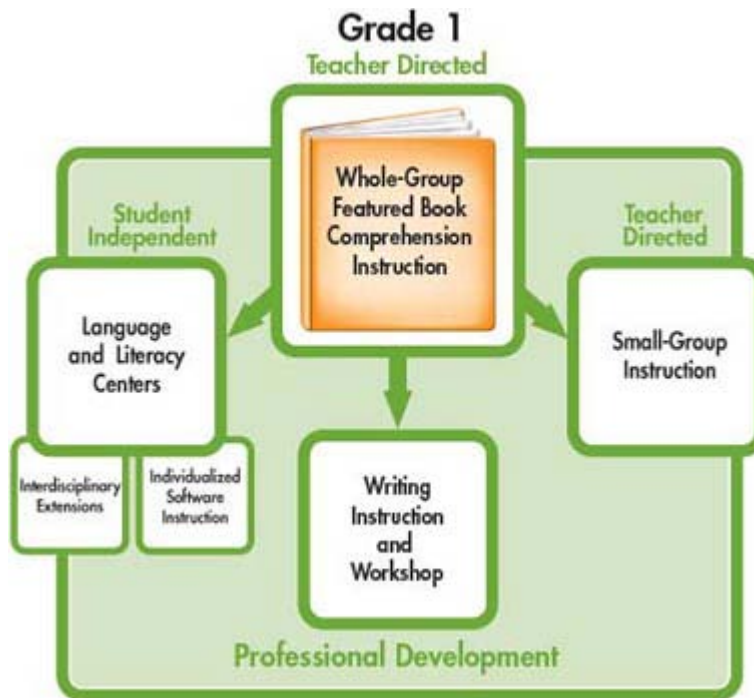


Figure 2. BTL First Grade Classroom Instructional Model (Image included with permission from McGraw-Hill)

The Pulaski County School’s Research and Curriculum Department conducted its own study data from 2001-2003. The BTL program was instituted in twenty-eight classes with a total sample size of 504 students with 76% eligible for free and reduced lunch. The data were collected using the Pulaski County Assessment of Reading (PAR) as well as the BTL End of the Year Reports. The Research and Curriculum Department compared the PAR scores of 2001 with previous kindergarten results before the implementation of the BTL program. The Research and Curriculum Department found posttest gains in these areas: 72.5 % gain in auditory awareness; letter recognition of capital/lower case; 78% gain in phonics (letter to sound relationship); 78% gain in

phonics (sound to letter relationship); 45% gain in comprehension skills; and a 47% gain in rhyming words. The PAR results showed 70% of exiting kindergarteners who used the BTL program demonstrated mastery of all areas (Pulaski County School's Breakthrough to Literacy PAR Assessment Results 2001-2002 Website, 2008).

Research data were also obtained in the 2002-2003 school year from the Research and Curriculum Department. The BTL program was implemented in 28 kindergarten classrooms with a student population of 532 with 74% eligible for free and reduced lunch. When compared to the previous years results, the Research and Curriculum Department found gains in these areas: 65.5 % in auditory awareness; letter recognition of capital/lower case; 76% in phonics (letter to sound relationship); 78% in phonics (sound to letter relationship); 42% in comprehension skills; and a 50% in rhyming words (M. Mauney, personal communication, July 2, 2008). The percentage of exiting students with mastery of all areas was not obtained.

Another urban school district that examined the effects of the BTL program was Norfolk Public Schools in Norfolk, Virginia. Norfolk Public Schools became a partner in the research and saw a direct match with the essential practices of the BTL program and with the practices advocated by the National Reading Panel (NRP). Norfolk examined the NRP report and its best practices in the teaching of reading, and established a local reading plan.

Further, one study of the BTL program conducted in the 1999 – 2000 school year by Dr. Fred Bateman of Old Dominion University examined the Standard of Learning (SOL) scores of students who had used the BTL program during the 1996 – 1997 school year and compared them with the district average (McGraw-Hill Education, 2002). Three

urban elementary schools participated in the study. The control group consisted of 1,100 third graders who did not receive the BTL treatment in kindergarten. The experimental group consisted of 87 third graders who received the BTL treatment in kindergarten. The majority of the students was African Americans and received free or reduced price lunch. This study utilized quantitative data, which incorporated the Standards of Learning (SOL) assessment as well as the Phonological Awareness Literacy Screening (PALS) scores. The SOLs were utilized as required by the Virginia Department of Education. The results showed that the BTL students' scores exceeded the district's average in every content area (McGraw-Hill Education, 2002).

Significant findings of the McGraw-Hill study indicated that students in third grade who received the BTL treatment scored significantly higher on the English, Math, History/Social Science, and Science SOL scores. Also, at one urban elementary school, kindergarten students who received the BTL treatment scored significantly higher on PALS scores when compared to those kindergarten students who did not receive the BTL treatment. The results were conducted over a three-year span. Like the Chicago study, a limitation of this study was that it did not examine whether or not effective teacher instruction played a role in student results (McGraw-Hill Education, 2002).

Flanagan (2006) conducted an extensive study on the effects of the Breakthrough to Literacy reading program and its impact on literacy development with at-risk preschoolers in the Norfolk Public School District in Virginia. Also, the research examined whether or not literacy achievement gains were achieved beyond the school district's summer break. Students were administered the Phonemic Awareness Literacy Screening (PALS) in the fall and spring to measure key phonological and print skills. The

PALS kindergarten assessment was used in the fall to determine if regression of literacy skills occurred over the summer break. Teacher surveys were also distributed to preschool teachers in the study for the purpose of evaluating the efficacy of the BTL program (Flanagan, 2006).

The study was conducted in the 2004-2005 school year using causal-comparative research and a nonrandomized control group design. The experimental group consisted of 12 at-risk four year-old preschool programs (207 students; approximately 16 in each class). Seventy-nine at-risk, preschool classes (1,192 students) from two early childhood centers served as the control group (Flanagan, 2006). Results indicated that the students in the treatment group had a higher increase on the PALS posttest than the control group. Although the mean average was higher, it was not statistically significant. The experimental group had a larger percentage of minority students than the control group. The minority group increased their literacy achievement as reflected in the PALS posttest scores. Prekindergarten students who received the BTL treatment retained literacy achievement beyond the summer months than those in the control group. The research also showed that over 40% of the preschool students in both the experimental and control groups showed a loss of literacy achievement skills over the summer break (Flanagan, 2006).

The strength of this study consisted of its large sample size, especially with minority students. The experimental group had 94.6 % African-American and 2.7% White students while the control group had 68.7% African-American and 17.6 % White students. Also, the study included students with disabilities who were enrolled in the inclusion prekindergarten programs as well as English as a Second Language (ESL)

students. As noted by the researcher, one limitation of the study was that the experimental group consisted of students at an Early Childhood Center while the control groups were students at elementary schools which promoted rigorous academic achievement. This may have influenced the fact that the differences between groups, although higher for the experimental group, were not statistically significant (Flanagan, 2006).

As shown in Figure 3, the BTL conceptual framework, curriculum, instructional practices, and assessment are based on the same predictors of reading achievement as those that emerged from the NRP's conclusions.

National Reading Panel	Similarities	Breakthrough to Literacy
Alphabetics/Phonemic Awareness	Letter/Sound Recognition	Interactive Computer Software which focus on letter sound recognition
Fluency	Fluency	Daily Story Reading – Students read stories daily for fluency practice
Comprehension	Comprehension	-Teachers and parents ask students comprehension questions on stories -Take Me Home Books/ Materials
Teacher Education and Reading Instruction	Teacher Education	Staff Development
Computer Technology and Reading Instruction	Integration of Technology/Reading	BTL Integrative Software

Figure 3. NRP and BTL Comparison Matrix

The conceptual framework of the BTL program incorporates many of the facets of NRP's best practices such as the emphasis on meeting all children's learning styles (McGraw-Hill Education, 2002). Computer enhanced reading programs have had promising results in increasing reading outcomes for African American students.

Although computer enhanced reading programs have shown promising results for African American males, an examination of more comprehensive reading programs that include a strong parent and community involvement piece is needed.

Summary of the Research

The reviewed research highlighted the importance of computer enhanced reading programs and how these programs could contribute to improving reading outcomes of African American male students. The research examined the following: achievement gaps in African American males; components of effective reading programs; reading programs and African American students; the BTL program; and studies on the BTL program.

National studies, such as the NRP, clearly emphasized the importance of utilizing computer technology for reading instruction (NRP, 2000). The study showed that in addition to utilizing computer technology in reading instruction, other approaches are needed such as: systematic phonics instruction, vocabulary building, and support from teachers, peers, and parents. One of the conclusions of the NRP is that more continuous research is needed in the areas of Internet instruction and interactive computer software as it relates to reading outcomes (NRP, 2000).

The findings from various computer enhanced reading programs showed improvement in reading and writing development in students with low social-economic status (SES) (Carver, 1994; Casey, 2001). Commonalities among both computer enhanced reading programs emphasized the importance of teacher support and training in order to increase reading outcomes. In addition, findings of both studies stressed the

importance of using the computer as a problem-solving tool for children's literacy development (Carver, 1994; Casey, 2001).

Results have shown that a holistic approach involving students, parents, and community stakeholders is needed to improve reading outcomes in African American males. The Street Academy and the Four Block reading programs indicated the need for student mentoring as well as staff development. The findings from the studies also stressed the importance of teacher commitment and ownership as necessary ingredients for reading program success. The need for administrative support was clearly defined in both studies (Diamond & Onwuegbuzie, 2000; Vanderhaar & Munoz, 2006).

The BTL program research findings showed a link between positive reading outcomes and urban learners. Studies from both Pulaski and Norfolk Public Schools highlight the success of the BTL program in improving reading outcomes for at-risk learners. In the Pulaski study, the BTL program was aligned with their communication skills curriculum and had a strong parental involvement component (Pulaski County School's Breakthrough to Literacy PAR Assessment Results 2002-2003 Website, 2008). Flanagan (2006) stressed the importance of further studies as it relates to retention of literacy acquisition skills in at-risk preschoolers over the summer break.

The research from Gardner (2006) and Brown (2001) showed that the need for teachers to incorporate brain-based research and how it relates to reading instruction is essential. The common theme in Brown's research was that computers can be used to develop higher level thinking skills, enhance cognitive abilities, and improve linguistic skills. Finally, Gardner found that teachers should structure materials and lessons in a way that engages most or all of the intelligences (Gardner, 2006).

