

ABSTRACT

Dale Buie, PROGRAM EVALUATION OF *READING PLUS*: STUDY OF THE IMPACT ON READING ACHIEVEMENT AT THE SCHOOL LEVEL IN MOORE COUNTY SCHOOLS (Under the direction of Dr. James McDowelle) Department of Educational Leadership, November, 2014.

At the request of the Moore County School district's superintendent a program evaluation was conducted on *Reading Plus*. *Reading Plus* is a reading intervention program that places an emphasis on the connection between eye-movements and reading skills that is in use in the school district. The program evaluation focused on the use of *Reading Plus* at Cameron Elementary School. A full evaluation was conducted using Daniel Stufflebeam's Context, Input, Process, Product (CIPP) model. The purpose of the program evaluation was to determine whether or not the *Reading Plus* program impacted student academic achievement in reading for those students enrolled in the program in grades four and five based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI). *Reading Plus* was found to be an effective intervention program and cost effective for the school which was evaluated.

PROGRAM EVALUATION OF *READING PLUS*: STUDY OF THE IMPACT ON READING
ACHIEVEMENT AT THE SCHOOL LEVEL IN MOORE COUNTY SCHOOLS

A Dissertation

Presented to

The Faculty of the Department of Educational Leadership
East Carolina University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

by

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November, 2014

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Chapters 1-3 were written in cooperation with my colleagues:
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TABLE OF CONTENTS

LIST OF TABLES	vii
LIST OF FIGURES	viii
CHAPTER 1: INTRODUCTION	1
Explication of Problem of Practice	1
History of Problem.....	4
Statement of Problem of Practice	10
Research Questions and Methodology.....	12
Definitions.....	15
CHAPTER 2: REVIEW OF LITERATURE.....	18
History of Reading Instruction.....	19
Types of Readers: Meaning, Sound, and <i>deaf mute</i> Methodology	19
The Reading Wars.....	21
Why Johnny Can't Read	24
Eye-movement Research and a Relationship to Reading	25
National Emphasis on Reading	29
National Reading Accountability.....	31
Foundational Reading Instructional Methods.....	32
Phonemic Awareness	33
Phonics Instruction.....	33
Fluency.....	34
Vocabulary	35
Comprehension	36

Individualized Reading Instruction.....	36
History of the <i>Reading Plus</i> Program.....	38
<i>Reading Plus</i> Program Instructional Methods.....	39
Current Reading Initiatives.....	42
Assessing Reading.....	44
Motivating Readers.....	47
The Challenge for Older Readers.....	49
CHAPTER 3: METHODOLOGY.....	52
Research Purpose.....	52
Statement of Problem of Practice.....	54
Design of Study.....	57
CIPP Product Evaluation.....	59
Research Setting.....	61
Study Participants.....	62
School Demographics.....	66
Data Collection.....	68
Data Analysis.....	71
Cost Benefit Analysis.....	72
Summary.....	72
CHAPTER 4: RECOMMENDATIONS BASED UPON LITERATURE REVIEW, DATA COLLECTION, AND ANALYSIS.....	73
Delineating.....	74
Obtaining.....	78
Comprehension.....	83

Fluency.....	85
Vocabulary	86
Phonemic Awareness	87
Phonics	87
Reading Stamina	88
Providing.....	88
Effective Implementation.....	88
Unexpected Outcomes	94
Cost Benefit	96
Recommendations.....	97
Summary	98
REFERENCES	101
APPENDIX A: CONTEXT-INPUT-PROCESS-PRODUCT (CIPP) DECISION MODEL.....	121
APPENDIX B: PROGRAM EVALUATION CYCLE	122
APPENDIX C: CIPP RELATIONSHIP OF EVALUATION TO DECISION-MAKING...	123
APPENDIX D: SUPERINTENDENT’S REQUEST FOR PROGRAM EVALUTION....	124
APPENDIX E: TEACHER SURVEY QUESTIONS	125
APPENDIX F: INSTITUTIONAL REVIEW BOARD APPROVAL LETTER	127

LIST OF TABLES

1. Projected Cost	8
2. Achievement Level Ranges for the North Carolina End-of-Grade Tests Reading Comprehension at Grades 3–8	64
3. Lexile Measures by Grade	65

LIST OF FIGURES

1. <i>Reading Plus</i> progress and usage.....	77
2. Student growth in Lexile Levels.....	80
3. Lexile growth of all students vs. African American students.....	81
4. Teacher survey responses to training and support and program implementation.....	84
5. Teacher survey responses to the five domains of reading.....	89

CHAPTER 1: INTRODUCTION

Explication of Problem of Practice

According to a 2002 report, the United States Department of Education reported that more than 8 million students in grades 4–12 are struggling readers (Grigg, Daane, Jin, & Campbell, 2003). In addition, expert on poverty Ruby Payne (2005) indicated that children from language enriched backgrounds and families that encourage literacy experiences may enter school with a stronger vocabulary than children from families in poverty because of mental resources, support systems and relationships.

The issue of academic deficiencies and need for reading intervention has not been a recently identified problem despite new legislation at the federal and state levels. In 1959 a reading expert cited reading issues that resonate today:

Criticisms of the American school system are appearing in increasing numbers. In too many instances, the critics appear to engage in wishful thinking and long for the ‘good old days’ when almost anyone who attended school succeeded in securing an education—at least to a degree. They appear to overlook the fact that attendance is now compulsory for all children beyond the age when many formerly withdrew to take jobs. So often, too, these critics seem to believe that school difficulties arise merely because proper attention is not being given to teaching ‘the three R’s.’ Some firmly attest that reading instruction was more efficient twenty-five to fifty years ago. Others argue that reading instruction is more efficient today, in spite of the fact that eye-movement studies indicate that not more than 40% of the total population can be considered to be really efficient in the act of reading (Taylor, 1959, p. vii).

In 2006, ACT, Inc. released a report called *Reading Between the Lines*, which provided evidence to support increased reading requirements because, while the reading demands of college, workforce training programs, and workforce citizenship have risen over the past 50 years, K–12 academic texts have become less demanding and less complex. Lesnick, Goerge, Smithgall, and Gwynne (2010) noted that early reading achievement impacted later academic success because the third-grade reading level was a predictor of eighth- and ninth-grade performance, high school graduation and college attendance. In addition, other researchers noted that 75% of students identified with reading problems in the third grade struggled with reading in the ninth grade (Francis, 1996; Francis et al., 2005; Shaywitz, Escobar, Shaywitz, Fletcher, & Makuch, 1992), and that third-grade students with poor skills in word recognition when applied to texts were not likely to improve their reading skills with any significance by the end of eighth grade (Felton & Wood, 1992).

The *No Child Left Behind Act of 2001* (NCLB), signed into law by President Bush in January 2002, reauthorized the *Elementary and Secondary Education Act* (ESEA), a law which encompassed Title I and was first enacted in 1965 as federal aid for disadvantaged students. NCLB required annual testing, annual school report cards, specific teacher qualifications, included funding to target poor children, and offered a competitive grant program to fund research-based reading programs for disadvantaged students. Within the NCLB mandates, states were required to bring all third-grade students up to a proficient reading level by 2013–2014 (U.S. Department of Education, 2004b).

Along with changing federal and state laws, the Common Core curriculum implemented in the fall of 2012 required students to read and understand material within complex literary and informational texts (Common Core State Standards, 2012b). The Common Core reading

curriculum framework was designed to bolster students' reading skills through sophisticated reading material that encouraged strong fluency and comprehension.

Mandates of *No Child Left Behind*, coupled with 2012 North Carolina state law and expectations of newly-implemented national Common Core curriculum, have dictated that students must read on grade level by the end of third grade. Improving reading has also continued to be a common theme at the federal level and North Carolina has followed its lead by imposing laws about reading. In 2012, the North Carolina General Assembly passed legislation requiring students at the end of third grade to read on grade level as measured by the North Carolina End-of-Grade (NCEOG) reading test. Based on the implementation of the 2012 law, if the student cannot read on the third-grade level as determined by the EOG, the student would be retained in third grade unless the child attended a remedial summer reading camp for the purpose of improving reading skills. Students who did not pass assessments at the end of the summer camp program (North Carolina Department of Public Instruction [NCDPI], 2013) would be retained, remediated during the fall of the next school year (NCDPI, 2013), and reassessed in November (North Carolina General Assembly, 2011). To fulfill the requirements, these non-proficient eight-year-old students would have faced as many as three lengthy, formal reading assessments between May and November.

According to the North Carolina Department of Public Instruction's (NCDPI) *More Information* (2012a), the requirements and accountability purposes of North Carolina Accountability Based Curriculum (ABCs) and federal Annual Measurable Objectives (AMOs) stated,

No Child Left Behind (NCLB) affects your school and every public K-12 school in the country. Key requirements of the law were: closing achievement gaps, holding schools

accountable for all students and having a Highly Qualified teacher in every classroom.

(para. 1)

The North Carolina testing requirements under the ABC model and the requirements of No Child Left Behind (NCLB) impacted each school's performance based on the test results of students enrolled in the school. However, students in a school could have performed well on ABC requirements, resulting in the school's designation of a High Growth School or School of Excellence, while collective student scores did not meet the expectations set forth in NCLB. The ABC program established performance standards for the school as a whole, as well as achievement levels for individual students. Based on North Carolina state test results, students were ranked at achievement levels one, two, three, or four, with levels three and four as indicators of grade level proficiency. The collective student test score results determined the school's growth status and designation such as School of Excellence or High Growth. NCLB, an initiative by the U.S. Department of Education, offered an additional challenge with the addition of the Annual Measureable Objective (AMO), which included goals for groups of students. AMOs were pre-determined by the NCDPI for areas of student attendance, graduation, student participation in assessments, and student performance on North Carolina End-of-Grade and North Carolina End-of-Course tests in the areas of reading and mathematics. These AMOs were required for each designated group of students, and North Carolina End-of-Grade or North Carolina End-of-Course test results were reported as a group. Also, AMOs provided pre-determined intervals intended to assist schools in reducing the achievement gaps over a six-year period from 2012 to 2018. Student subgroups determined by NCDPI included White, Black, Hispanic, American Indian, Asian, Pacific Islander, Two or More Races (multiracial, although Hispanic overrides all other races of the student), Economically Disadvantaged, Limited English

Proficient, Students with Disabilities, and School as a Whole (all students). Within each school's improvement process, the NCDPI set AMO goals for each subgroup on each test. Schools were required to reduce the achievement gaps between subgroups of students based on achievement of the AMOs (NCDPI, 2012a). Reading became more important because stronger readers were assumed to produce better test scores.