While each of these studies looked at the effects of reading programs in improving scores, there is no specific research on their success for African American males when the programs are implemented with fidelity. This gap in the literature suggests further research is needed.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

Introduction

This proposed study was developed to examine the BTL program as it relates to reading outcomes in African American males as compared to other racial/ethnic groups and gender in grade one. While both groups used the BTL program during kindergarten, only one of the groups used the BTL program in grade one. That group, for the purpose of this study, is the treatment group. The group who did not use the BTL program in grade one is the control group. African American males in the elementary grades were chosen because this population was more likely to be at-risk of developing low self-esteem, significant reading deficits, and behavioral difficulties. Also, these students are more likely to drop out of school (Hart, 2006).

Research Questions

The overarching research question is: What is the difference between the use of the BTL program and the reading outcomes of African American males and other racial/ethnic groups and gender in grade one?

Research Question One

Phonological Awareness Literacy Screening (PALS)

Question 1: What is the difference between the use of the BTL program and reading outcomes of African American males and other racial/ethnic groups and gender in grade one with respect to growth on the PALS assessment?

1A: Is there a statistically significant difference between the treatment and control groups with respect to growth on the PALS assessment?

1B: Is there a statistically significant difference between race/ethnic groups (White or African American) with respect to growth on the PALS assessment?

1C: Is there a statistically significant difference between gender with respect to growth on the PALS assessment?

1D: Is there a significant interaction between treatment and control groups and race/ethnic groups (White or African American) with respect to growth on the PALS assessment?

1E: Is there a significant interaction between race/ethnic groups (White or African American) and gender with respect to growth on the PALS assessment?

1F: Is there a significant interaction between treatment and control groups and gender with respect to growth on the PALS assessment?

Research Question Two

Developmental Reading Assessment (DRA)

Question 2: What is the difference between the use of the BTL program and reading outcomes of African American males as compared to racial/ethnic groups and gender in grade one with respect to growth on the DRA?

2A: Is there a statistically significant difference between the treatment and control groups with respect to growth on the DRA?

2B: Is there a statistically significant difference between race/ethnic groups (White or African American) with respect to growth on the DRA?

2C: Is there a statistically significant difference between gender with respect to growth on the DRA?

2D: Is there a significant interaction between treatment and control groups and race/ethnic groups (White or African American) with respect to growth on the DRA?

2E: Is there a significant interaction between race/ethnic groups (White or African American) and gender with respect to growth on the DRA?

2F: Is there a significant interaction between treatment and control groups and gender with respect to growth on the DRA?

Research Question Three

Teacher Perceptions

Question 3: What are teacher perceptions about the utility and effectiveness of the BTL's reading program as it relates to use with their first grade students?

3A: How do teachers rate the individual components of the BTL program?

3B: How do teachers rate the overall value of the BTL program?

The research on computer enhanced reading programs is very limited as it relates to instructing elementary African American male students. This study contributes to the knowledge base regarding the effectiveness of the BTL program in an urban school setting. The study is useful to administrators, educators, and parents who are investigating what reading programs might be more productive in changing reading outcomes. Through this research, educational decisions can be made regarding ways to close the achievement gap in reading for African American males.

Research Design

Quantitative data were utilized in this comparative study. While both groups used the BTL program during kindergarten, only one of the groups used the BTL program in grade one. That group, for the purpose of this study, is the treatment group. The group

that did not use the BTL program in grade one is the control group. These data were analyzed to determine if there were gains in reading outcomes among racial/ethnic groups and gender. Also, data were taken from teacher surveys to determine their perceptions of the BTL's program effectiveness. Only teachers from the treatment group were administered the surveys.

Population

The population for this study was first grade students in four elementary schools within an urban school district in Southeastern Virginia during the 2007-2008 school year. The district consists of thirty-five elementary schools and is the largest urban school division in the Commonwealth of Virginia. The district is also racially and economically diverse and has approximately 53 American Indians, 852 Asians, 22,432 African Americans, 1,362 Hispanics, 8,316 Whites, and 2,109 students whose ethnicity was unspecified based on a report entitled Virginia Department of Education September 30, 2007 Student Membership by Division and Race (Virginia Department of Education Website, 2008).

In selecting the student population, the student non-equivalent group design was used. The four elementary schools were selected because two of them have students who utilized the BTL program in kindergarten and first grade and two of them had students who utilized the BTL program in kindergarten only. Three out of four schools had reasonably similar demographics related to ethnicity and socio-economic status (SES). The two schools that received the BTL treatment in kindergarten and first grade are Title I schools. The two schools that received the BTL treatment in kindergarten only are non-Title I schools. All schools used the school division's reading curriculum. The two non-

Title I schools did not offer any additional reading intervention beyond the current reading curriculum.

At the time of this study, the school division's current reading curriculum consists of both whole and small group instruction. Whole-group instruction consists of shared reading, oral language development, and mini lessons. The whole-group instruction sessions lasts for up to 45 minutes per day. Direct instruction consists of using big books and adopted basal text in the following areas: building background knowledge; phonological awareness and letter/sound knowledge; concepts of print and text structure; comprehension strategies and skills; story elements; word study using word wall; and developing word recognition skills. Small-group instruction consists of the following: three teacher-directed flexible guided reading groups; direct Standards of Learning (SOL) based instruction using flexible, literacy extension centers; and reinforcement learning activities (Tavernier, 2005).

The first grade students whose scores were excluded from the study are: (1) Students who transferred from another local school system or state during the first grade (2) Students with less than a 90% attendance rate from October through May of the school year (3) Those students who had been retained in kindergarten and/or first grade and (4) Those students who had missing PALS and DRA scores.

To control for the variables of attendance, transfer students, and students who were retained in schools A through D, the school division's database called Star-Base was utilized to review data for the 2006-2008. The PALS website was used to obtain which students had fall and spring scores. The school division's data warehouse was utilized to determine which students were administered the DRA in the fall and spring.

As shown in Table 1, the proposed population for this research project consisted of first graders in all target schools. This study targeted four urban elementary schools from the same district. While the socio-economic status (SES) is reasonably similar in three out of four schools, one group, schools A and B are Title I schools while the other schools, C and D are non-Title I schools. However, no closer matches could be identified in the district. The four selected schools were located in close proximity and in similar neighborhoods. Schools A and B used the BTL program in kindergarten (2006-2007) and grade one (2007-2008), schools C and D used the BTL program in kindergarten (2006-2007) only.

In schools A and B, African American males and females as well as other racial/ethnic groups received the BTL treatment in both kindergarten (2006-2007) and grade one (2007-2008). In schools C and D, African American males and females, as well as, other racial/ethnic groups, received the BTL treatment in kindergarten (2006-2007) only. Table 1 also gives the percentage of free and reduced lunches in all four schools.

Instrument / Data Collection

The research questions in this study were examined by survey methodology, utilizing inferential statistics, and ANOVA. The Phonological Awareness Literacy Screening (PALS) and the Developmental Reading Assessment (DRA) pre and posttest results in grade one were used. Also, the Children's Software Evaluation Instrument Survey was used to obtain teacher input from the treatment schools on the utility and effectiveness of the BTL program (Children's Software Review, 2008). These data were currently collected within the school division.

The PALS assessment measures young children's knowledge of important literacy fundamentals including phonological awareness, alphabet knowledge, knowledge of letter sounds, spelling, concept of word, word recognition in isolation, and oral reading (University of Virginia Website Outreach Virginia Database Program Details, 2008).

The major purpose of PALS is to identify those students who are below grade-level expectations. The PALS assessment has been piloted and field tested over several years to determine the following: inter-rater reliability, test-retest reliability, content validity, construct validity, criterion-related validity, and concurrent validity. After extensive testing was complete, the correlation coefficient was positive ($r=.936$ to $r=.997$) (Invernizzi, Meier & Juel, 2007). If first grade students score below the PALS fall benchmark of 39 in the given school year, they receive additional literacy instruction provided by literacy teachers. In order to achieve a proficient score on the PALS, first grade students must score a 35 on the spring posttest. Literacy teachers are trained to provide additional corrective instruction in the area of reading. Table 2 indicates the fall and spring benchmarks for PALS assessments. The kindergarten benchmark for the fall is set at 28 which is the minimal competence level expected of students entering kindergarten (University of Virginia Website Outreach Virginia Database Program Details, 2008). The first grade benchmark decreases from fall to spring because the letter sounds task is not included in the spring-summed score (University of Virginia Website Outreach Virginia Database Program Details, 2008).

Table 1.

Schools A, B, C, and D – Population Demographics and SES 2007 – 2008

SCHOOL A - POPULATION DEMOGRAPHICS AND SES								
2007-2008								
BM	WM	OM	BF	WF	OF	SWD	ESL	SES
20	12	6	13	10	4	7	0	61.61%
30.7%	18.4%	9.2%	20.0%	15.3%	6.1%	10.7%	0	
SCHOOL B - POPULATION DEMOGRAPHICS AND SES								
2007-2008								
BM	WM	OM	BF	WF	OF	SWD	ESL	SES
24	9	3	26	8	5	10	0	60.49%
32.0%	12.0%	4.0%	34.6%	10.6%	6.6%	13.3%	0	
SCHOOL C - POPULATION DEMOGRAPHICS AND SES								
2007-2008								
BM	WM	OM	BF	WF	OF	SWD	ESL	SES
15	32	9	20	18	12	15	2	52.85%
13.7%	29.3%	8.2%	18.3	16.5	11.0%	13.7%	1.8%	
SCHOOL D - POPULATION DEMOGRAPHICS AND SES								
2007-2008								
BM	WM	OM	BF	WF	OF	SWD	ESL	SES
10	22	3	7	19	4	6	4	42.66%
14.9%	32.8%	4.4%	10.4%	28.3%	5.9%	8.9%	5.9%	
Key: BM = Black Male			W = White Male			OM = Other Male		
OF = Other Female			BF = Black Female			WF = White Female		
SWD = Students w/Disabilities			ESL = English as Second Language					
SES = Social Economics Status (Percentage of Students Receiving Free or Reduced Price Lunches)								

The Developmental Reading Assessment (DRA) was utilized to determine student’s fluency/comprehension skills and instructional reading level. The DRA can be used on an annual, semi-annual, or quarterly basis to document change over time in each student’s reading level. It allows teachers to look forward and plan for future instruction. The DRA has been field tested nationally over several years to determine its reliability and validity. The overall test has been examined for the following: test-retest reliability, scoring reliability, content validity, and criterion-related validity. The overall correlation coefficient for grade one was positive ($r=.92$) (Pearson Learning Group Website, 2009).

Table 3 indicates the levels of proficiency that students need to attain in kindergarten and grade one during the school year. The DRA enables primary teachers to systematically observe, record, and evaluate change in a student’s reading performance. Finally, teachers can use the information to plan for and teach the skills each student needs to learn next (Beaver, 2001).

Table 2.

PALS Benchmarks

PALS Benchmarks		
Grade	Fall	Spring
Kindergarten	28	81
1 st grade*	39	35
2 nd grade	35	54
3 rd grade	54	65

The research questions in this study were examined utilizing quantitative data. Data gathered from the Phonological Awareness Literacy Screening (PALS) and the Developmental Assessment of Reading (DRA) were compared for students who received Table 3.

DRA Proficiency Levels

DRA Proficiency Levels			
Kindergarten End of the Year		1 st Grade End of the Year	
Fall	May/June	Fall	May/June
Not Assessed	Reading Levels 1-2	Reading Levels 3-6 at 94% Accuracy or Above With Adequate Understanding	Reading Levels 16-18 at 94% Accuracy or Above With Adequate Understanding

the BTL treatment in kindergarten (2006-2007) and grade one (2007-2008) to those schools who received BTL in kindergarten (2006-2007) only.

To determine whether or not there was a strong comparison between the PALS and DRA assessments a bivariate analysis was run to find the correlation coefficient. As shown in Table 4, the spring PALS and DRA raw data were compared and the correlation coefficient was moderately positive ($r=.521$). Although the analysis showed a moderate correlation between PALS and DRA, both assessments are similar and different in several areas. Both PALS and DRA have oral reading and phonological awareness components. The DRA does not include alphabet knowledge, knowledge of letter sounds, spelling, and concept of word which are all found on the PALS assessment. The local school division utilizes both the PALS and DRA assessments to determine appropriate reading levels of students.

Table 4.

PALS and DRA Correlations

		SPRING PALS	SPRING DRA
SPRING PALS	Pearson Correlation	1	.521(**)
	Sig. (2-tailed)		.000
	N	165	165
SPRING DRA	Pearson Correlation	.521(**)	1
	Sig. (2-tailed)	.000	
	N	165	165

Note: ** Correlation is significant at the 0.01 level (2-tailed).

First grade teachers who implemented the BTL program in both kindergarten (2006-2007) and first grade (2007-2008) were given the Children’s Software Evaluation Instrument (Appendix A). This survey rated teacher’s perception on the BTL program by rating the software on: student’s ease of use; safeguards against tampering from students;

educational value; entertainment aspects of the program; and value. These data were collected within the school division.

The collection of data in this study was an extensive process. The Southeastern Virginia school division contained 36 elementary schools with various populations. Permission was obtained from the local school division's Research and Testing Department to conduct the study. In addition, an online Institutional Review Board (IRB) application was completed to ensure the protection of human subjects in research. The application was submitted to the IRB committee located at Virginia Polytechnic Institute and State University, Blacksburg, Virginia, and approved.

In order to find a treatment and control group, with similar population of African Americans and social-economic status (SES), the school division's database called Star-Base was used. Star-Base contains information such as: student's race, gender, disability status, grade, attendance, and age. Also, the school division database called Ultimate Data System and the resources of the school division's Research and Testing Department were utilized to find student information on: transfer status, PALS and DRA scores, and retention status.

Out of the 36 elementary schools, only four schools were identified as acceptable control and treatment groups based on their African American population, close proximity, and social-economic status. One out of the four schools had less similar SES, but it was the closest of the possible groups. Once these schools were identified, the school's four principals were called to give them the purpose of the study and to receive their input as well. All the principals were cooperative with the study and agreed to make themselves as well as their staff members available to provide data and input. Teachers

who implemented the BTL program in first grade during the 2007-2008 school year were identified by their principals and were administered the Children's Software Evaluation Instrument (Children's Software Review, 2008). This survey gave information regarding teachers' perceptions on the effectiveness of the BTL program.

The data were received from the school's division Star-Base Database, Ultimate Data System, and the four school principals. First grade students who received the BTL program in kindergarten (2006-2007) and first grade (2007-2008) were identified as well as those students who received the BTL program in kindergarten (2006-2007) only.

When examining the population, students were exempted from the study for the following reasons: if they transferred from another local school system or state during first grade; students with less than 90% attendance rate from October through May of the school year 2007-2008; students who had been retained in either kindergarten or first grade; and those students with missing PALS and DRA scores.

To ensure confidentiality, student information was coded with a number by race, gender, disability status, retention, transfer, and English as a Second Language (ESL) status. Scores from the PALS assessment were obtained on pre and posttest information regarding these areas: Summed Score and Letter/Sound Identification.

The school principals in the treatment group submitted names of first grade teachers who taught the BTL program in first grade during the 2007 – 2008 school year. These teachers were selected for the survey analysis regarding their perceptions of the BTL program because they administered the BTL program in first grade; whereas, the control group did not. Out of the eight teachers identified for the study, one of the teachers moved within the school division and one moved out of state. Permission was

obtained from the publisher of the Children's Software Evaluation Instrument for it to be used for the study. The Children's Software Evaluation Instrument was mailed to one teacher who had moved. After receiving the principals' permission, the teachers were selected for the study and informed by their principals regarding the purpose and application of the study and the study's timelines. Teachers were given incentives, such as, office supplies to complete the surveys in a timely fashion.

Data Analysis

The research included quantitative components to measure reading outcomes of African American males and other racial/ethnic groups and genders and teacher perceptions. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) software. Frequency, mean, and standard deviation were calculated for each variable. To determine if there were statistically significant differences in the reading outcomes of the African American males as well as other racial/ethnic groups and gender who received the BTL treatment in kindergarten and grade one as compared to African American males, other racial/ethnic groups, and genders who received the treatment in kindergarten only, inferential statistics were used. To determine if there was any difference between the treatment and control groups, ANOVAs were used. The PALS data were analyzed with and without the letter sound component through pre and posttest to determine if the letter sound component impacted the spelling portion on the PALS assessment. Data gathered from the PALS and DRA was disaggregated by gender and race. PALS and DRA scores were compared for students who received the BTL program in kindergarten (2006-2007) and grade one (2007-2008) and those schools who received BTL in kindergarten (2006-2007) only.

Teacher surveys were used to answer the final question, “What are teacher perceptions about the utility and the effectiveness of their school’s reading program as it relates to use with their first grade students?” Teachers’ responses from the BTL treatment group were analyzed using the Children’s Software Evaluation Instrument (Children's Software Review, 2008). Teachers’ responses were examined using a 5-point Likert scale in the following categories: Childproof; Ease of Use; Educational; Entertaining; Design Feature; and Overall Value.

This study incorporated survey methodology to determine the utility of each program on first grade students in the year 2007-2008 from a teacher’s perspective. Teachers were given a Children’s Software Evaluation Instrument (Appendix A). This survey uses a Likert-style format in which teachers can rate each program on: student’s ease of use; safeguards against tampering from students; educational value; entertainment aspects of the program; design features; and value. Eight first grade teachers who implemented the BTL program in the school year 2007-2008 were given the survey to complete. This instrument was used in the Flanagan study to gather teacher perceptions on the effectiveness of the BTL program on prekindergarten students (Flanagan, 2006). Approval to administer the teacher survey using the Children’s Software Evaluation Instrument was obtained from Virginia Polytechnic Institute and State University as well as the school division’s Research and Testing Department (Children's Software Review, 2008).

Summary

Reading programs and outcomes for students, especially African American males, continue to need further exploration. As indicated by the NAEP study, there are still significant achievement gaps between African American students and children from other racial and ethnic groups (Snyder & Tan, 2005). Studies continue to show that African American males perform significantly lower on reading assessments and as a result are more likely to experience behavior problems and school failure (Diamond & Onwuegbuzie, 2000). Further research is needed to examine why African American males do not acquire essential literacy skills by grade three. Additional research is needed to determine whether or not computer enhanced reading programs increase reading outcomes of African American males. Educators and administrators should have the BTL program results available to them in order to make informed decisions. This researcher conducted this study to explore the effectiveness of the BTL program on reading outcomes for African American males and other ethnic/racial groups and gender who received the BTL treatment in kindergarten and grade one as compared to African American males, other racial/ethnic groups and gender in grade one who received the BTL treatment in kindergarten only. Input from teacher surveys was analyzed to determine the teacher perceptions of the BTL program in first grade.

CHAPTER IV

DATA ANALYSIS AND RESULTS

Introduction

This chapter gives an analysis of the research data obtained for this study. The purpose of the study was to compare the impact of computer enhanced reading programs on first grade African American males in an urban school district in Southeastern Virginia. The treatment group selected for this study received the Breakthrough to Literacy (BTL) program in both kindergarten (2006-2007) and first grade (2007-2008). The control group received the BTL program in kindergarten only in the school year 2006-2007. The process of obtaining data was challenging because out of the 36 elementary schools who implemented the BTL program, only a limited number of schools with similar demographics and make up utilized the BTL program in both kindergarten (2006-2007) and first grade (2007-2008). Also, the challenge of obtaining two control groups with similar African American population and Social Economic Status (SES) was difficult. There were many schools that implemented the BTL program in both kindergarten (2006-2007) and first grade (2007-2008) but did not have similar racial/ethnic and social economic status (SES).

The Laboratory for Interdisciplinary Statistical Analysis (LISA) statistical analysts at Virginia Polytechnic Institute and State University were very helpful in providing consultation to analyze the research data. After consultation with the analysts, the researcher decided that students from both the treatment and control groups would be disaggregated by the following criteria: race/ethnicity and gender. Through consultation with the analysts and a review of the research questions, inferential statistics, ANOVA,

and survey methodology were selected as the most appropriate statistical procedures to measure the data for this study.

Demographic Statistics

This study involved the analysis of the scores of one hundred and ninety first grade students. The treatment group received the BTL program in kindergarten (2006-2007) and first grade (2007-2008). The control group received the BTL program in kindergarten only in the school year 2006-2007. Table 5 provides a description of the participants. At the time of the study, the total population was 190 first grade students of which 49% were male and 51% were female.

The racial/ethnic composition of the treatment group was as follows: 24% White, 63% African American, and 13% Other. Students with Disabilities (SWD) and English as a Second Language (ESL) were excluded from the study because the populations were too small. Sixty-one percent of the students in the treatment group had low socioeconomic status (SES). The racial/ethnic composition of the control group schools was as follows: 52% White, 35% African American, and 13% Other. Forty-eight percent of the control group students whose scores were analyzed had low SES.

After running the raw data on SPSS and consulting with statisticians at the LISA Lab, it was determined that the variability between subgroups was significant because the SWD, ESL and other male and female populations were too small. Therefore, these subgroups were deleted because not enough information would be obtained to determine

Table 5.