History of Problem

The problem that precipitated this study was that there were no local data to support the use of the *Reading Plus* program for reading intervention, though at least three schools were using it for the purpose of improving student reading achievement. The issue was compounded by the fact that schools or administrators across the system had chosen a variety of different intervention programs without LEA coordination or internal analysis. Therefore, the purpose of this study was to determine the extent, if any, of the *Reading Plus* intervention program on the reading achievement of students at elementary (grades 4 and 5), middle (grades 6, 7, and 8), and high school (grade 9) levels in the Moore County Schools, as well as the *Reading Plus* impact on the students with disabilities who were being served in these grades, so that the administration could make informed decisions about the program. Reading intervention programs targeted academic needs of students in one or more of the students' reading deficiencies. Each intervention program claimed that its program is based on the goals and skills established for purpose of reading and that the use of the program improved students' skills such as fluency, phonics, vocabulary, or comprehension.

Individual school administrators within the Moore County Schools system selected reading intervention programs based upon the individual needs of their students. Multiple reading programs have been used across the system intended to improve reading deficiencies.

These programs included *Corrective Reading*, *Earobics*, *Fast Forward*, *Intervention Kits*, *Language for Learning*, *Leveled Literacy Intervention*, *Read 180*, *Reading Mastery*, *Reading Plus*, *Reading Recovery*, *System 44*, and *S.P.I.R.E.*, a program specifically used for students with disabilities (Moore County Schools, 2013).

Proficiency, a standard cut score according to the 2011 North Carolina Accountability Model, referred to the requirement that students must have scored at a pre-determined level to be considered proficient on any North Carolina End-of-Grade or End-of-Course assessment. Based on 2011–2012 North Carolina End-of-Grade reading assessment data for students in grades 3–8, and on North Carolina End-of-Course English I assessment for students in grade 9, not all students scored adequate proficiency in reading. At Cameron Elementary School, white students in grades 3–5 scored 80% proficient in reading, Black students in grades 3–5 scored 29.4% proficient in reading, Students with Disabilities in grades 3–5 scored 35.7% proficient in reading, and Economically Disadvantaged students in grades 3–5 scored 57.5% proficient in reading. At New Century Middle School, 82.5% of White students in grades 6–8 scored proficient in reading, 57.1% of Black students in grades 6–8 scored proficient in reading, 46.7% of Students with Disabilities in grades 6–8 scored proficient in reading, and 67.2% of Economically Disadvantaged students in grades 6–8 scored proficient in reading. At Pinecrest High School, 95% of White students in grade 9 were proficient in reading, 74.6% of Black students in grade 9 were proficient in reading, 34.1% of Students with Disabilities in grade 9 were proficient in reading, and 77.8% of Economically Disadvantaged students in grade 9 were proficient in reading. Though achievement gaps may appear in the data, for purposes of this study, achievement gaps were not studied.

Statistics (Complete College America, 2013) indicated that college graduation rates were low for students who are low-socio-economic, part-time, African American, Hispanic, or older. In North Carolina, 31.8% of college freshmen enrolled in two-year college programs require remediation, while 5.3% of freshmen in four-year college programs require remediation. In addition, graduation rates for remedial students are 4.5% for on-time graduation from a two-year program and 20.8% from a four-year program (Complete College America, 2013).

Because the *Reading Plus* program was used at the elementary, middle, and high school levels, it was assumed by administrators and teachers that gains were being made at all levels and that, additionally, students with disabilities who received the *Reading Plus* interventions found further improvement in their reading skills. However, the Moore County School system had not investigated the program impact on student achievement in reading or the financial feasibility of the program, which cost \$25 to \$55 per student for one year. In addition, cost may be impacted by length of contract and number of seats. Therefore, an administrator who needed to remediate 100 students might pay \$4,400 per year for the program from the school budget. Gregory W. Taylor, Vice President of Tarmac Educational Services, Inc. submitted a *Reading Plus*[™] Software Proposal to Dr. Kathy Kennedy, Associate Superintendent Instructional Design and Innovation, on March 25, 2013. Specific pricing for Cameron Elementary School, New Century Middle School, and Pinecrest High School were provided and shown in Table 1.

A review of historical research literature indicated approaches to reading instruction and intervention have changed since the 1800s. Early reading research revealed an original emphasis on the teaching of reading through the *deaf mute* method, an approach to reading through meaning and context clues while reading whole words or passages. This process was a sight word method which involved obtaining information from words and pictures on the written page.

Table 1

Projected Cost

School	Description	Student Seats	Total
Cameron Elementary	New Student seat subscriptions for one year access	50	\$2,750.00
New Century Middle	New Student seat subscriptions for one year access	100	\$4,400.65
Pinecrest High	Converted 25 Student seats-subscription fee	200	\$2,000.00

Later reading instruction methods emphasized the use of phonics as a means of helping students to sound each letter in isolation rather than obtain meaning from context (Rodgers, 2001). In the 1955 book, *Why Johnny Can't Read: And What You Can Do About It*, Rudolph Flesch described a necessary method of teaching reading that included 44 phonetic sounds and application of the sounds to more complex literature. Kamil, Mosenthal, Pearson, and Barr (2000) verified the importance of the method of phonetic instruction in *The Handbook of Reading Research*.

An early effort by researchers in the area of ophthalmology supported that a reader's eye-movements, or saccades, created a vehicle for identifying reading problems through the types and lengths of the fixations and movements (Tinker, 1933). More recent studies using technology noted that fluid eye-movements and the successful cognitive process of reading were related (Rayner, 1998), indicating that a student's need for remediation was more complex than the simple need for assistance in connecting sounds to symbols. However, the National Education Association (NEA) stated in its reading policy that reading is the "gateway" to learning and achievement; therefore, the NEA has not promoted any particular method of reading instruction over another. NEA's statement established the point that reading instruction should be individualized, thus, NEA would not dictate a preferred method for educators to follow.

In 2000, a National Reading Panel (NRP) report recognized the importance of key reading components, including phonemic awareness, phonics, fluency, vocabulary, and comprehension. The NRP (2000) noted a "close relationship" between the student's ability to read fluently and the student's ability to comprehend what he is reading (p. 1). Five components necessary to reading instruction and noted by the NRP included instruction in meaning as well as sound, therefore providing multiple ways for the student to address and absorb reading material (NRP, 2000). *Reading Plus*, which was the focus of this program evaluation, used current

computer technology to encourage smooth eye-movements in reading and combined sight, fluency, and comprehension to improve the student's reading.

Statement of Problem of Practice

The acquisition of reading skills by K–12 students may be essential to academic and career success because reading is required for academic tasks, as well as daily adult activities. School-age students who do not read well may have more difficulty with both academic assignments and reading for pleasure. As adults, these same students with weak reading skills may also experience difficulty following written directions or reading a newspaper. Career-oriented reading may require the worker to read and comprehend complex documents. Therefore, students who are successful in reading may be more likely to find success in adult life activities that involve both personal reading and career-related reading.

Previously in the school district involved in this study, the Moore County Schools district level administrators allowed school principals and faculties to select reading programs based upon their own student needs and budgets. Program selections varied by training, implementation, and fidelity, which is implementation according to program design. This selection process resulted in a list of at least 13 different reading programs in 23 schools across the district. In addition, as more reading programs were purchased and as data became more important, the district administration began requiring schools to provide a streamlined evaluation of the implemented program, including data results for groups of students and the school population as a whole in response to Race to the Top (RttT) requirements and methods of monitoring achievement data. Superintendent Dr. Aaron Spence expected schools to provide data showing that their selected intervention programs were effective for the purpose of improving students' reading. For streamlined evaluation, each school provided pre and/or post data using

scores or information the school deemed important to its purpose. This study sought to provide a review of reading scores, Lexile levels, and teacher information regarding implementation of the *Reading Plus* program and fidelity to implementation in order to produce a more thorough result. Though data regarding achievement gaps among groups may have existed, for the purpose of this study, achievement gaps were not examined because researchers did not have access to Free/Reduced student data. Further study may be necessary to analyze achievement gaps.

The district superintendent requested the evaluation of reading programs to determine whether or not data supported the current programs, whether or not these programs improved student achievement and, particularly, proficiency in reading. This study focused on the impact of *Reading Plus* on student reading achievement in elementary, middle, and high school, so that information was gleaned to provide an objective view of student academic progress in reading. Three schools were included in the study: Cameron Elementary School, located in rural northeastern Moore County, with 242 students; New Century Middle School, a rural school in central Moore County with 550 students; and Pinecrest High School, in southern Moore County serving 1,982 students, according to 2011–2012 data (NCDPI, 2012b).

Public scrutiny has become more obvious because school report cards (including test scores, attendance, teacher data, and student data) are published in newspapers and state websites (NCDPI, 2012b). Special stipulations for funding from RttT sources required LEAs to adhere to stringent curriculum and testing requirements. In addition, because of the budgetary and curricular concerns about intervention programs, this specific study assisted the Moore County Schools in making decisions about the *Reading Plus* program and which levels or students, if any, should receive the program instruction. Data released by the North Carolina Department of Public Instruction for 2011–2012 indicated that students at or above proficient in Moore County

were at the 74.7% level. At Cameron Elementary School, third-grade students scored 71.3% proficient in 2010–2011 and 70.4 % for 2011–2012. Both of these scores were below the district-wide average of 74.7 %. At New Century Middle School, 2010–2011 data revealed student scores at or above proficient as 80.5%, as well as 2011–2012 reading proficiency for New Century at 77.8%. At Pinecrest High School, reading proficiency based on North Carolina English 1 EOC was 89.7 in 2010–2011 and 89.6 % in 2011–2012. Despite the fact that scores from these three schools averaged at or above the MCS average, each school still served students who did not read at the expected proficiency level and were, therefore, in need of reading remediation.

Research Questions and Methodology

Based on the study design, four questions are pertinent to this research:

1. To what extent, if any, did the *Reading Plus* program impact student academic achievement in reading for those students enrolled in the program in grades four and five based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI)?
2. To what extent, if any, did the *Reading Plus* program impact student academic achievement in reading for those students enrolled in the program in grades six through eight based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI)?
3. To what extent, if any, did the *Reading Plus* program impact student academic achievement in reading for those students enrolled in the program in grade nine based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI)?

4. To what extent, if any, did the *Reading Plus* program impact student academic achievement in reading for students with disabilities enrolled in the program based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI)?

Due to the nature of this study, it was determined that a program evaluation was the best method to use in determining the effectiveness of the *Reading Plus* program. A program evaluation is a systematic method for collecting, analyzing, and using information to answer questions about projects, policies, and programs, particularly about their effectiveness and efficiency. This study followed a research design pioneered by Daniel Stufflebeam, the Context-Input-Process-Product (CIPP), with regard to program evaluation standards which were developed for evaluators and other audiences to judge the overall quality of an evaluation (Fitzpatrick, Sanders, & Worthen, 2011). While program evaluations were a relatively recent phenomenon, the process of planned social evaluation dates as far back as 2200 BC (Shadish, Cook, & Leviton, 1991). Evaluation became particularly relevant in the United States during President Lyndon Johnson's "Great Society."

Use of this model provided information to improve the quality of decisions made by stakeholders, Moore County Schools, with a program evaluation of the *Reading Plus* program and allowed these stakeholders to make good decisions based on valid information. Two principles of this model, (a) focus on serving decisions, and (b) judging merit and worth, provided a framework for making decisions that improve products. The intent of the CIPP model as used in this program evaluation was to provide guidance for continuing, modifying, adopting, or terminating the *Reading Plus* program in Moore County Schools based on assessing outcomes and side effects of the program.

The purposes of product evaluation were to relate outcomes to objectives and to assess the overall worth of a procedure in terms of its effects. An advantage of the CIPP model was that it allowed the program evaluators to think of evaluation as cyclical, rather than project based. This model provided evaluators the flexibility to evaluate the *Reading Plus* program in stages depending on the needs of the stakeholders (Alkin & Christie, 2004).

Although the context, input, and process of the *Reading Plus* program were critical depending on the stage of a program, district administrators in the Moore County Schools wanted informative data regarding the product of the program and, specifically, whether or not the program had improved reading achievement for those students enrolled in the program based on the student Lexile scores generated from the SRI.

By using the CIPP model, the *Reading Plus* program evaluation consisted of three steps focused on the product of the program. The first step was delineating the objectives of the program. The second step was obtaining information and data regarding those students who were enrolled in the *Reading Plus* program and by analyzing responses to survey questions. The third step was providing a report of the program results and achievements to the Superintendent and the Moore County School's Board of Education that was both descriptive and analytical.

This study was intended to investigate data and attitudes regarding the *Reading Plus* intervention program for struggling readers and the role of *Reading Plus* instruction in developing 21st century-ready students within Moore County Schools. This information was intended to provide administrators in the school system with valid information for future decisions regarding this particular program and its relationship to reading achievement in elementary, middle, and high school students, as well as students with disabilities throughout these three levels.

Definitions

Within this study, a variety of terms were defined or clarified. The following terms were important and included in the study:

Achievement Gap—the difference between the scores of the highest performing group of students and a lower performing group, such as Male versus Female or Economically Disadvantaged versus Non-Economically Disadvantaged (“Achievement gap,” 2011).

Annual Measureable Objective (AMO)—pre-determined scores designated as targets for groups of students.

Comprehension—“Reading comprehension is the construction of the meaning of a written text through a reciprocal interchange of ideas between the reader and the message in a particular text” (Harris & Hodges, 1995, p. 39).

Common Core State Standards (CCSS)—reading and mathematics curriculum designed at a national level.

Decoding—the process of transforming information from reading into meaning.

Five domains of reading—phonemic awareness, phonics, fluency, vocabulary, and comprehension (National Reading Research Panel, 2000).

Fixation—concept of maintaining the eye on one location, word, letter or figure.

Fluency—reading text with speed, accuracy, and proper expression.

Interventions—a set of specific steps to improve a deficiency.

Leveled readers—reading books that are a part of a larger collection of books organized in levels of difficulty (Pinnell, 2013).

Lexiles—algorithm that analyzes sentence length and vocabulary; information about either an individual's reading ability or the difficulty of a text, like a book or magazine article;

the Lexile measure is shown as a number with an “L” after it—880L is 880 Lexile (MetaMetrics, 2013b).

National Reading Panel (2000)—panel of reading experts, who at the request of Congress assessed the status of research-based knowledge about reading and, as a result, endorsed five instructional methods for the teaching of reading:

1. **Explicit Instruction:** Students are given definitions or other attributes of words to be learned.
2. **Implicit Instruction:** Students are exposed to words or given opportunities to do a great deal of reading.
3. **Multimedia Methods:** Vocabulary is taught by going beyond text to include other media such as graphic representations or hypertext.
4. **Capacity Methods:** Practice is emphasized to increase capacity through making reading automatic.
5. **Association Methods:** Learners are encouraged to draw connections between what they do know and words they encounter that they do not know. (NRP, 2000, p. 3)

NCLB—acronym for *No Child Left Behind*, the former Elementary and Secondary Education Act (ESEA) and the federal bipartisan reform law passed in 2001, and was intended to create standards and processes that result in improved student achievement across among all students (U.S. Department of Education, 2004a).

Phonics—method of reading (or teaching reading) wherein the reader pronounces each sound of the alphabet, including consonants and vowels, and blends sounds together to create words.

Phonological awareness—reader's cognizance of the sounds of letters and the process of blending sounds to vocalize words.

Prosody—the patterns of stress and intonation in a language denoting fluency; speech rhythm

Reading—cognitive process through which meaning is derived from symbols.

Reading comprehension—cognitive process of deriving meaning from words or groups of words or text and the level to which the meaning is understood.

Reading Plus—commercial reading intervention program which claims to prepare students to engage with complex text by developing capacity, efficiency, and motivation and to improve silent reading fluency, reading rate, and stamina.

Saccade—smooth eye-movement measured by ophthalmic equipment.

Tachistoscope—mechanical device that measures eye-movement and is used in speed reading programs.

Visagraph—an eye-movement recording device that analyzes visual, perceptual and information processing deficiencies.

Whole language—method of teaching reading that emphasizes meaning of the sentence or passage and is noted as a method that contrasts with phonics.

Whole word—reading method of addressing a word in context rather than by sounding out the individual letters.

CHAPTER 2: REVIEW OF LITERATURE

The ability to read information with comprehension was a core, literacy skill that determined the success of each student in today's world (Honig, Diamond, & Gutlohn, 2008). Thomas Jefferson stated, "Democracy . . . can survive and flourish only with a literate citizenry" (as cited in Honig et al., 2008, p. 2). "In order to read, a child must develop an awareness that spoken words can be pulled apart into phonemes and that the letters in these written words represent these sounds" (Lyon, Shaywitz, & Shaywitz, 2003, p. 7). McCoach, O'Connell, Reis, and Levitt (2006) reiterated that "Learning to read was one of the most important academic skills that students develop during the first 2 years of school" (p. 14). According to the NRP (2000), the ability to read included being able to recognize printed words through decoding and finding meaning in words through comprehension. Both decoding and comprehension depend on the student's cognitive abilities and memory. Further, if the student used all or most of his available cognition for one process, such as decoding, then few resources remained for comprehension.

A student's ability to read ultimately affected his/her progress throughout his/her educational career and determined future aspirations of vocational choice. Within the medical community, the American Academy of Pediatrics (2012) provided information and support concerning the development of children and reading for parents on their webpage, which explained that children generally learn to read by six or seven years of age, although some learn earlier. But the Academy noted that early readers might not continue to excel because later readers tended to accelerate reading and learning in the second or third grade. The Academy's comments warned parents pushing children to read too early might create problems, since a love of learning could not be artificially created or forced.

Reading instruction progressed from the *deaf mute* methodology (Rodgers, 2001) of the 1930s to the current, specialized computer methodology of *Reading Plus* (Marrs & Patrick, 2002). The literature review begins with an overview of the history of reading instruction. Major controversies surrounding the phonics approach versus a whole language approach are included in the review along with information regarding the necessity of individualizing reading instruction for students who are not achieving as expected in the area of reading. The history of eye-movement research details the information of a relationship between ophthalmological data and reading achievement, which results in the Reading Plus program. At the end of the 20th century a national focus by the NRP (2000) spurred the identification of foundational reading methods. An overview of the Reading Plus program detailed the history and methodology of the program. The chapter ends with an overview of current reading initiatives, the challenge for older readers and factors that affect reading achievement, all of which support the case for individualized reading intervention such as *Reading Plus*.

History of Reading Instruction

Types of Readers: Meaning, Sound and *deaf mute* Methodology

Reading teachers since the 1900s have explored a variety of methodologies to find the correct process for beginning readers. Reading *experts* such as Gates and Gray downplayed the importance of phonics after 1918. Gates introduced intrinsic phonics and Rudolph Flesch emphasized the importance of systematic phonics. Geraldine Rodgers (2001) discovered two very different types of readers labeled from 1930s reading instruction materials. The first type was labeled the *meaning* type, while the second type was labeled the *sound* type (Rodgers, 2001). The introduction in 1930 of the *deaf mute* method of reading was, according to Rodgers (2001), “a setback; it focused more on sight words, less on phonics” (p. 956). The *meaning* type

reader learned with the conscious help of context, and so he/she could never read without the slower process of comprehending each passage before moving onto the next. The *meaning* reader was forever hampered by reliance on context clues in the text. This reader was slowed by having to continually and consciously focus on decoding print. This type of reader devoted part of his/her attention to understanding the message or to comprehending what was being read (Rodgers, 2001), so most likely it deeply diminished an individual's enjoyment of reading.

According to Rodgers's (2001) research of the *deaf mute* method, "The *sound* type learner read by the sound of print, not with the conscious use of context, and so (he/she) can read fluently" (p. 1,518). The *sound reader* developed an automated reading process. Because of this automation, the reader was able to devote all attention to understanding the text. This type of reader does not have to devote his/her attention to constantly decoding text while reading. The *sound reader* had the potential to develop into a successful reader. *Sound readers* could comprehend the text that they are reading without having to decode as they progressed through a reading selection they were reading.

Many problems were abundant with the *deaf mute* method of reading. This method primarily focused on students relying entirely on memorizing high frequency words and relying on picture or text clues to figure out words that they didn't know. Part of the *deaf mute* program that was detrimental to developing readers was the omission of teachers being required to listen to students read aloud. During the 1930s there was an emphasis on silent reading. The teachers missed an opportunity to detect students' difficulty in completing a reading selection. Possibly, the teacher may have noticed that fluency was low and also that students were struggling to comprehend what they were reading.

Teachers misinterpreted students' forced but divided attention as a strength. Even though students were focused, their focus was on understanding the actual words in the text and not the meaning of the text itself (Rodgers, 2001). This caused a disconnection between a student's fluency and comprehension ability.

Rodgers (2001) witnessed third graders, who had been taught by *meaning*, struggle to pronounce and understand words that first graders, who had been taught by *sound*, were easily able to decode and understand. She stated that most third-grade teachers did not even know there was a real problem with comprehension and decoding. Rodgers (2001) explained that low frequency words were more difficult to recognize and read independently because the words were not in their general vocabularies and did not evoke meaning connections to sound combinations or meaning.

The *deaf mute* method of 1930 was still firmly in place in America in 1962. Nila Banton Smith stated that in 1963, basal readers were used by 90% of first grade teachers on all or most days of the school year. Chall (1967) discussed in *Learning to Read: The Great Debate* that none of the basal series in 1962 were phonics series and all used the sight word method. These facts indicated that at least 90% of first-grade teachers in America were using the *deaf mute* method to teach beginning reading in 1962 (Rodgers, 2001).

The Reading Wars

The Reading Wars focused attention on the phonics approach versus the whole language approach to teaching reading. The first and most divisive issue in that conflict was the debate over the importance of phonics in early reading instruction.