Demographic Description of 2007 – 2008 Sample

Gender and Race	Treatment Group	Control Group
Males	50	43
Females	54	43
African American Males	33	13
African American Females	32	17
White Males	11	24
White Females	14	21
Other Males	6	6
Other Females	8	5

whether or not the BTL program had any impact on reading outcomes. Table 6 shows the final population for this study after controlling for the subgroups. The population for the treatment group was n = 90 and the control group was n = 75. The total number of participants in the study was 165.

Table 6.

Controlled Variables With Deleted Students

Sch	Start Pop	Retained	Attend.	Transfer	SWD ESL Other	Students/w Missing PALS Data	Students/w Missing DRA Data	Final Pop.
A	N = 92	0	16	12	28	1	11	N =
B	N = 92	2	16	4		2	2	90
C	N = 109	0	4	26	24	24	5	N =
D	N = 67	0	8	5		4	1	75

Results of the Study

The research questions in this study were used to examine the relationship with the Breakthrough to Literacy (BTL) program and reading outcomes as it relates to race/ethnicity and gender for students in grade one during the 2007-2008 school year. The organization of the results was based on the three research questions as outlined in this paper.

Research Question One

Descriptive and inferential statistics from PALS assessment were used to determine growth among racial/ethnic groups and genders. These data were given to determine whether there was a positive or negative difference as well as significant interaction between the treatment and control groups. To look at differences, a 2 x 2 x 2 (Treatment/Condition X Race/Ethnicity X Gender) ANOVA was used. PALS differences on spring posttest between the treatment and control groups as it related in race/ethnicity, and gender were examined.

Phonological Awareness Literacy Screening (PALS) Results

Table 7 describes the mean growth between race/ethnicity and gender for PALS pretest and posttests. When comparing both treatment and control groups, the treatment group had a higher mean gain (M=19.38, SD=8.196) as compared to the control group (M=16.48, SD= 10.013) with a mean difference of 2.9. The starting mean (M=30.04) for the BTL treatment group was lower than the starting mean (M= 35.58) of the control group with a mean difference of 5.54.

Table 7.

PALS Mean Growth Between Pretest and Posttest Inferential Statistics as a Function of Treatment Condition as a Whole

Source	PALS Growth				
	Population	Pretest	Posttest	Growth	Standard Deviation
	<u>n</u>	<u>M</u>	<u>M</u>	<u>GTH</u>	<u>SD</u>
BTL Treatment	90	30.04	49.42	19.38	8.196
Group					
Control Group	75	35.58	52.06	16.48	10.013

When examining the BTL treatment group, the percentage of students who did not meet the benchmark in the spring decreased from 17.78% to 14.44% as shown in Table 8. The control group showed an increase in the number of students between pre and posttest who did not meet the benchmark in the spring from 9.33% to 12.00%.

Table 8.

PALS Fall and Spring Benchmark Percentages - 2007-2008 School Year

Source	FALL PALS BENCHMARKS			SPRING PALS BENCHMARKS		
	<u>N</u>	<u>Made Benchmark</u>	<u>Did Not Meet Benchmark</u>	<u>N</u>	<u>Made Benchmark</u>	<u>Did Not Meet Benchmark</u>
BTL Treatment	90	82.22%	17.78%	90	85.56%	14.44%
Group						
Control Group	75	90.67%	9.33%	75	88.00%	12.00%

Inferential statistics were utilized in Table 9 to describe PALS growth between pre and posttest as a function of treatment condition, race/ethnicity, and gender. Table 10 examines PALS growth by race/ethnicity, and gender. When examining PALS differences, White males in the treatment group had a positive mean growth ($M=17.36$, $SD=6.439$) as compared to White males in the control group ($M=14.75$, $SD=8.548$) with a mean difference of 2.61. There were only slight differences between African American males in the treatment group ($M=18.12$, $SD=8.026$) as compared to African American males in the control group ($M=18.46$, $SD=12.204$). White females in the treatment group had positive mean growth of 2.57 ($M=20.57$, $SD=7.314$) as compared to White females in the control group ($M=18.00$, $SD=11.520$). Finally, African American females in the treatment group had a 5.31 mean growth ($M=20.84$, $SD=9.197$) as compared to the African American females in the control group ($M=15.53$, $SD=8.330$).

To determine whether there was an overall significant PALS difference with the BTL treatment ($p < .05$) between race/ethnicity and gender, a 3-Way ANOVA was used. According to Table 10, the overall treatment was not significant ($p = .098$). The BTL treatment group did not show significance on PALS difference with respect to treatment condition, race/ethnicity, and gender ($p = .352$).

Table 9.

PALS Growth Between Pretest and Posttest Inferential Statistics as a Function of Treatment Condition, Race/Ethnicity, and Gender

Source	PALS Growth		
	<u>n</u>	<u>M</u>	<u>SD</u>
BTL Treatment Group			
White Males	11	17.36	6.439
AA Males	33	18.12	8.026
White Females	14	20.57	7.314
AA Females	32	20.84	9.197
Control Group			
White Males	24	14.75	8.548
AA Males	13	18.46	12.204
White Females	21	18.00	11.520
AA Females	17	15.53	8.330

Note: AA = African American

Table 10.

3-Way ANOVA of PALS Differences Between Race/Ethnicity, Gender, and BTL

Treatment

<u>Source</u>	<u>df</u>	<u>Ss</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Treatment Condition (TC)	1	229.899	229.899	2.771	.098
Race/Ethnicity (R)	1	11.487	11.487	.138	.710
Gender (G)	1	86.964	86.964	1.048	.308
TC X R	1	.099	.099	.001	.972
TC X G	1	70.167	70.167	.846	.359
R x G	1	99.024	99.024	1.194	.276
TC x R x G	1	72.294	72.294	.871	.352
Error (Within)	157	13025.674	82.966		
Total	165	67562.000			

Note. * $p < .05$.

Research Question Two

Descriptive and inferential statistics from DRA raw scores were used to determine growth among racial/ethnic groups and gender. These data were given to determine whether there was a positive or negative difference as well as significant interaction between the treatment and control groups. To look at differences, a 2 x 2 x 2 (Treatment/Condition X Race/Ethnicity X Gender) ANOVA was utilized. DRA differences on

spring posttest between the treatment and control groups as it related in race/ethnicity, and gender were analyzed.

Developmental Reading Assessment (DRA) Results

Table 11 describes the mean growth between race/ethnicity and gender for DRA pretest and posttests. When comparing the BTL treatment group and the control group, the BTL treatment group had more growth (M= 13.73, SD= 6.377) as compared to the control group (M= 10.57, SD= 4.731). The starting mean (M=6.99) for the BTL treatment group was lower than the starting mean (M= 8.49) of the control group with a mean difference of 1.5.

As shown in Table 12, the percentage of students in the BTL treatment group achieving and exceeding the DRA benchmark increased from 73.33% (pretest) to 74.44% (posttest). The control group showed no gain in the number of students achieving or exceeding the DRA benchmarks from pretest to posttest.

Table 11.

DRA Mean Growth Between Pretest and Posttest Inferential Statistics as a Function of Treatment Condition as a Whole

Source	DRA Growth				
	Population <u>n</u>	Pretest <u>M</u>	Posttest <u>M</u>	Growth <u>GTH</u>	Standard Deviation <u>SD</u>
BTL Treatment Group	90	6.99	20.72	13.73	6.377
Control Group	75	8.49	19.06	10.57	4.731

Table 12.

DRA Fall and Spring Benchmark Percentages - 2007-2008 School Year

Source	DRA BENCHMARKS			SPRING DRA BENCHMARKS		
	<u>N</u>	<u>Made Benchmark</u>	<u>Did Not Meet Benchmark</u>	<u>N</u>	<u>Made Benchmark</u>	<u>Did Not Meet Benchmark</u>
BTL Treatment Group	90	73.33%	26.67%	90	74.44%	25.56%
Control Group	75	84.00%	16.00%	75	84.00%	16.00%

Table 13 examines interactions on DRA outcomes by race/ethnicity, and gender. White males in the treatment group had a 2.18 mean growth (M=13.18, SD=6.646) as compared to the White males in the control group (M=11.00, SD=3.022). African American males in the treatment group showed a mean growth of 2.15 (M=12.00, SD=5.414) as compared to African American males in the control group (M=9.85, SD=6.78). It is important to note that the treatment group had a larger population (n=33) than the control group (n=13). White females (M=16.00, SD=8.849) had a 6.05 mean growth than White females in the control group (M=9.95, SD=5.229). Finally, African American females in the treatment group (M=14.72, SD=5.726) had a 3.43 mean growth as compared to African American females in the control group (M=11.29, SD=4.483).

Using the 3-Way ANOVA of DRA differences with respect to the treatment condition, the BTL treatment had an overall significant effect (p = .000) as shown in Table 14. The BTL treatment group did not show significance differences on DRA with respect to treatment condition, race/ethnicity, and gender (p = .495).

Table 13.

DRA Growth Between Pretest and Posttest Inferential Statistics as a Function of Treatment Condition, Race/Ethnicity, and Gender

Source	DRA Growth (Between Pre and Posttest)		
	<u>n</u>	<u>M</u>	<u>SD</u>
BTL Treatment Group			
White Males	11	13.18	6.646
AA Males	33	12.00	5.414
White Females	14	16.00	8.849
AA Females	32	14.72	5.726
Control Group			
White Males	24	11.00	3.022
AA Males	13	9.85	6.768
White Females	21	9.95	5.229
AA Females	17	11.29	4.483

Note: AA = African American

Table 14.

3-Way ANOVA of DRA Differences Between Race/Ethnicity, Gender, and BTL Treatment

<u>Source</u>	<u>df</u>	<u>Ss</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Treatment Condition (TC)	1	424.702	424.702	13.224	.000*
Race/Ethnicity (R)	1	11.531	11.531	.359	.550
Gender (G)	1	78.524	78.524	2.445	.120
TC X R	1	15.654	15.654	.487	.486
TC X G	1	58.773	58.773	1.830	.178
R x G	1	12.790	12.790	.398	.529
TC x R x G	1	15.001	15.001	.467	.495
Error (Within)	157	5042.279	32.116		
Total	165	30635.000			

Note. * $p < .05$.

Research Question Three

Explanatory results were given to answer Research Question Three, which examined teacher perceptions on the utility and effectiveness of the BTL program on reading outcomes as it related to first grade students. Teachers completed the Children's Software Evaluation Instrument which was divided into the following components: Childproof; Ease of Use; Educational; Entertaining; and Design Feature. Also, teachers rated the overall value of the BTL software (Children's Software Review, 2008).