The two theoretical approaches have been debated since the 1960s (Williams, 2009). Rodgers (2001) clearly stated her belief in the phonics approach, while others fully and

emphatically supported whole language. Even though the two approaches were referred to differently from time to time, supporters on both sides of the argument were emphatic that their approach to reading was the correct one. To understand the differences of opinion, it was important to understand what each approach entailed. Even though there have been volumes of research and hundreds, if not thousands, of reading programs designed utilizing each approach, there were still differences among researchers as to the best method to teach reading.

A National Education Association (NEA) report stated in its official reading policy, “that reading was the gateway to learning in all content areas and essential for achieving high standards” (NEA, 2013, para. 3). The NEA policy continued by stating, “to open that gateway for all students, the NEA, International Reading Association and many others believe it was counterproductive to promote any particular program, procedure, or method of reading instruction to the exclusion of all others” (NEA, 2013, para. 4). The NEA also lamented the fact that the war on reading had been “politicized adding that this does little to help students or teachers in the trenches” (NEA, 2013, para. 2).

Phonics supporters believed that children must be taught systematically about the letter-sound combinations that make up words. They believed that without this, children would struggle and fall behind as readers. Whole-language supporters believed that instruction starts with short, everyday words and sentences. To learn a new word, children looked first at its context, its first letters, or at a relevant picture to figure it out. They used both *leveled readers* and trade book classics (Williams, 2009). Leveled readers are books that were part of a larger collection of books organized in levels of difficulty. These books were leveled from easy books that a beginning reader would read to the longer, complex books selected by advanced readers. Some schools chose to house these books in a central location. Usually there were multiple

copies of many books. This allowed teachers to work with small groups of students that had similar reading abilities (Pinnell, 2013).

The phonics supporters received a major boost with recommendations from two major groups. The NRP and the “*Reading First*” portion of the *No Child Left Behind Act of 2001* legislation recognized the importance of phonics instruction in successful reading programs. While some reading programs may have ignored phonics instruction, few ignored these elements completely (Williams, 2009). The NRP’s report came to the clear conclusion that without some phonics instruction, whole language pedagogy was not enough. The report revealed the characteristics of phonemic awareness training most effective in enhancing reading and spelling skills, including explicitly and systematically teaching children to manipulate phonemes (Anderson, 2000).

Torgesen, Wagner, and Rashotte (1994) yielded insight on the importance of phonological skills in reading through Longitudinal Studies of Phonological Processing and Reading, during which time they explored three types of phonological skills, including phonological awareness, phonological memory, and rate of access for phonological information, with reading achievement. Research prior to this study indicated the following:

- (a) individual differences in phonological processes were predictive of later differences in development of reading skills;
- (b) training in phonological awareness, coupled with instruction in specific letter-sound relationships, significantly enhanced growth in early word-reading skills;
- (c) older (students who were) good and poor readers consistently differed in phonological processing skills; and,
- (d) phonological skills were related to one another in development. (Torgesen et al., 1994, p. 278)

In Torgesen et al.'s (1994) longitudinal study using 288 students, results implied that the stability of individual differences in phonological skills remained over time, or that poor readers in early grades continued to remain poor readers in subsequent grades.

Why Johnny Can't Read

In his book, *Why Johnny Can't Read—And What You Can Do About It*, published in 1955, Rudolf Flesch blamed all of the reading experts of the time for substituting the whole word method for systematic phonics in early reading instruction and accused them of causing “massive reading failure among the young. Flesch was also critical of teachers who explained student deficiency in reading as the student not being developmentally ready to read. Flesch claimed that his research overwhelmingly supported systematic phonics over the intrinsic method. He also claimed that the reading experts of the time had ignored their own research (Flesch, 1955). Flesch's comments may have been referring to Albert J. Harris, a senior editor of a very popular Macmillan reading series. This reading series claimed to introduce phonics to students when it instead relied on students comparing two words for similarities and differences. This reading series did not teach phonics even though Flesch's ideas were causing some reading experts to question the whole word method of teaching reading (Rodgers, 2001).

Whole word and the deaf mute method of teaching were essentially the same process with different names. These methods of teaching reading rely on students identifying words by sight. Student memorization of sight words or high frequency words and word association using context clues and pictures are the foundation of these methods of reading instruction. At the beginning of the 20th century these methods were much more than a methodology, they were a philosophy. The NRP (2000) determined that systematic phonics instruction leads to significant positive benefits for students in kindergarten through sixth grade and for children with difficulty

learning to read. Kindergartners who receive systematic beginning phonics instruction read better and spell better than other children, and first graders are better able to decode and spell words. The students also show significant improvement in their ability to understand what they read. Similarly, phonics instruction helps older children spell and decode text better, although their understanding does not necessarily improve. Later, Kamil et al. (2000) emphasized that favorable research in word identification “doesn’t necessarily imply that such an advantage carries over to other areas of reading ability” (p. 89). The authors explained the difference between systematic and intrinsic phonics. *Systematic phonics* also called *synthetic phonics* is an instructional method in which early, intensive, phonic rules were taught in a deductive, part-to-whole manner by teaching letter sounds in isolation, which were then blended into words. *Intrinsic phonics*, also called *analytic phonics*, involves whole-to-parts strategy in which learned sight words are analyzed and phonics rules are inferred and discovered.

Throughout the previous century, reading specialists and researchers were divided into two categories. These two categories focused upon phonics and meaning, with each group using research to support claims of their superiority.

Eye-Movement Research and a Relationship to Reading

The *Reading Plus* program evolved from studies in eye-movement and the relationship of eye-movement to the reading process. While current literature indicates that eye-movement research relates to cognitive processes, the earliest research on eye-movement dates back to 1879 (Rayner, 1998). Early research focused on the impact of eye-movements on reading words with less emphasis on neurological processing, while in the 1980s and 1990s, evidence was collected on information regarding eye-movements, including reading fixation time and saccade length, in relation to language processing (Rayner, 1998).

In his compilation of 20 years of work in the area of eye-movement, Keith Rayner described three eras of research. The initial era began in 1879 with observations by Emile Javal, a French oculist, concerning the role of eye-movements in the process of reading; this era lasted until 1920 (Williams, 2009). In the early work, Javal asked his subjects to read while wearing a small Plaster of Paris cupped device over one eye. The cup was fitted with a slender stick in the center that moved as the eyeball moved. By noting the series of jerks and pauses, known as saccadic movements, Javal discovered the “oculo-motor nature of the reading process” (Williams, 2009, p. 17). During the first era of research, it was determined that readers do not perceive information during actual eye-movements or saccades but rather during the time when the eye is fixed on a word (Rayner, 1998).

The second era reported in the literature included important work by Miles Tinker and extended from the 1920s through the 1960s (Rayner, 1998). Interest in the impact of eye-movements on the process of reading can be found in notable literature beginning in 1928 with work by Tinker (1933), who produced records of eye-movement measures on reading performance during the previous fifteen years. Four methods were used to record eye-movement and pauses during reading and included:

1. Direct or indirect attachment of mechanical recording apparatus to the eyeball;
2. Photographing (a) eye with point of reference attached to eyeball, or (b) beam of light reflected from mirror held gently against closed lid of one eye;
3. Counting eye-movements from observation of eye with or without auxiliary aids (i.e., mirror, telescope);
4. Photographing the image of a light reflected from the surface of the cornea. (Tinker, 1933, p. 381)

This work additionally noted that, “there is no such thing as a fixation point in reading, but rather a fixation field” and Tinker (1933) stated that “the most important use of eye-movement measures has been to discover the fundamental nature of oculomotor habits in various reading situations” (p. 382). The significance of this finding appeared to be that the fluid reader does not read word by word but rather by sweeping the eye across multiple words which are then absorbed for comprehension.

Tinker (1933) documented that a reader’s eye-movements provided a vehicle for identifying reading deficiency, immature reading habits, and reading efficiency through measurements of fixation frequency, pause duration, perception time (sum of pause durations), and regression frequency, though he cautioned that additional checks of comprehension were important and that eye-movement alone, while highly valid, should not be the only test of reading efficiency. He noted that speed and comprehension appear to be related. However, because testing of eye-movement was expensive and labor intensive, only small groups had been studied at the time of his research.

During the second era of research, technology was created that included eye-movement photography equipment, pacers, films, and the tachistoscope, a mechanical device which measured eye-movement, resulting in new efforts to create speed reading programs or programs that improved reading efficiency (Williams, 2009).

The third era was initiated in the mid-1970s and was impacted by a surge of new and complex technology that allowed researchers to refine their methods of measuring both saccades and fixations—critical types of eye-movements—through the use of computers and research laboratories (Rayner, 1998). In 2011, Webber, Wood, Gole, and Brown reported on research using the Visagraph III, a device that records eye positions during reading. This technology

required goggles worn by 59 students in the study who were checked for reading rates and eye-movements, or saccades. The study verified that slower developmental eye-movement (DEM) corresponded to weaker reading skills because the duration of both fixations and reading rate determined through technology corresponded to standardized reading achievement scores (Webber et al., 2011).

More recent studies have pursued working memory and processing speed in relation to eye-movements based on the assumption that reading comprehension included language processes in addition to general cognitive abilities of perception, attention, working-memory, and reasoning (Traxler et al., 2012). In Traxler et al.'s (2012) study, results showed that reading speed impacts the reader's progress more than working-memory capacity.

Research also indicated that reading is more complex than the task of decoding letters. As the eye moved across a field of words or symbols, the brain was prompted to make sense of the written word. In the 2012 *Journal of Early Childhood Literacy*, three researchers studied a second grader's reading pattern and eye-movements, noting miscues and visual behaviors related to each miscue (Brown, Kim, & O'Brien Ramirez, 2012). In addition, it was worth noting that this study demonstrated that readers were not passive but rather were actively engaged in seeking meaning during the reading process (Brown et al., 2012).

In summary, the three eras of research in eye-movement, which spanned from 1879 through 2000, included studies that connected the visual process of scanning words to the absorption of meaning during the reading process. This research confirmed that fluid eye-movements were important to successful reading. This relationship between eye-movement and comprehension connected the critical nature of reading for student success in classrooms. The ability to read was a physical and mental connection that allowed students to process and

comprehend reading materials. Monitoring this specific student capability was difficult for teachers to assess through typical classroom instructional methods, interventions and assessments. The *Reading Plus* program allowed teachers to pinpoint student weaknesses in reading and to target them through successful eye-movement interventions.

National Emphasis on Reading

The United States federal government, through the work of the Department of Education, illustrated a continued commitment to the importance of reading instruction by pursuing research studies that identified best practices and by participating in both national and international assessments that monitored literacy rates of children in the United States. To provide direction, the Department of Education developed the following initiative:

In 1997, Congress engaged federal agencies by guiding the Director of the National Institute of Child Health and Human Development (NICHD), in consultation with the Secretary of Education, to convene a national panel to assess the status of research-based knowledge, including the effectiveness of various approaches to teaching children to read. (NRP, 2000, p. 1)

The subsequent 449-page report, “Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and the Implications for Teaching Reading” by the NRP was released in 2000. Specifically, “The National Reading Panel embraced the criteria in its review to bring balance to a field in which decisions have often been made based more on ideology than evidence” (Armbruster, Lehr, & Osborn, 2001, “Introduction,” para. 6). The report contained evidence to support specific instructional practices to teach reading. This report was used to shape educational policies, classroom instruction and teaching materials that affected students in classrooms across the nation. Consequently, responses were both positive and

negative in nature from organizations such as the International Reading Association, The Committee on the Prevention of Reading Difficulties in Young Children, The RAND Reading Study Group, The National Literacy Council, and the university research community.

With a sense of respect and specified direction, the public school community including students, parents, teachers and school administrators relied on educational leaders to make sound decisions about the foundations of reading instruction. Educational leaders at the district and state levels across the nation received information from the U.S. Department of Education (USDE) on the best instructional methods to teach reading. Interestingly, USDE “Department officials have continually stressed that there was not any sort of list of ‘sanctioned’ programs. The critical issue was that any and all reading programs and materials . . . must be based upon scientifically-based reading research as that term is defined in the program statute” (U.S. Department of Education, 2008, “No approved list,” para. 1).

Two major documents were published to assist state and local school systems. The *Research Building Blocks for Teaching Children to Read, Put Reading First: Kindergarten through Grade 3* was developed by the Center for the Improvement of Early Reading Achievement and published by The Partnership for Reading, a collaborative effort of the National Institute for Literacy, the National Institute of Child Health and Human Development. The U.S. Department of Education published *Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and the Implications for Teaching Reading-Reports of the Subgroups* by the NRP of the USDE in 2000. Recently in 2008, the Institute of Educational Sciences (IES) published *Improving Adolescent Literacy: Effective Classroom and Intervention Practices*. These important publications provide exemplars of reading instruction for decision-making based upon rigorous scientifically-based research.

National Reading Accountability

From the implementation of the Goals 2000, the Improving America's Schools Act, it was apparent that states must move towards clear goals, standards, and expectations to address the achievement gap issue (Johnson, 2002).

The work of the NRP paralleled the emerging federal accountability requirements of NCLB. NCLB required states to administer reading assessments at the elementary and middle school levels. These assessments included NC End-of-Grade and NC End-of-Course tests for grades 3–12. High school students participated in subject specific tests such as English I, which included literary devices, literature, comprehension and grammatical structure. United States History and Biology End-of-Course assessments required reading comprehension and vocabulary skills for successful proficiency.

RttT accountability included the same state-wide assessments for elementary and middle schools, but moved the high school assessment to English II in 2011. The RttT accountability measures for North Carolina included a progression scale for schools to reduce the gaps between subgroups or specifically labeled as AMOs. This accountability model merged student scores within a subgroup that was reported within the accountability data for each school in North Carolina. The resulting data highlighted the school as a whole as opposed to individual students within the school. Local state requirements included an A–F labeling system for schools based upon student growth.

Student achievement had been important from the national perspective through NCLB and other national efforts to improve college graduation rates. While attention was given previously to individual student test scores, more recent emphasis focused on groups of student data, which resulted in student sub-group scores as well as a score for the school as a whole.

Foundational Reading Instructional Methods

“Learning to read was a complex task for beginners. They (readers) must coordinate many cognitive processes to read accurately and fluently, including recognizing words, constructing the meanings of sentences and text, and retaining the information read in memory” (NRP, 2000, p. 89).

Five essential components of reading instruction emerged from the research of the NRP and the Partnership for Reading. However, many reading experts contend that reading instruction and competence relied on more than skills, but also on an emotional connection to text. Snow (2002) explained that literacy experts should reinforce reading as an emotional sphere in addition to cognitive. Motivating the reader through a stimulating learning environment through text material and activity would keep the young reader engaged and interested in reading. The NRP encouraged educators to motivate students through engaging classroom strategies and tasks.

The NRP (2000) contended that children should be assessed not only in phonics but also in their interest and understanding of reading material. The panel emphasized that use of all the different reading processes, rather than in only one, would contribute to academic development as students grow in reading skills.

Instructional methods identified by the NRP (2000) included phonemic awareness, phonics, fluency, vocabulary instruction, and comprehension. Designated by the educational community as the “Big 5,” educators around the nation began implementing these strategies in classrooms and publishing companies began producing teaching materials. This combination of teaching reading with five core instructional strategies and the importance of motivational factors that sustained a reader’s interest provided the educational community with a framework for instructional reading methods for teachers. The *Reading Plus* program combines the five core

instructional strategies through the use of technology and ophthalmology research and administered by a teacher who motivates the students through facilitation of the program.

Phonemic Awareness

Phonemic awareness (PA) instruction was intended “only as a critical foundational piece. It helps children grasp how the alphabetic system works in their language and helps children read and spell words in various ways” (NRP, 2000, 7). The NRP (2000) contends that their “results of the meta-analysis showed that teaching children to manipulate the sounds in language helps them learn to read” (p. 5).

The NRP describes phonemic awareness and associated processes as an essential part of reading that assists readers with combinations of sounds that apply to corresponding letters in order to make words.

As students learned to make the sounds of the alphabet by matching an alphabetic letter while moving their mouths, vocal chords and hearing the sounds they create, it strengthens their ability to decode unfamiliar words. This ability to hear a sound and match it to an alphabet letter(s) enabled a young reader to “sound out” letters and spell words that in turn enhances future literacy skills.

Phonics Instruction

The phonics instruction “process for beginners involves learning the alphabetic system, that was, letter-sound correspondences and spelling patterns, and learning how to apply this knowledge in their reading” (NRP, 2000, p. 89). Harris and Hodges (1995) explained that “systematic phonics instruction is a way of teaching reading that stresses the acquisition of letter-sound correspondences and their use to read and spell words” (NRP, 2000, p. 89). NRP

continued that the goal of phonics is to assist the reader to use the alphabet in order to read and write effectively.

The ability of the student to transfer the printed word into its spoken form enables the reader to “decode” the word. Decoding “involves looking at a word and connecting the letters and sounds and then blending those sounds together” (Honig et al., 2008, p. 8). The alphabetic principle was reinforced when students understand that “written letters represent spoken sounds” (Honig et al., 2008, p. 8). Phonics instruction helped beginning readers to understand that letters and sounds work together for reading and writing.

Fluency

Fluency skills of a reader may appear to be sufficient to others during the common practices of read-aloud opportunities within classroom settings. As teachers and fellow classmates listen to a classmate read aloud, everyone may be able to discern the smoothness of the voice or the difficulty of the pronunciations. Reading fluency is emphasized by the NRP (2000) with the statement: “[there is] a close relationship between fluency and reading comprehension. Students who are low in fluency may have difficulty getting the meaning of what they read” (NRP, 2000, p. 1). The NRP included speed, accuracy, strong word recognition skills and proper expression as skills that impacted fluency skills but noted that these components do not always lead to fluency. Fluency was critical so that readers could devote their attention to understanding the meaning of the content instead of identifying the words in print (Florida Center for Reading Research, 2006).

Fluency skills were teachable, yet the methods have been debatable. Many educators contended that practice increases fluency, so reading aloud and frequently were understandable instructional solutions. Procedures such as repeated oral reading practice and guided oral reading

practice and programs such as Sustained Silent Reading, Accelerated Reader and other incentive programs were analyzed for effectiveness by the NRP. The panel noted that these procedures improved sound/word recognition and comprehension, along with the speed and accuracy of the oral reading process, thus contributing to reading achievement. The Florida Center for Reading Research (2006) recommended fluency instruction built upon phonemic awareness, oral reading practice and listening to appropriate reading of others. Based upon the uncertainty of correlational studies, NRP reminded educators that reading practice was important to reading attainment, though stronger readers may read more and continue to improve their reading because they enjoy reading.

Vocabulary

Biemiller and Boote (2006) contended the importance of vocabulary instruction for children who have not been exposed to a vocabulary-rich environment as critical. Biemiller and Boote (2006) stated that “early vocabulary limitations make ‘catching up’ difficult even though once in school, children appear to acquire new vocabulary at similar rates. To ‘catch up,’ vocabulary-disadvantaged children have to acquire vocabulary at above-average rates” (Biemiller & Boote, 2006, para. 7).

Vocabulary occupied an important position in learning to read. “As a learner begins to read, reading vocabulary encountered in texts was mapped onto the oral vocabulary the learner brings to the task. The reader learns to translate the (relatively) unfamiliar words in print into speech, with the expectation that the speech forms will be easier to comprehend” (NRP, 2000, p. 7).

With the importance of vocabulary for comprehension and the critical need for students that were not exposed to a rich vocabulary environment, it was imperative for early childhood educators to teach vocabulary words to students on a daily basis.

Comprehension

Comprehension and vocabulary knowledge work together in the reader's mind to create meaning for himself/herself from the text. “Reading comprehension is the construction of the meaning of a written text through a reciprocal interchange of ideas between the reader and the message in a particular text” (Harris & Hodges, 1995, p. 39).

The NRP (2000) explained comprehension as the moments when “a reader reads a text to understand what is read and to put this understanding to use” (p. 5). In addition, the panel noted that comprehension skills were active when the reader could learn, locate information, or even be entertained in order to gain meaningful memories of the reading text and then communicate that information to others (NRP, 2000). Further, comprehension strategies guide the student as he reads and writes so that he is able to understand the text and use the information effectively (NRP, 2000).

Understanding the written text by reading or listening to the text was the culmination of the skills of a literate person. The ability to gain knowledge or skill, to be entertained, or to make a decision was the right of every citizen. The ability to flourish in a democracy as an active citizen was to be literate.

Individualized Reading Instruction

Connor, Morrison, Fishman, Schatschneider, and Underwood (2007), in a report titled “Algorithm-Guided Individualized Reading Instruction,” argued that it was important to individualize reading instruction. Connor et al. (2007) addressed the reading methods

controversy by saying that a balanced approach of phonics and whole language was best for a majority of students since use of one single approach, such as only word attack or only whole word method, might only improve the reading deficits only in the children who showed that type of reading problem.

Fortunately, teachers approached how to best teach children to read by studying a variety of researched best practices and use diagnostic tools such as the Woodcock-Johnson III to monitor students' reading proficiencies. According to Stanovich and Stanovich (2003), "reflective teachers use scientific thinking . . . and inquire into their own practice and . . . examine their own classrooms to find out what works best for them and their students" (p. 5).