Teacher Perceptions Results

The Children's Software Evaluation Instrument Survey was distributed to eight teachers who implemented the BTL program in first grade during the 2007 – 2008 school year. On each category, results were converted to a five point scale. To achieve this, the results were divided by the total items answered in the survey to get a percentage. Then the percentage was multiplied by five. This formula gave the overall rating in each category. The survey utilized a Likert-style format with the following ratings: 1=dud, 2=poor, 3=fair, 4=good, and 5=excellent. The ratings in each category as well as the Overall Value category were rounded off once results were received.

In the Ease of Use component of the survey as shown in Appendix B, all teachers gave an overall rating of excellent (5.0) for use of icons in the BTL program. Other areas which achieved excellent ratings were as follows: Children know if they make a mistake (overall rating 5.0); Getting to the first menu is quick and easy (Overall rating 5.0); and graphics makes sense to the intended user (Overall rating 5.0). Reading ability is not a prerequisite to using the BTL program was rated in the fair range (Overall rating 3.0). A majority of the responses were in the fair range (Overall rating of 3.0).

The survey results in Appendix C explored whether or not the BTL program was childproof. All teachers gave an overall rating of excellent (5.0) for children know when they've made a mistake. Files, not intended for children are safe, was rated excellent as well. A fair response (Overall rating of 3.0) included: offers quick, clear, obvious response to a child's action; the child has control over exiting at any time; and when a child holds a key down, only one input is sent to the computer.

The results of teacher's perceptions of the educational component of the survey in Appendix D revealed an overall excellent rating (5.0) on the use of speech. Some excellent responses included: offers a good presentation on one or more content areas and feedback reinforces content (Overall rating 4.0). A dud rating of 1.0 was given for a child's ideas can be incorporated into the program.

The Entertaining portion of the survey was explored in Appendix E. All teachers gave an overall rating of excellent (5.0) for speech and sound are meaningful to children where the program is responsive to a child's actions was given an overall rating of good (4.0). An overall fair response was given for challenge is fluid, or a child can select own level (3.0).

The survey's design feature was also reviewed by teachers in Appendix F. Excellent ratings were given to the following two areas: program keeps a history of the child's use over a period of time and keeps records of child's work (Overall rating 5.0). Some good responses included feedback is customized in some way to the individual child and teacher/parent options are easy to find and use (Overall rating 4.0). A dud response (1.0) was given for a child's ideas can be incorporated into the program.

The final component explored by the teacher survey was the overall value of the BTL program as shown in Appendix G. It explored the cost of the program in relation to what it does and its worth. The overall value was rated good by all the respondents (Overall rating 4.0). The teacher's perception of the BTL program were explored, as noted in Figure 4, and the teachers gave an overall good rating for the following areas Ease of Use; Childproof; Educational; Entertaining; Design Features; and Value.

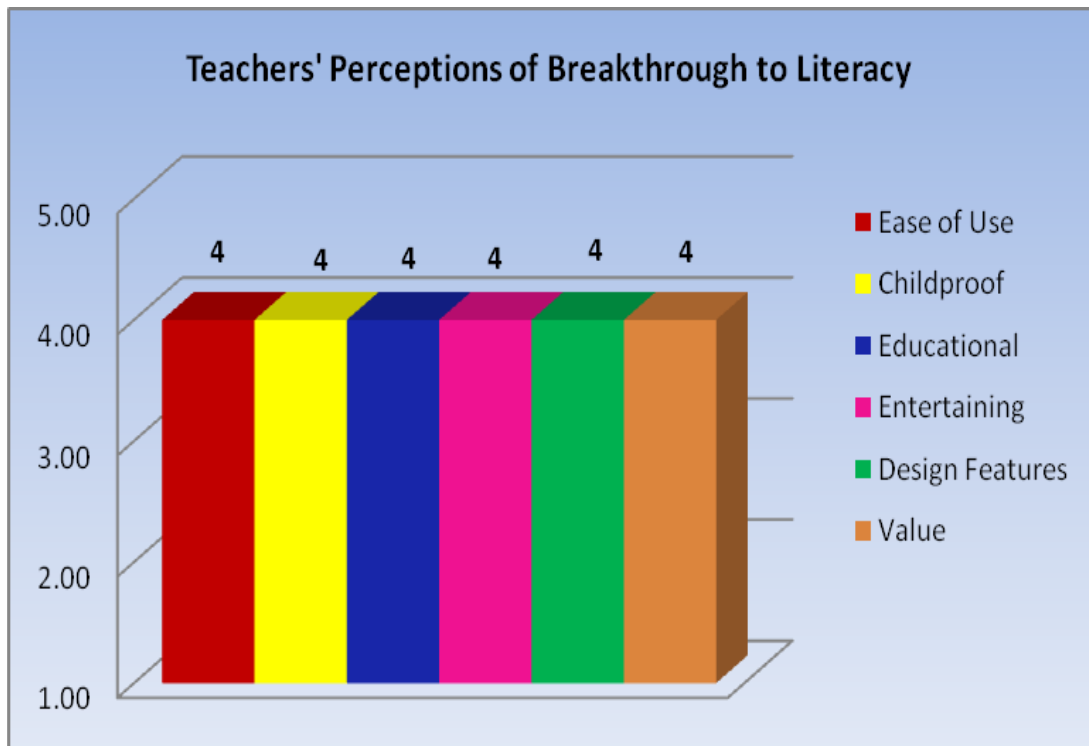


Figure 4. Teachers' Perceptions of Breakthrough to Literacy

Summary

This chapter presented results on reading outcomes of African American males and other racial/ethnic groups and gender as well as teacher perceptions of the BTL program. This study analyzed the effects of the independent variable on race/ethnicity, gender, and treatment on the dependent variable (Summed Spring Scores on both PALS and DRA). ANOVAs revealed statistically significant differences on the DRA with respect to treatment condition. PALS differences between race/ethnicity and gender revealed no significant difference between the treatment group and the control group. Gains in DRA reading outcomes were made in all racial/ethnic groups and gender in the treatment group. According to the results of the Children's Software Evaluation Instrument Survey, teachers' perceptions of the BTL program were overall positive.

CHAPTER V

LIMITATIONS, METHODOLOGY SUMMARY, RESEARCH FINDINGS, IMPLICATIONS, AND FUTURE RESEARCH

This chapter summarizes the research by focusing on the following: acknowledging its limitations; reviewing the research methodology used; reporting its findings; determining its implications; and exploring the need for further research. The purpose of this study was to determine whether or not the African American males who participated in the interactive reading software of the Breakthrough to Literacy (BTL) program in kindergarten (2006-2007) and first grade (2007-2008) increased reading achievement when compared to those African American males and other racial/ethnic groups as well as gender who participated in the BTL program in kindergarten (2006-2007) only. Other studies on computer enhanced reading programs such as e-MINTS and Semi Star (Hager, 2004; Casey, 2001) have shown increases in student reading achievement.

The findings of this study may be beneficial to administrators by helping them to decide which computer enhanced reading programs are effective in increasing reading outcomes in African American males and other racial and ethnic groups. Further, this research adds to the body of research on the effects of computer enhanced reading programs on student achievement, especially African American males. Finally, this research provides strategies for closing the achievement gap among African American males.

Limitations

Although the research showed positive gains for all students, especially African American males, on the Developmental Reading Assessment (DRA), the study was limited due to several factors. These factors are as follows: limited sample size; limited length of study; lack of parent feedback; and limited empirical research on computer based reading programs as it relates to African American males.

The final sample, which included the treatment and control group, was challenging to obtain. Most elementary schools in the school system had only implemented the BTL program in kindergarten. Out of the 36 elementary schools, a limited number were centrally located that used the BTL program in kindergarten and first grade. Although the sample size had similar make-up, the overall size was limited. The make-up, while similar, was not completely comparable.

The research was conducted for only one year. The school system in which the research was conducted continuously revises its database, only data could be obtained for the school year 2007-2008 regarding first grade reading outcomes. Also, data were limited to only two schools that had implemented the BTL program in kindergarten (2006-2007) and first grade (2007-2008) and two schools that implemented the BTL program in kindergarten (2006-2007) only.

Since the BTL program was implemented in the treatment schools in kindergarten (2006-2007), parent feedback on the reading program was difficult to obtain because there was no effective tracking system available. Survey results could only be obtained from the teachers who implemented the BTL program in first grade during the 2007 – 2008 school year.

Finally, through an extensive search on various databases, journals, and books, it was difficult to find an abundance of empirical studies on the use of computer enhanced reading programs. Research on the plight of African American males and the achievement gap was abundant.

Methodology Summary

Non-equivalent design groups were used for the population that consisted of first grade African Americans and other racial/ethnic groups who received the Breakthrough to Literacy (BTL) treatment in kindergarten (2006-2007) and first grade (2007-2008) as compared to those students who received the BTL treatment in kindergarten only during the school year 2006-2007. Two schools (School A and B) with similar racial/ethnic, and socioeconomic backgrounds were chosen to serve as the treatment group and two schools with similar student backgrounds made up the control group (Schools C and D). After controlling for variables such as: transfer students; students from a limited sample size; students with limited data; students who had been retained; and students with less than 90% attendance rate, both the treatment and control groups were formed. The treatment group consisted of 90 students while the control group was 75 students.

The research method utilized consisted of quantitative methodology. The Phonological Awareness Literacy Screening (PALS) and the Developmental Reading Assessment (DRA) were used to measure reading outcomes for first grade African American students and other racial and ethnic groups for the school year 2007-2008. The independent variable included: race/ethnicity, gender, and the BTL treatment. The dependent variable included the spring Summed PALS and DRA scores. Also, to measure teacher perceptions on the utility and effectiveness of the BTL program, the

Children's Software Evaluation Instrument Survey was used (Children's Software Review, 2008). A 2 X 2 X 2 ANOVA was conducted to look at differences in reading outcomes for both PALS and DRA on the spring posttest scores as it related to race/ethnicity and gender with both the treatment and control group. Inferential statistics were also used to determine if there were interactions and comparisons between the independent variable and race/ethnicity as well as gender.

Research Findings

1. Students in the treatment group made higher gains on the PALS test than students in the control group. When examining interactions and comparisons between pre and posttest statistics as a whole, reading outcome gains were shown in the treatment group as compared to the control group. The treatment group made a 19.38 mean gain on the PALS from pre and posttest. The control group made a 16.48 mean gain although the control group had a higher pretest score in the fall (M=35.58) as compared to the treatment group (M=30.04). Another important factor was that the treatment group sample size was larger than the control group sample size, and that resulted in more students making overall gains in the treatment group.
2. The control group showed an increase in the number of students not meeting the PALS benchmark in the spring (Fall benchmark=9.33, Spring benchmark=12.00). The treatment group had a lower percentage of students in the fall who did not meet the PALS benchmark than the control group. An analysis of those students meeting or exceeding the PALS benchmarks was promising for those students in the treatment group. The number of students in the treatment group meeting or exceeding the spring PALS benchmark increased (Pretest=82.22, Posttest=85.56).