Reflective teachers may realize that there might not be one single best approach to reading instruction. Many factors should go into teaching children to read. Most often, teachers pre-assessed reading proficiencies and determined methods and strategies that would best suit a child. Kamil et al. (2000) called this an "ecologically balanced or comprehensive approach to teaching reading" (p. 234). He continued by saying that in order to develop the most effective instructional approaches and interventions, we must clearly define what works, "the conditions under which it works," and what may not be helpful (Pearson, 2004, p. 244). Combining different methodologies may be necessary in order to design reading programs that will work with children who have different abilities. Research suggested that using ineffective teaching methods along with instructional strategies that are without "enough research evidence" limit student mastery of essential skills and new concepts (Moats, 2007, p. 8).

The new Common Core State Standards (CCSS) were the culmination of an extended, broad-based effort to create the next generation of K–12 standards to help ensure that all students are college and career ready in literacy no later than the end of high school (Honig et al., 2008).

The hope was that instead of each state having separate standards and in turn separate measures of what a literate high school graduate would learn, all states would require the same things from graduates by following like standards. Gill and Kozloff (2004) stated that “[although] students, regardless of their learning difficulties, reach higher and faster achievement with systematic and explicit instruction, this type of instruction was still not always used” (p. 3).

History of the *Reading Plus* Program

The development of the *Reading Plus* program began in 1931 through the research of Earl Taylor, James Taylor, and Carl Taylor on the connection between eye-movements and reading skills. Their development of the *Ophthalmograph*, an instrument used to photograph the eyes during reading, and the *Metronoscope*, a device that exposed short reading passages to the eyes so that they were exercised to increase binocular coordination, were the foundation instruments that connected reading skills such as fluency to the physical capability of the student’s eyes. These instruments were two of the first instruments to be used in reading instruction in the United States (*Reading Plus*, 2013).

In 1945, there were three points of view concerning eye-movement and the reading process. Brandt (1945) and Ahrendt and Mosedale (1971) explained that in 1945 one school of thought contended that poor central processes were due to poor eye-movement. Another group believed that eye-movement determined the cognitive processes and the third group simply acknowledged that there was a functional relationship between ocular movements and cognitive processes.

Continuing the research of the correlation of the strengthening of the student’s eye coordination with reading, Stanford E. Taylor founded Educational Developmental Laboratories, Inc. (later EDL/McGraw-Hill) and invented the Reading Eye I Camera. He contended that eye-

movements were not the reflection of poor reading, but were part of the “individual’s functional and interpretative development” (Ahrendt & Mosedale, 1971, p. 149). With the ability to photograph eye-movement during reading, Taylor felt that it was important to use this diagnostic method to develop individualized reading programs for struggling readers.

Mr. Stanford Taylor continued his research by conducting a large-scale eye-movement study with 39 colleges and university students. He produced the *Look, Listen, Learn* system of beginning reading and the Learning 100 system for adult learners. His systems used his invented instructional devices including the *Aud-X*, the *Controlled Reader*, and the *Tach-X Tachistoscope* (*Reading Plus*, 2012). His development of the *Guided Reader*, a simplified controlled reading device, the Tach-Mate tachistoscope, and the Apple® version of the *Visagraph*®, a computerized eye-movement recording system infused new technologies. In 1995, Taylor Associates/Communications, Inc. launched the first versions of the *Reading Plus* program. Subsequent research and development led to the 2002 web-based version of the RP program. Under the direction of CEO, Mark Taylor, the company recently released the 2013 version of the *Reading Plus* program that included a writing component (*Reading Plus*, 2012). The *Reading Plus* program’s goal was to increase a student’s fluency and silent reading, comprehension, vocabulary, and overall reading proficiency for students in Grade 3 through college.

Reading Plus Program Instructional Methods

The *Reading Plus* program followed the premise that eye-movements or visual-perceptual skills impacted reading so many of the components of the RP methodology included eye exercises and repetition. Visual-perceptual skills were the ability to interpret or give meaning to what is seen (*Glossary of Reading Plus*, 2012). The student began the process by taking a *Reading Placement Appraisal* (RPA) to determine his/her practice level for each part of the

program. The RPA determined the student's independent silent reading rate, independent silent reading level, and instructional vocabulary level. Another pre-assessment option is the use of the Visagraph, a tool that detects the student's binocular abilities by tracking the student's eye-movements across text.

Once the pre-assessment process was completed, the RP program followed a routine process of activities. The warm-up activity was called *PAVE*, Perceptual Accuracy/Visual Efficiency. The "scan and flash" activities increased visual memory by building visual skills and by training students to recognize letters and numbers accurately and instantly. *Scan* required students to scan and count the visible characters as they moved across the screen. This activity increased students scanning rate and skills such as "visual coordination and directional attack, visual discrimination and instant recognition" (Glossary of *Reading Plus*, 2012, p. 1). *Flash* required students to view a set of "flashed" characters and then they typed what they saw as quickly as possible. *PAVE* built basic skills necessary for fluent and efficient reading and improved spelling.

Guided Reading™ was the major component of the RP program that enabled students to practice their silent reading in an efficient manner. Students had the option to select a story, which they read within their independent and/or guided rate formats. The independent rate was self-paced yet timed. The student read the sentence and clicked to add the next line of text. The guided rate was the student's silent reading rate. The program used a technique in which the software had a "window" that moved across the text on the screen to direct the student's eyes. The speed of the window increased as the student's comprehension skills increased. The Guided Reading exercises reinforced key vocabulary and the student must answer comprehension questions within 80% accuracy to improve their level.

The primary goal of the *Cloze Plus*TM activity was to provide students with a wide variety of contextual analysis experiences and comprehension building lessons. The focus on surrounding text increased the student's ability to use context to predict and infer for greater comprehension.

Reading Plus methodology included four critical components that were described as *Keys to success with the Reading Plus program*. The components included: following an intense schedule of three to five times per week; 45-minute sessions in a lab environment; extrinsic motivation rewards and recognition; adequate computer workstations; student monitoring by the teacher through one-on-one encouragement, and individual program adjustments.

Students, teachers and administrators received individual, class and site level reports that monitor their performance levels according to the program assessments. The program built in an award system that recognized growth in student performance and the opportunity for teachers to send positive messages to students. Many teachers also used small rewards to supplement the built-in award system.

Taylor Associates/Communications, Inc. developed other tools to support students that were included within the available program components. A writing component, vocabulary activities without the computer, and teacher-directed lessons were included to support students who were not successful on the computer. *Reading Plus* incorporated the understanding and research from their founders in 1931 to the present instructional online system that monitored students individually and provided each student with personally designed reading support. Research (Connor et al., 2007) claimed that individually designed reading instruction was critical for student success.

Reading Plus was listed in the What Works Clearinghouse (WWC), a component of the United States Department of Education Institute of Education Sciences. The Institute issued an *Adolescent Literacy Intervention Report* stating that the program “demonstrates the system has ‘a statistically significant positive effect’ on adolescent learners’ reading comprehension” (Institute of Education Sciences, 2008, p. 1). The attributes of reading instruction methodologies promoted by the NRP (phonemic awareness, phonics, fluency, vocabulary instruction, and comprehension) were included within the RP program with the addition of the physical intervention support for binocular eye-movement structures and motivational strategies.

Current Reading Initiatives

Key components of reading were regularly noted in the literature and included phonemic awareness, phonics, fluency, vocabulary and comprehension (Honig et al., 2008). These five essential skills were based on recommendations of the NRP (2000) regarding research-based reading skills in the report of the NRP: Teaching children to read (NRP, 2000).

With the *Reading First* initiative, *No Child Left Behind Act of 2001*, *Common Core* curriculum, and increased test requirements, more effort was placed on the targeting of early readers. Though it was generally accepted that reading deficits should be addressed at the earliest level, a review of programs for beginning readers through the What Works Clearinghouse (WWC, 2010) was conducted to determine which programs and interventions were supported by scientific evidence of effectiveness; however, the findings yielded limited evidence. One hundred fifty-three programs were reviewed by the WWC, although only 11 were found to have sufficient evidence of effectiveness in at least one or two of the five domains noted as essential aspects of reading by the NRP (2000).

Through the more recent Response to Instruction (RTI) model which called for a tiered process of intervention to address academic or behavioral needs of students, the Rose Report (Rose, 2006) recommended a second tier of intervention before reading failures became significant. Rose (2006) cited a longitudinal study in which phonics was effectively taught when using a synthetic approach of teaching sounds in association with the corresponding letters. When students recognized letters and their corresponding sounds, they were taught to put more letters together in order to read a word by sounding out the phonemes. Gersten and Dimino (2006) reported that it was difficult to identify struggling students during the first year of school, thus noting that special education students may be either over-identified or under-identified during this time period in kindergarten or first grade. While a discrepancy between IQ and reading achievement tests was the prior identification requirement for learning disabilities in the area of reading, the newer process of RTI provided teachers with a framework for making data-based decisions before referring a child to special education evaluation, RTI allowed teachers to provide accommodations and small group interventions for students who may not be able to respond to the typical classroom instruction (Gersten & Dimino 2006).

Literature regarding *Reading Plus*, a web-based intervention program that focused on reading fluency, comprehension, and vocabulary, included a study of eye-movement in relation to reading and the reading rate of students with reading problems or disabilities in a group of 13,128 students in grades five through nine. In the 2008 study, technology was used to assess student reading levels, as well as provide reading activities via the computer that were complemented by supplemental offline activities. WWC (2010) noted that *Reading Plus* had potentially positive effects with regard to comprehension.

Taylor Associates, the company that created *Reading Plus*, noted that it was founded on research and development in the field of silent reading technology and has documented success in increasing standardized scores through gains in fluency and silent reading, comprehension, vocabulary, and overall reading proficiency for students in grade 3 through college (*Reading Plus*, 2012).

The combination of both eye-movement research and reading intervention practices used in *Reading Plus* resulted in a unique approach to improved silent visual reading skills through more fluid eye-movements that allowed for sustained comprehension. *Reading Plus* (n.d.) methodology contained structures to scaffold content, rate, repetition intensity and lesson formats to build independent reading skills.

Assessing Reading

In 2000, the NRP produced a report for Congress focused on the five essential components of reading instruction that were intended to prevent reading failure (Honig et al., 2008). In some instances students continued to fail. According to Torgesen (1998), early assessment was one of the best ways to prevent the downward spiral of failure in reading. Early assessment served to identify students who needed extra help in reading before they experienced serious failure. Torgesen (1998) claimed educators must “catch them [students] before they fall” (p. 32).

Stanovich (1986, 1993) continued to emphasize the importance of early reading assessments in what he called the *Matthew Effect*. His theory stated that students who learned to read early continued improving but that students that did not learn to read early continued to struggle and “become ‘poorer’ and increasingly distanced from the students ‘rich’ in reading ability” (Stanovich, 1986, p. 380).