3. The BTL treatment had a greater impact on other subgroups than it had on African American males. African American females in the treatment group made the most gains. White males and females in the treatment group also made positive gains.
4. An examination of the PALS differences between race/ethnicity and gender revealed no significant difference between the treatment group and the control group ($p=.352$). This was analyzed by utilizing a 2 X 2 X 2 ANOVA (3-Way) between the independent and dependent variables.
5. There was a larger difference in mean gains of $M = 13.73$ on the DRA summed scores of the treatment group as compared to the gains in the control group (Pretest=8.49, Posttest=19.06, gain-10.57). When examining interactions and comparisons between pre and posttest statistics as a whole, reading outcome gains were shown in the treatment group as compared to the control group.
6. The treatment group showed an increase in the number of students meeting or exceeding the spring DRA benchmark (Pretest=73.33%, Posttest=74.44%). The control group showed no increase in the number of students not meeting the DRA benchmark in the spring (Fall benchmark=84.00%, Spring benchmark=84.00%). An analysis of those students meeting or exceeding the DRA benchmarks was promising for those students in the treatment group. The treatment group had a lower percentage of students in the fall who did not meet the DRA benchmark.
7. All subgroups (race/ethnicity and gender) in the treatment group showed greater gains on the DRA than subgroups in the control group. White males in the treatment group ($M=13.18$) showed a higher mean increase than the control group ($M=11.00$). African American males had a mean increase of 12.00 as compared to the control group of 9.85.

White females showed the largest gains in the treatment group. White females showed a mean gain of 16.00 as compared to White females in the control group ($M=9.95$). African American females showed a mean gain of 14.72 in the treatment group as compared to 11.29 in the control group. An examination of race/ethnicity and gender revealed significant differences in the treatment group as compared to the control group.

8. Significant differences were shown on the DRA with respect to treatment condition ($p=.000$). Race and gender were not significant ($p=.495$). These data were analyzed using a 2 X 2 X 2 ANOVA to look at interactions between the independent and dependent variables.

9. The Children's Software Evaluation Instrument Survey results revealed excellent ratings in the following areas: use of icons on the BTL Program; children know if they make a mistake; getting to the first menu is quick and easy; files not intended for children are safe; graphics make sense to the intended user; use of speech; speech and sound are meaningful to children; program keeps a history of the child's use over a period of time; and keeps records of child's work.

10. The Children's Software Evaluation Instrument Survey indicated that some areas could be improved with the BTL program including: child's ideas can be incorporated into the program; child control over exiting at any time; and a child can select own level.

11. The teachers who completed The Children's Software Evaluation Instrument Survey rated the overall value of the BTL program as good.

Implications

The No Child Left Behind (NCLB) Act reauthorized the Elementary and Secondary Act in January 2002, to target all students so that they reach proficiency in core subject areas, especially reading. The findings of this study have revealed many implications regarding the use of computer enhanced reading programs, specifically the BTL program, to improve reading outcomes of African American males as well as the outcomes of other racial/ethnic groups and gender. These implications are as follows:

1. Divisions that are using the BTL reading program in kindergarten should consider extending its use to at least in kindergarten and first grade. The control group in this study used the BTL program for one year, while the treatment group used it for an additional year. The results of this research demonstrate the effectiveness of extended use in this setting and suggest its effectiveness in other settings.
2. Divisions should consider using the Breakthrough to Literacy (BTL) program to increase reading outcomes for all students, including African American males. In this study, African Americans and other racial/ethnic groups acquired essential literacy skills to improve reading outcomes. This study on the BTL program supports the research from the National Reading Panel (NRP) which clearly states that computer assisted instruction to improve literacy acquisition should be utilized (NRP, 2000).
3. Divisions should consider the use of the BTL program, because it is an effective program for improved reading and it is aligned with the goals of the No Child Left Behind (NCLB) Act. Since all schools are required to follow the NCLB Act and implement research-based reading methods to ensure all students learn to read by grade three, using the BTL program aligns with NCLB (Educational Commission of the States,

2007). The Phonological Awareness Literacy Screening (PALS) is a state-provided screening assessment for Virginia's Early Intervention Reading Initiative (University of Virginia Website Outreach Virginia Database Program Details, 2008). Since students in the BTL treatment group achieved or exceeded the PALS benchmark as compared to the control group, the implications of this research supports the tenets of NCLB in that empirical information was used to show that students achieved benchmarks as required by the local school district.

4. Divisions should consider the use of the BTL program as part of an effort to avoid widening the achievement gap between African American students and other racial/ethnic groups. As shown in this research, African American males can improve reading outcomes when strategies are focusing on their learning styles. Mubenga (2006) asserted that an examination of intelligences as well as learning styles is needed to improve outcomes of African American males. Breakthrough to Literacy includes components that allow students to use various learning styles in the acquisition of literacy skills.

5. Divisions should consider the use of technology as a vehicle for improving reading achievement in African Americans and increasing achievement of all groups. The National Assessment of Education Progress (NAEP) revealed a significant achievement gap among African American males and White students and those African American students continue to lag behind in the areas of decoding and comprehension skills (Snyder & Tan, 2005). The outcome of this study showed that positive gains were made which were similar to findings from other computer enhanced reading programs such as eMINTS (Hager, 2004), Accelerated Reader (Facemire, 2000), and Simi Star (Casey, 2001).

6. Divisions that seek to improve reading outcomes of all groups should consider using the BTL program. The BTL program results are aligned with the National Reading Council (NRC) tenets. These tenets are word recognition/vocabulary, alphabets, and phonemic awareness; skills essential for children to avoid failure in reading (Snow, Burns, & Griffin, 1998). The implications were just as profound for White males, females, and African American females. The findings showed an increase in mean gains for both White male and female students as well as African American females in word recognition/ vocabulary, alphabets, and phonemic awareness.
7. The BTL program showed progress for African American males and other racial/ethnic groups. However, the growth of African American males was not as large as it was for African American females and other groups. Divisions should consider looking at other factors, like parental involvement, that might increase growth for African American males.

Future Research

Future research should be considered in the following areas: longitudinal study on the Breakthrough to Literacy (BTL) program; the BTL program reading achievement among English as a Second Language Students (ESL) and Students with Disabilities (SWD); survey analysis on parent participation with the BTL program; the BTL program and reduction of behavioral problems; and further brain-based research on the BTL program. Each of these areas is discussed in the following paragraphs:

1. More studies are needed to determine how the BTL program impacts reading outcomes of African American males throughout elementary school. Although there have been limited qualitative and quantitative studies on Breakthrough to Literacy

(Flanagan, 2006; Tancredo, 2001), there is a lack of longitudinal data to support the long-term impacts of the BTL program. These studies can also incorporate standardized achievement testing in reading and writing.

2. Additional research on Breakthrough to Literacy, in conjunction with ESL education, can offer assistance to these students in improving reading outcomes. The English as a Second Language (ESL) population is expanding throughout the continental United States. These students come to school already behind in grammar and reading skills.

Forty-two percent of public school students were included in a racial or ethnic population in 2005, an increase from 22 percent of students in 1972. In comparison, White students decreased from 78 to 58 percent (U.S. Department of Education Website, 2009).

3. Further studies can be developed to analyze the correlation between Students with Disabilities (SWD) performance in the BTL program and their reading outcomes. This research study did not have adequate SWD population numbers to use for a valid population sample. Since SWD are included more in general education classrooms, studies can be developed to determine the effectiveness of the BTL program on students with mild to significant disabilities.

4. More research to include parent input should be considered. The take home books are a big part of the BTL's program parent component. Students take home a paper version of the book that was featured that week from the BTL program and can reread it at home. Parents can reinforce what their child has learned that week by reading to their child and by providing extension activities (i.e. dramatizations, word hunts, and spelling words). Breakthrough to Literacy gives parents an opportunity to learn more about the BTL program. Survey analysis can be utilized to determine the attitudes of parents towards

the BTL's program effectiveness. Also, feedback from the surveys can be used to improve the parent component of BTL.

5. Research on the BTL program that targets student behavior, especially African American students and reading proficiency, should be considered. As Kenneth Anderson (2007) indicated, African American males have been found to have the highest suspension rates in school as compared to other minorities. His research showed that as reading achievement increased; suspensions went down for middle school students. Also, African American male suspensions in seventh grade significantly increase their rate of suspension in subsequent grades (Anderson, 2007). African American students can be tracked to determine suspension rates after the BTL program implementation.

6. Further research is needed on learning styles and associated brain-based strategies that are effective in African American males. Research like Gardner (2006) and Hale (1986) have indicated that African American children have specific learning styles. The activities in the BTL program utilize these same styles. Finally, there is a limited amount of information on brain-based strategies to support the learning styles of African American's reading outcomes. These strategies, coupled with brain-based frameworks, can be studied further to determine if there is an increase in reading outcomes in African American males.

7. Future research should look at the impact of parental involvement in the BTL program and resulting growth. There is a parental component built into the BTL program which involves take home books. This area can be examined further to show whether or not the parental component has an effect on student achievement.

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APPENDIX A



How We Rate Interactive Media: About the Ratings, and CTR's Software Evaluation Instrument

Here's the [evaluation instrument](#) that we use to do our full-length reviews (below).

[Ratings Key](#)

[Rating Spread](#)

[The Instrument](#)

If you're looking for an easy to print form to use with test families (especially good for video games, here's the Serious Games Testers Evaluation form, used by the Mediatech foundation. [It is a PDF](#). Please keep in mind that these forms are copyrighted. If you use them, please attribute the source, and don't modify them without a proper reference. If you do use them and have a suggestion, please feel free to contact the author, Warren Buckleitner (warren at childrenssoftware.com).

Read the article:

The six categories help you keep in mind what it takes to make a quality children's software title. This instrument favors software that is [easy to use](#), [child controlled](#), has solid [educational](#) content, is engaging and [fun](#), is designed with features you'd expect to see, and is [worth the money](#).

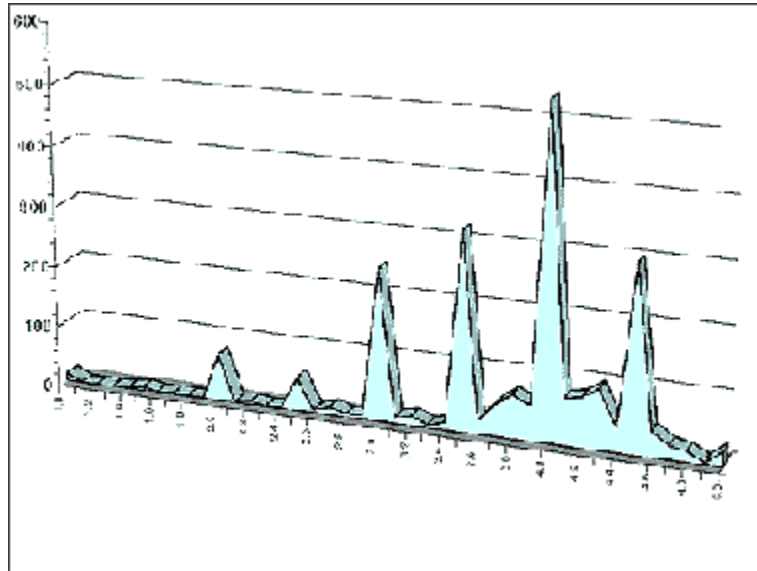
[The State Of Children's Software Evaluation-- Yesterday, Today And In The 21st Century](#)

To be safe, we recommend staying with a rating above 4 stars. CTR editors typically recommend programs that receive a 4.3 star rating or better. You can easily search for these titles in the [Children's Software Finder](#) (just enter 4.2 or greater for the rating search field).

Some Interesting Facts About the Ratings

The ratings are assigned by [educators](#) (CTR reviewers) who have been "trained" on the use of the instrument below. The word trained means that they have achieved inter-rater reliability when rating the same title independently. In cases when two reviewers come up with different ratings, a third reviewer is consulted, along with additional child testing until all raters "can sleep with" the rating. The system is not perfect; but it attempts to be the "least worst" rating system. In assigning ratings, the reviewers consider [feedback](#) from [test schools and families](#).

Key: 1=dud, 2=poor, 3=fair, 4=good, 5=excellent



CTR's Checklist for Quality

To get a program's 1-5 star rating, you need to do some simple math; a process that is automated for reviewers using the instrument, but is defined in detail here, for replication purposes. Add up the points in each category (always = 1 point, some extent = .5 points, never = 0 points, and N.A. = Not Averaged) and then divide by the number of items in the category. This number can then be converted to a 0 to 5 point scale. It is important to match the instrument with the type of software. In other words, you can't rate a program low in "Educational Value" if it is designed primarily as a game. Even though That's where the "N.A." category comes in. Finally, it is very important to consider the date that the review was written (in the Children's Software Finder, all you can do is check the copyright date, which is a searchable field). Remember that a highly rated program in 1993 might be equal to a poorly rated program in the context of current day software and hardware. For a more in-depth discussion of the art and craft of software evaluation, consult the article by CTR editor Warren Buckleitner: [The State Of Children's Software Evaluation-- Yesterday, Today And In The 21st Century.](#)

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Children's Software Evaluation Instrument

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I. Ease of Use (Can a child use it with minimal help?)

- | A | S. E. N. N.A. | S. E. N N.A. |
|----|---------------|--|
| 1 | _____ | Skills needed to operate the program are in range of the child |
| 2 | _____ | Children can use the program independently after the first use |
| 3 | _____ | Accessing key menus is straightforward |
| 4 | _____ | Reading ability is not prerequisite to using the program |
| 5 | _____ | Graphics make sense to the intended user |
| 6 | _____ | Printing routines are simple |
| 7 | _____ | It is easy to get in or out of any activity at any point |
| 8 | _____ | Getting to the first menu is quick and easy |
| 9 | _____ | Controls are responsive to the touch |
| 10 | _____ | Written materials are helpful |
| 11 | _____ | Instructions can be reviewed on the screen, if necessary |
| 12 | _____ | Children know if they make a mistake |
| 13 | _____ | Icons are large and easy to select with a moving cursor |
| 14 | _____ | Installation procedure is straightforward and easy to do |

II. Childproof (Is it designed with "child-reality" in mind?)

- | | | |
|----|-------|---|
| 1 | _____ | Survives the "pound on the keyboard" test |
| 2 | _____ | Offers quick, clear, obvious response to a child's action |
| 3 | _____ | The child has control over the rate of display |
| 4 | _____ | The child has control over exiting at any time |
| 5 | _____ | The child has control over the order of the display |
| 6 | _____ | Title screen sequence is brief or can be bypassed |
| 7 | _____ | When a child holds a key down, only one input is sent to the computer |
| 8 | _____ | Files not intended for children are safe |
| 9 | _____ | Children know when they've made a mistake |
| 10 | _____ | This program would operate smoothly in a home or classroom setting |

III. Educational (What can a child learn from this program?)

- | | | |
|----|-------|---|
| 1 | _____ | Offers a good presentation of one or more content areas |
| 2 | _____ | Graphics do not detract from the program's educational intentions |
| 3 | _____ | Feedback employs meaningful graphic and sound capabilities |
| 4 | _____ | Speech is used |
| 5 | _____ | The presentation is novel with each use |
| 6 | _____ | Good challenge range (this program will grow with the child) |
| 7 | _____ | Feedback reinforces content (embedded reinforcements are used) |
| 8 | _____ | Program elements match direct experiences |
| 9 | _____ | Content is free from gender bias |
| 10 | _____ | Content is free from ethnic bias |
| 11 | _____ | A child's ideas can be incorporated into the program |
| 12 | _____ | The program comes with strategies to extend the learning |
| 13 | _____ | There is a sufficient amount of content |

IV. Entertaining (Is this program fun to use?)

- 1 _____ The program is enjoyable to use
- 2 _____ Graphics are meaningful and enjoyed by children
- 3 _____ This program is appealing to a wide audience
- 4 _____ Children return to this program time after time
- 5 _____ Random generation techniques are employed in the design
- 6 _____ Speech and sounds are meaningful to children
- 7 _____ Challenge is fluid, or a child can select own level.
- 8 _____ The program is responsive to a child's actions
- 9 _____ The theme of the program is meaningful to children

V. Design Features (How "smart" is this program?)

- 1 _____ The program has speech capacity
- 2 _____ Has printing capacity
- 3 _____ Keeps records of child's work
- 4 _____ "Branches" automatically: challenge level is fluid
- 5 _____ A child's ideas can be incorporated into the program.
- 6 _____ Sound can be toggled or adjusted
- 7 _____ Feedback is customized in some way to the individual child
- 8 _____ Program keeps a history of the child's use over a period of time
- 9 _____ Teacher/parent options are easy to find and use

VI. Value (How much does it cost vs. what it does? Is it worth it?)

Considering the factors rated above, and the average retail price of software, rate this program's relative value considering the current software market. Consider also any extra hardware attachments required to get full potential of the programming, e.g., a sound card, CD-ROM, etc.

Poor

Good

1 2 3 4 5 6 7 8 9 10

Don't forget that this form is generic! To use it properly, you have to look at a lot of similarly designed products, and that the "NA" field is particularly powerful in the overall score.

APPENDIX B

Children's Software Evaluation Instrument Survey Results: Ease of Use

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Ease of Use #1 Skills needed to operate the program are in range of the child	Always	Some Extent	Always	Some Extent	Always	Always	Some Extent	Always	8	6.5	4.06
Ease of Use #2 Children can use the program independently after the first use	Some Extent	Some Extent	Some Extent	Some Extent	Always	Always	Some Extent	Some Extent	8	5	3.13
Ease of Use #3 Accessing key menus is straightforward	Always	Always	Some Extent	Never	Always	Always	Some Extent	Some Extent	8	5.5	3.44

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Ease of Use #4 Reading ability is not prerequisite to using the program	Always	Some Extent	Some Extent	Never	Some Extent	Always	Never	Always	8	4.5	2.81
Ease of Use #5 Graphics make sense to the intended user	Always	Always	Always	Some Extent	Always	Always	Always	Always	8	7.5	4.69
Ease of Use #6 Printing routines are simple	N/A	Always	N/A	Some Extent	Some Extent	Some Extent	Always	Some Extent	6	4	3.33
Ease of Use #7 It is easy to get in or out of any activity at any point	Some Extent	Always	Never	Some Extent	Always	Always	Some Extent	Some Extent	8	5	3.13
Ease of Use #8 Getting to the first menu is quick and easy	Always	Always	Always	Always	Always	Always	Some Extent	Always	8	7.5	4.69
Ease of Use #9 Controls are responsive to the touch	Always	Always	Some Extent	Always	Always	Always	Some Extent	Always	8	7	4.38

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Ease of Use #10 Written materials are helpful	Always	Some Extent	Some Extent	Some Extent	Some Extent	Always	Always	Always	8	6	3.75
Ease of Use #11 Instructions can be reviewed on the screen, if necessary	Some Extent	Some Extent	Always	Never	Always	Some Extent	Some Extent	Always	8	5	3.13
Ease of Use #12 Children know if they make a mistake	Some Extent	Always	Always	Always	Always	Always	Always	Always	8	7.5	4.69
Ease of Use #13 Icons are large and easy to select with a moving cursor	Always	Always	Always	Always	Always	Always	Always	Always	8	8	5.00
Ease of Use #14 Installation procedure is straightforward and easy to do	Always	Some Extent	Always	Some Extent	Always	Always	Some Extent	Always	8	6.5	4.06

APPENDIX C

Children's Software Evaluation Instrument Survey Results: Childproof

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Childproof #1 Survives the "pound on the keyboard" test	Always	Always	Some Extent	Never	Some Extent	Always	N/A	Some Extent	7	4.5	3.21
Childproof #2 Offers quick, clear, obvious response to a child's action	Always	Never	Always	Some Extent	Always	Always	Some Extent	Always	8	6	3.75
Childproof #3 The child has control over the rate of display	Always	Never	Some Extent	Always	Never	Some Extent	Some Extent	Always	8	4.5	2.81
Childproof #4 The child has control over exiting at any time	Some Extent	Always	Never	Always	Some Extent	Never	Always	Never	8	4	2.50

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Childproof #5 The child has control over the order of the display	Always	Some Extent	Some Extent	Always	Always	Some Extent	Some Extent	Some Extent	8	5.5	3.44
Childproof #6 Title screen sequence is brief or can be bypassed	Always	Never	Always	Never	Some Extent	N/A	Some Extent	N/A	6	3	2.50
Childproof #7 When a child holds a key down, only one input is sent to the computer	N/A	Some Extent	N/A	Never	N/A	Always	Some Extent	Some Extent	5	2.5	2.50
Childproof #8 Files not intended for children are safe	Always	Always	Some Extent	Always	Always	Always	N/A	Always	7	6.5	4.64
Childproof #9 Children know when they've made a mistake	Always	Always	Always	Always	Always	Always	Always	Always	8	8	5.00