Scientificallly-based research studies have repeatedly demonstrated the value of regularly assessing students' reading progress (e.g., Fuchs & Fuchs, 1999; Shinn, 1998). The implementation of the No Child Left Behind Act of 2001 (NCLB) caused many states to reexamine their accountability models and thus revamp their curricula and testing (Dennis, 2009). For example, Tennessee revised its assessment program implementing a criterion-referenced standardized assessment measuring the student's proficiency on the content standards in grades three through eight (TCAP). The Tennessee Reading Policy required a direct reading instruction using scientifically-based reading research that includes the five elements of reading (Dennis, 2009).

The Tennessee State Board of Education's policy required these scores to be used to make instructional decisions about the students (Tennessee State Board of Education, 2005, p. 4). The scores reflected the level of mastery on the grade-level content but did not reveal why these students were testing below grade level (Dennis, 2009). This phenomenon illustrated the challenges that school administrators and teachers faced when trying to use state mandated assessments such as criterion-referenced exams to provide reading instruction that was personalized for students.

In order to effectively meet the needs of students who struggle with reading, Moore County Schools relied on a variety of assessment tools such as formative, benchmark, and summative assessments along with progress monitoring weekly on targeted skills to ensure adequate progress and student learning in the analysis of student reading skills (Moore County Schools, 2012). Each of these tests identified students at risk of reading issues and resulted in information for teachers to provide support and progress monitoring (Honig et al., 2008).

Specific diagnostic assessment identified specific weaknesses while outcomes-based assessments evaluated overall skills (Honig et al., 2008).

The research was consistent in explaining the five domains/skills (phonemic awareness, phonics, fluency, vocabulary, and comprehension) possessed among successful readers (NRP, 2000). Some of the domains narrowed even further into subcomponents. All of these components and their subcomponents must be understood and measured through ongoing observations so that effective instructional interventions can be individualized to each reader who was experiencing difficulty in one or all of the five domains. Even subtle changes in the components are important to observe so that modifications to the instruction met the specific needs of the student to insure the continued growth of the reader (Leslie & Caldwell, 2005).

In order to implement appropriate targeted interventions, it was necessary to understand the various key assessments which follow.

Reading Plus assessed students on an interim basis throughout the period of intervention including a Universal Screener, Placement Test, Silent Reading Eye-Movement Recording Assessment and Benchmark Assessments which provided teachers with an analysis of a student's motivation, reading efficiency and capacity. The Universal Screener assessed students for reading proficiency and determined which students would benefit from silent reading intervention. Placement tests determined student's initial placement and assignments. Benchmark Assessments assisted teachers as they monitored student progress over time in reading efficiency, capacity and motivation. The Silent Reading Eye-Movement Recording Assessment uses the Visagraph, eye-movement recording device to detect visual or perceptual processing deficiencies. The results of the interim assessments created an individualized and

responsive program with personalized goals that provided teachers with information and resources to meet individual student needs (*Reading Plus*, n.d.).

Motivating Readers

Researchers Kirsch et al. (2000) reported that students' interest in reading was a predictor of reading comprehension and that 37% of all students surveyed did not read for enjoyment. Additionally, the research of Ivey and Broaddus (2001) shared that independent reading decreases during the middle school years. Researchers Guthrie, Schafer, and Huang (2001) reported that high motivation to read impacted reading achievement even more so than socioeconomics and family background. More specifically researchers Cox and Guthrie (2001) as well as Wang and Guthrie (2004) showed that intrinsic versus extrinsic motivation was more closely associated with reading comprehension. Ivey and Broaddus (2001) also shared that motivating adolescent readers was not a simple task; in fact, it was multidimensional. Furthermore, they shared that teachers expect students to read critically, as well as independently, while instructional practices do not support these expectations. Teachers seldom allowed students to initiate conversations about reading texts or gave them limited opportunities to pursue their own reading interests.

Gambrell (2011) discussed seven ways to engage students in reading: make the tasks relevant to students' lives, give students access to a wide range of reading materials, give students sufficient time to read, give students choices in what they read and their tasks, give students time to talk with their peers about what they read, make reading challenging but successful, and provide incentives that value the importance of reading. Technology was also a motivating factor for some students who struggled with reading; however, the research appeared to be inconclusive. The research of Grimshaw, Dungworth, Mcknight, and Morris (2007) did not

show a significant impact on the reading comprehension of students who used electronic texts while Ertem (2010) reported that electronic texts did have a positive impact on reading comprehension. Marinak and Gambrell (2008) summed it up best when they stated that carefully selected rewards worked best in increasing reading motivation.

The current research showed that responsive and individualized instruction yielded a higher growth in reading than a more generalized approach (Connor et al., 2007). Many of these strategies overlapped and used blended approaches and applications. These blended approaches impacted the students' interest and motivation in what they were reading and also had a significant impact on their vocabulary acquisition, comprehension, and overall increase in their reading skills. There was a great deal of research on reading intervention strategies for K–5 children (Armbruster et al., 2001, Biemiller & Boote, 2006; Connor et al., 2007) but as Vaughn et al. (2008) reported there was very little research in regard to six to 12 students who were experiencing difficulty in reading comprehension.

The NRP (2000) reported that far too many students, in general, were not adequate readers. Biancarosa and Snow (2004) stated that struggling readers in intermediate grades performed below proficiency in both word reading skills and comprehension. Hock et al. (2009) concurred that by the time these struggling readers reached the high school level, many demonstrated deficits in comprehension, word reading, fluency, and vocabulary.

Reading Plus provided an intrinsic motivation connection for students as they progressed during the intervention. Goals, badges, teacher notes and progress were continually shared with the student through the *Reading Plus* format and teacher facilitation. The program claimed that student confidence and interest would increase as he/she demonstrated mastery (*Reading Plus*, n.d.).

The Challenge for Older Readers

Once students reached the secondary level in school, they were expected to read at the appropriate level or “read to learn” instead of “learn to read” as they did in elementary school. Unfortunately, some sixth-grade students entering middle school were not prepared to read proficiently at the secondary level. Specific reading instruction was not continued at the middle and high school levels so struggling reading students did not receive specific intervention strategies to support his/her individual needs. Consequently, these students continued to struggle with reading throughout their secondary school careers, which was a critical concern for educators and parents (Schatschneider et al., 2004; Torgesen, Nettles, Howard, & Winterbottom, 2005). Researchers Rasinski, Rikli, and Johnston (2009) noted a correlation between fluency and a standardized assessment of silent reading comprehension for elementary and middle grade students that emphasized the importance of fluency during the reading process. Similarly, Rasinski et al. (2005) commented that there was a high correlation between a high school student’s comprehension and silent reading fluency proficiency.

Current state-level standardized testing practices in North Carolina required students (testing modifications were provided if noted on an exceptional education student’s Individualized Education Plan or a health-impaired student’s 504 plan) to read silently in order to complete his/her NC End-of-Grade or Common Exam testing requirements in grades three through 12. Unfortunately, if the student was not proficient in reading fluency then there was a high risk of a lack of comprehension and failing the standardized assessments (Buck & Torgesen, 2003; Roehrig, Petscher, Nettles, Hudson, & Torgesen, 2008). Incidentally, exceptional education students that are identified as *reading disabled* are not permitted to receive the *read aloud* modification for their NC End-of-Grade English Language Arts assessments

which contained long reading passages with comprehension questions. The *read aloud* testing modification permitted an adult to read the test passages out loud for the student.

Research (Armbruster et al., 2001; Burke & Rowsell, 2007; Dennis, 2009; Reutzel, Petscher, & Spichtig, 2012; Snow, 2002; Woods, 2007) indicated that practitioners wanted to know a specific instructional methodology that would assist struggling readers. In the quest to discover the best methods, a multitude of approaches of reading instruction and interventions emerged from different associations to the national level (Brown et al., 2012; Cheung & Slavin, 2012; Guthrie & Davis, 2003; Kamil et al., 2000). The NRP (2000) has not promoted any particular method of reading instruction over another. Methodologies included critical details of physical supports concerning eye-movements, hearing, speech abilities and cognition (Lyon et al., 2003). Because secondary teachers were not trained in reading methodologies, current instructional strategies for fluency at the secondary level typically included oral reading which was time consuming, permitted only one student at a time to read for the group, was distracting for some students, and created embarrassing situations for struggling readers at the secondary level.

A critical need for continued fluency support at the secondary levels was noted by researchers (Rasinski, Padak, Linek, & Sturtevant, 1994; Rasinski & Stevenson, 2005; Stahl & Heubach, 2005) which found positive effects for fluency instruction on students' word recognition, reading fluency, comprehension, and overall reading achievement. Researchers (Buck & Torgesen, 2003; Roehrig et al., 2008) shared that there was a direct correlation between third graders' fluency skills and success on standardized tests. While this was the case, there was not a focused continued instructional support for fluency proficiency past the elementary school. Typical middle and high school classrooms teachers monitored fluency as the ability to read

aloud with *prosody*, the ability to read with intonation, expression and inflection, which was not an accurate indicator of comprehension. “Repeated and monitored oral reading” was cited as a valuable practice to improve reading fluency (Armbruster, Lehr, & Osborn, 2001, p. 24).

The history of teaching reading confirmed that there was no consensus among reading experts as to the best method to teach children to read. Teaching reading was a difficult endeavor. Elementary students faced many social and motivational hurdles. The discrepancy between educators understanding fluency instruction at the middle and high school levels and reading comprehension demonstrated a neglect of reading instructional strategies in many classrooms. A more rigorous high stakes testing program based upon Common Core State Standards (RttT, 2013), which increased the requirement of students’ comprehension and silent reading fluency and the absence of clear individualized reading instructional practices at the secondary level, created a need to use an individualized reading support system such as *Reading Plus* to support struggling readers at Cameron Elementary, New Century Middle, and Pinecrest High school in the Moore County Schools district.

CHAPTER 3: METHODOLOGY

Research Purpose

The purpose of this study was to determine the effectiveness of the *Reading Plus* reading intervention system used in three schools in the Moore County Schools in North Carolina with regard to student reading achievement. Due to the continued budget crisis of 2010, coupled with the implementation of the Common Core Curriculum in 2012 and the increased pressure from *Race to the Top* requirements in 2013 to reduce the achievement gaps, school administrators searched for instructional tools and strategies with the potential to improve student achievement for all students. Some elementary schools applied Title I funding while other administrators exhausted state instructional budgets for promising supplemental programs. District administrators supported the quest by school administrators to identify reading support for students who were struggling in reading through partial funding to a school that was seeking an effective reading program.

Pinecrest High School (PHS) piloted the *Reading Plus* system in 2008–2009 and continued the implementation while New Century Middle School (NCMS) piloted the system in 2010–2011 and Cameron Elementary School began its pilot year of *Reading Plus* in the 2012–2013 school year. *Reading Plus*®/Taylor Associates, the company that created and sold *Reading Plus*, provided the program at no charge for these three schools for the pilot year. In addition, Pinecrest High School continued the program at no cost to the school or district for the first three years.