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Childproof #10 This program would operate smoothly in a home or classroom setting	N/A	Always	Some Extent	Some Extent	Always	Some Extent	Always	Always	7	5.5	3.93

APPENDIX D

Children's Software Evaluation Instrument Survey Results: Educational

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Educational #1 Offers a good presentation of one or more content areas	Always	Always	Some Extent	Some Extent	Always	Always	Never	Always	8	6	3.75
Educational #2 Graphics do not detract from the program's educational intentions	Always	Always	Always	Always	Some Extent	Always	Some Extent	Always	8	7	4.38
Educational #3 Feedback employs meaningful graphic and sound capabilities	Always	Some Extent	Always	Always	Some Extent	Always	Some Extent	Always	8	6.5	4.06

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Educational #4 Speech is used	Always	Always	Always	Always	Some Extent	Always	Always	Always	8	7.5	4.69
Educational #5 The presentation is novel with each use	Always	Always	Some Extent	Never	Some Extent	Never	Always	Always	8	5	3.13
Educational #6 Good challenge range (this program will grow with the child)	Always	Some Extent	Some Extent	Some Extent	Always	Always	Always	Always	8	6.5	4.06
Educational #7 Feedback reinforces content (embedded reinforcements are used)	Always	Some Extent	Some Extent	Some Extent	Always	Always	Some Extent	Always	8	6	3.75

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Educational #8 Program elements match direct experiences	Some Extent	Some Extent	Some Extent	Some Extent	Always	Some Extent	Some Extent	Always	8	5	3.13
Educational #9 Content is free from gender bias	Always	Always	Some Extent	N/A	Always	Always	Some Extent	Always	7	6	4.29
Educational #10 Content is free from ethnic bias	Always	Some Extent	Some Extent	N/A	Always	Always	Some Extent	Always	7	5.5	3.93
Educational #11 A child's ideas can be incorporated into the program	Some Extent	N/A	Never	Never	Never	N/A	Never	Some Extent	6	1	0.83
Educational #12 The program comes with strategies to extend the learning	Always	Some Extent	Always	Never	Some Extent	Always	Always	Always	8	6	3.75

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Educational #13 There is a sufficient amount of content	Always	Always	Some Extent	Never	Some Extent	Always	Always	Always	8	6	3.75

APPENDIX E

Children's Software Evaluation Instrument Survey Results: Entertaining

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Entertaining #1 The program is enjoyable to use	Always	Some Extent	Some Extent	Some Extent	Always	Some Extent	Some Extent	Always	8	5.5	3.44
Entertaining #2 Graphics are meaningful and enjoyed by children	Always	Some Extent	Some Extent	Always	Always	Always	Some Extent	Always	8	6.5	4.06
Entertaining #3 This program is appealing to a wide audience	Always	Some Extent	Never	Always	Some Extent	Always	Some Extent	Always	8	5.5	3.44
Entertaining #4 Children return to this program time after time	Some Extent	Some Extent	Some Extent	Always	Some Extent	Always	Some Extent	Some Extent	8	5	3.13

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Entertaining #5 Random generation techniques are employed in the design	Always	Some Extent	Always	Some Extent	Some Extent	Always	N/A	Always	7	5.5	3.93
Entertaining #6 Speech and sound are meaningful to children	Always	Always	Always	Always	Always	Always	Always	Always	8	8	5.00
Entertaining #7 Challenge is fluid, or a child can select own level	Always	Never	Some Extent	Always	Never	N/A	Some Extent	Always	7	4	2.86
Entertaining #8 The program is responsive to a child's actions	Always	Some Extent	Some Extent	Always	Always	Always	Some Extent	Always	8	6.5	4.06
Entertaining #9 The theme of the program is meaningful to children	Always	Some Extent	Some Extent	Always	Never	Always	Some Extent	Always	8	5.5	3.44

APPENDIX F

Children's Software Evaluation Instrument Survey Results: Design Features

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Design Features #1 The program has speech capacity	Always	Some Extent	Always	Always	Always	Always	Some Extent	Always	8	7	4.38
Design Features #2 Has printing capacity	N/A	Always	N/A	Always	Always	Always	Some Extent	Always	6	5.5	4.58
Design Features #3 Keeps records of child's work	Always	Always	Always	Always	Always	Always	Always	Always	8	8	5.00
Design Features #4 "Branches" automatically: challenge level is fluid	Always	Some Extent	Some Extent	Always	Some Extent	Always	Always	Always	8	6.5	4.06
Design Features #5 A child's ideas can be incorporated into the program	Some Extent	Never	Never	N/A	Never	N/A	Never	Some Extent	6	1	0.83

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Design Features #6 Sound can be toggled or adjusted	Always	Some Extent	Some Extent	Always	Never	Always	Some Extent	Always	8	5.5	3.44
Design Features #7 Feedback is customized in some way to the individual child	Always	Some Extent	Never	Always	Some Extent	Always	Always	Always	8	6	3.75
Design Features #8 Program keeps a history of the child's use over a period of time	Always	Always	Always	Always	Always	Always	Always	Always	8	8	5.00
Design Features #9 Teacher/parent options are easy to find and use	Always	Some Extent	Always	Always	Always	Always	Some Extent	Some Extent	8	6.5	4.06

APPENDIX G

Children's Software Evaluation Instrument Survey Results: Overall Value

Children's Software Evaluation Instrument Survey Results

Question	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6	Survey 7	Survey 8	Total Possible	Results	Rating
Value How much does it cost vs. what it does? Is it worth it?	8	8	6	6	8	6	7	8	80	57	3.56

APPENDIX H

PERMISSION LETTER FROM MCGRAW-HILL

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Date: March 04, 2009

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Format: Print and password protected site (school's intranet site)
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Languages: English

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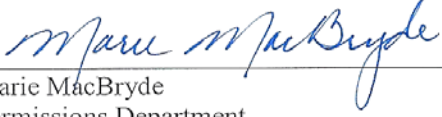
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APPENDIX I

School Division Permission Letter

January 29, 2009

Mr. Lawrence C. Taylor
Principal, Oceanair Elementary School
Doctoral Candidate, Virginia Polytechnic Institute and State University

The study, "A Comparative Study on the Impact of Computer Enhanced Reading Programs on First Grade African American Males in an Urban School District in Southeastern Virginia" proposed by Lawrence C. Taylor, Principal, Oceanair Elementary School, and doctoral candidate at Virginia Polytechnic Institute and State University, is approved for Norfolk Public Schools. Oceanair, Crossroads, Sewells Point, and Tarallton Elementary Schools have agreed to participate in the study.

The research proposal meets NPS Research & Survey Policy (www.nps.k12.va.us) criteria, including:

- Voluntary participation allows each teacher to individually decide whether to participate, and may withdraw at any time without question or consequence.
- Participant and school names will remain anonymous in data collection and aggregated results. Identifiable characteristics or linkage to the identity of any individual or school in the report is prohibited.
- Approval does not constitute commitment of resources, endorsement of the study, or its findings by the school district or the School Board.
- Data collected and results will not become part of any student, teacher, principal, school, or district record. All research records must be locked in a secured location.
- Copy of the final report will be provided for the school district files, and sent to Dr. Flanagan (SEAS).

We look forward to your findings and contribution to instructional practice, program services, and achievement for *ALL* students.

Sincerely,

Dr. Gail Flanagan, Ph.D.
Senior Coordinator, Research & Evaluation
Strategic Evaluation, Assessment & Support (SEAS) Dept.
Norfolk City Public Schools
gflanaga@nps.k12.va.us Office # 757-628-3852 Fax # 757-628-3925

cc: Karren Bailey, Senior Director, Strategic Evaluation, Assessment & Support (SEAS)
Mary Beers, Principal, Crossroads Elementary School
Mary Wrushen, Principal, Sewells Point Elementary School
Diane Gibson, Principal, Tarrallton Elementary School

APPENDIX J

PERMISSION GRANTED FROM IRB



Office of Research Compliance
Carmen T. Green, IRB Administrator
2000 Kraft Drive, Suite 2000 (0497)
Blacksburg, Virginia 24061
540/231-4358 Fax 540/231-0959
e-mail ctgreen@vt.edu
www.irb.vt.edu
FWA00000572(expires 1/20/2010)
IRB # is IRB00000567

DATE: February 18, 2009

MEMORANDUM

TO: Carol Cash

FROM: Carmen Green 

SUBJECT: **IRB Exempt Approval:** "A Comparative Study on the Impact of Computer Enhanced Reading Programs on First Grade African American Males in an Urban School District in Southeastern Virginia", IRB # 09-093

I have reviewed your request to the IRB for exemption for the above referenced project. The research falls within the exempt status. Approval is granted effective as of February 18, 2009.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in the research protocol. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

cc: File

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APPENDIX K

Permission Granted To use Children's Evaluation Software Instrument

(11/11/2008) Lawrence Taylor - Re: Request to use Children's Software Evaluation Instrument

Page 1

From: Warren Buckleitner <warren@childrenssoftware.com>
To: Lawrence Taylor <ltaylor@nps.k12.va.us>
Date: 11/10/2008 9:42 PM
Subject: Re: Request to use Children's Software Evaluation Instrument

Permission granted.
Best wishes,
W. Buckleitner

> From: Lawrence Taylor <ltaylor@nps.k12.va.us>
> Date: Mon, 10 Nov 2008 20:44:43 -0500
> To: <warren@childrenssoftware.com>
> Subject: Request to use Children's Software Evaluation Instrument
>
> Dear Mr. Warren Buckleitner:
>
> Michigan State University
> Children's Software Revue
> 120 Main Street
> Flemington, NJ 08822
> www.childrenssoftware.com
>
> I would like permission to copy and use your Children's Software Evaluation
> Instrument in my doctoral dissertation. The tentative title is "A CASE STUDY
> ON THE IMPACT OF COMPUTER ENHANCED READING PROGRAMS ON FIRST GRADE AFRICAN
> AMERICAN MALES IN AN URBAN SCHOOL DISTRICT IN SOUTHEASTERN VIRGINIA." The
> dissertation research is in fulfillment of requirements for the Doctor of
> Philosophy in Educational Leadership and Policy Studies at the Virginia
> Polytechnic Institute and State University. My email address is:
> ltaylor@nps.k12.va.us.
>
> Sincerely,
>
>
>
>
>
>
>
> Lawrence C. Taylor, Principal
> Oceanair Elementary School
> 600 Dudley Avenue
> Norfolk, VA 23503
> School: (757) 531-3095
> Fax: (757) 531-3099

--
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