Pinecrest High School implemented the program with three teachers, two of whom were English teachers and the third was a teacher of Exceptional Children. One teacher had previously implemented the *Reading Plus* system while teaching in another state. The company

representative Greg Taylor provided training to all three PHS teachers during the first year of implementation. Language Arts (ELA) teachers at NCMS received introductory training in the fall of 2010 from the *Reading Plus* representative, and a follow-up session with teachers from Pinecrest High School (PHS) who had successfully implemented the program at the high school level through teaming in a *Reading Plus* class. The NCMS ELA teachers used *Reading Plus* as supplementary support for their students, but it was not implemented with fidelity in 2010–2011. Dr. Kathy Kennedy, an assistant superintendent with Moore County Schools, said that, according to the National Center on Response to Intervention, “Fidelity of implementation was defined as the delivery of content and instructional strategies in the way in which they were designed and intended to be delivered; accurately and consistently.” Implementation of the program with fidelity was essential for students to show the greatest gains using the program. Dr. Kennedy further explained,

When a program was not implemented with fidelity, an implementation gap occurs resulting in diminished outcomes. Fidelity of implementation results in the proper execution of the specific research-based practices within the program. When these research-based practices were fully implemented, we can expect positive student achievement outcomes. (K. Kennedy, personal communication, October 16, 2013)

Natalie Cook, reading consultant to the Moore County Schools, advised the elementary schools in Moore County by saying, “Once a school selects a research-based educational program, the expectation must be to fully implement the program as it was written so as to get the intended results. High fidelity was critical to reach the desired outcomes. Leadership was at the core of effective implementation” (N. Cook, personal communication, October 16, 2013).

In 2010–2011, the PHS teachers designed a 90-minute English/Language Arts class in which selected ninth-grade students received 45 minutes of direct instruction in ELA from one teacher and 45 minutes of *Reading Plus* intervention with support from the second teacher. These teachers implemented *Reading Plus* with fidelity according the *Reading Plus* implementation guide. Pinecrest High School continued this 90-minute model throughout the 2012–2013 school year.

Statement of Problem of Practice

The acquisition of reading skills by K–12 students may be essential to academic and career success because reading is required for academic tasks, as well as daily adult activities. School-age students who do not read well may have more difficulty with both academic assignments and reading for pleasure. As adults, these same students with weak reading skills may also experience difficulty following written directions or reading a newspaper. Career-oriented reading may require the worker to read and comprehend complex documents. Therefore, students who are successful in reading may be more likely to find success in adult life activities that involve both personal reading and career-related reading.

Previously in the school district involved in this study, Moore County Schools district level administrators allowed school principals and faculties to select reading programs based upon their own student needs and budgets. Program selections varied by training, implementation, and fidelity. This selection process resulted in a list of at least 13 different reading programs in 23 schools across the district. In addition, as more reading programs were purchased and as data became more important, the district administration began requiring schools to provide a streamlined evaluation of the implemented program, including data results for groups of students and the school population as a whole, in response to RttT requirements

and methods of monitoring achievement data. Superintendent Dr. Aaron Spence expected schools to provide data showing that their selected intervention programs were effective for the purpose of improving students' reading. For streamlined evaluation, each school provided pre and/or post data using scores or information the school deemed important to its purpose. This study sought to provide a review of reading scores, Lexile levels, and teacher information regarding implementation of the *Reading Plus* program and fidelity to implementation in order to produce a more thorough result. Though data regarding achievement gaps among groups may have existed, for the purpose of this study, achievement gaps were not examined.

The district superintendent requested the evaluation of reading programs to determine whether or not data supported the current programs, whether or not these programs improved student achievement and, particularly, proficiency in reading. This study focused on the impact of *Reading Plus* on student reading achievement in elementary, middle, and high school, so that information was gleaned to provide an objective view of student academic progress in reading. Three schools were included in the study: Cameron Elementary School, located in rural northeastern Moore County, with 242 students; New Century Middle School, a rural school in central Moore County with 550 students; and Pinecrest High School, in southern Moore County serving 1,982 students, according to 2011–2012 data (NCDPI, 2012b).

Stakes were higher than ever before because of state and federal testing requirements (U.S. Department of Education, 2004b; Common Core State Standards; 2012b, North Carolina General Assembly, 2011). In addition, because of the budgetary and curricular concerns about intervention programs, this specific study assisted the Moore County Schools in making decisions about the *Reading Plus* program and which levels or students, if any, should receive the program instruction. Data released by the NCDPI for 2011–2012 indicated that students at or

above proficient in Moore County were at the 74.7% level. At Cameron Elementary School, third-grade students scored 71.3% proficient in 2010–2011 and 70.4% for 2011–2012. Both of these scores were below the district-wide average of 74.7%. At New Century Middle School, 2010–2011 data revealed student scores at or above proficient as 80.5%, as well as 2011–2012 reading proficiency for New Century at 77.8%. At Pinecrest High School, reading proficiency based on North Carolina English 1 EOC was 89.7 in 2010–2011 and 89.6% in 2011–2012. Despite the fact that scores from these three schools averaged at or above the MCS average, each school still served students who did not read at the expected proficiency level and were, therefore, in need of reading remediation.

Based on the study design, five questions are pertinent to this research:

1. To what extent, if any, did the *Reading Plus* program impact student academic achievement in reading for those students enrolled in the program in grades three through five based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI)?
2. To what extent, if any, did the *Reading Plus* program impact student academic achievement in reading for those students enrolled in the program in grades six through eight based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI)?
3. To what extent, if any, did the *Reading Plus* program impact student academic achievement in reading for those students enrolled in the program in grade nine based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI)?

4. To what extent, if any, did the *Reading Plus* program impact student academic achievement in reading for students with disabilities enrolled in the program based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI)?

Based on perceptions of teachers, it was believed that *Reading Plus* improved all or most students' reading abilities, which, in turn, impacted NC End-of-Grade test scores. This program evaluation of the *Reading Plus* program was intended, in part, to prove or disprove this perception based on the use of pretest and posttest comparison data.

Design of Study

Due to the nature of this study, it was determined that a program evaluation method was the best design to use in determining the effectiveness of the *Reading Plus* program. A program evaluation is a systematic method for collecting, analyzing, and using information to answer questions about projects, policies, and programs, particularly about their effectiveness and efficiency. In both the public and private sectors, stakeholders want to know whether the programs for which they are funding, implementing, voting, or supporting are producing the intended effect and/or results.

While program evaluations were a relatively recent phenomenon, the process of planned social evaluation dated as far back as 2200 BC (Shadish et al., 1991). Evaluation became particularly relevant in the United States during President Lyndon Johnson's "Great Society." Large amounts of money were invested in social programs, but the impact of those investments was largely unknown. Reading intervention programs may have been selected by and used in schools without significant research or study of the reading data that resulted from use of the programs.

This study of the *Reading Plus* program followed a research design pioneered by Daniel Stufflebeam called Context-Input-Process-Product (CIPP). Along with his work on the CIPP, Stufflebeam initiated the development of the program evaluation standards in 1975. These standards were developed for evaluators and other audiences to judge the overall quality of an evaluation. Stufflebeam also served multiple years as director of the Joint Committee on Standards for Educational Evaluation (Fitzpatrick et al., 2011). Stufflebeam's model provided researchers with a framework with which to address the *Reading Plus* program evaluation. This model indicated the need for program evaluations to determine the effectiveness of programs. This process began by making decisions about an area of need, implementing activities to address an area of need, and evaluating the activities that have been implemented (see Appendix A).

Researchers determined that this model would accurately provide information to stakeholders or organizations. In this case, the CIPP model provided Moore County Schools with a program evaluation of the *Reading Plus* program. Stufflebeam had been an influential proponent of a decision-oriented evaluation approach structured to help administrators make good decisions (Zhang et al., 2011). He defined evaluation as the following:

the process of delineating, obtaining, reporting and applying descriptive and judgmental information about some object's merit, worth, probity, and significance to guide decision making, support accountability, disseminate effective practices, and increase understanding of the involved phenomena. (Stufflebeam, 2005, p. 61)

This program evaluation delineated the *Reading Plus* program in Moore County Schools. Also following Stufflebeam's cycle, researchers obtained pertinent information about the program and provided stakeholders with findings (see Appendix B).

Stufflebeam's definition has evolved over the years and his most recent analysis emphasized the importance of judging the merit and worth of a program. The CIPP model has maintained the endurance beyond other early evaluation models (Fitzpatrick et al., 2011). The principles of the model, a focus on serving decisions in addition to judging merit and worth, have remained constant. The focus of the CIPP model has traditionally targeted program improvement. Stufflebeam (2004) wrote, "Evaluation's most important purpose is not to prove but to improve" (p. 262).

Stufflebeam developed a framework to serve managers and administrators facing different types of decisions. The *Reading Plus* program evaluation focused on the product evaluation component of the CIPP model. The product evaluation component, as stated by Stufflebeam, was intended to assist administrators when determining whether or not a program should be recycled. What should be done with the program after it had run its course? Should it be revised? Expanded? Discontinued? (Fitzpatrick et al., 2011). Based on the results of this program evaluation, the information may be used to provide system officials with data for decisions regarding the *Reading Plus* program.

CIPP Product Evaluation

The purposes of product evaluation were to relate outcomes to objectives and to assess the overall worth of a procedure in terms of its effects. An advantage of the CIPP model was that it allowed the program evaluators to think of evaluation as cyclical, rather than project based (see Appendix C). This model provided evaluators the flexibility to evaluate a program in stages depending on the needs of the stakeholders (Alkin & Christie, 2004).

Although the context, input, and process of the *Reading Plus* program were critical depending on the stage of a program, administrators in the Moore County Schools wanted to

know more about the product of the program. Specifically, administrators sought valid information regarding whether or not the program improved reading achievement for those students enrolled in the program based on student Lexile scores which were generated from the SRI.

The *Reading Plus* program evaluation using the CIPP model consisted of three steps initially theorized by Stufflebeam and focused on the product of the targeted program. The first step was *delineating*, which involved assessment of the *Reading Plus* program based on program expectations by administrators in the Moore County Schools. Dr. Aaron Spence, Superintendent of Moore County Schools, expected reading intervention programs, including *Reading Plus*, to improve student reading achievement.

The second step in the evaluation process was *obtaining*, which resulted when product information was obtained through both interim and final measures of data from those students who were enrolled in the *Reading Plus* program and by analyzing responses of teachers to survey questions. With regard to student products, Lexile scores were recorded at two benchmark periods. The first period was before students began the program at the beginning of the school year (August) and the second period was at the point of exit from the program at the end of the school year (June). With regard to the teachers' products, results were gleaned from surveys that were completed by classroom teachers who facilitated *Reading Plus*. A survey was used to gather qualitative data of observable actions of teachers who facilitated the *Reading Plus* program. The survey results were intended to document the behavioral responses of students to the program as well as the professional opinions of the teachers regarding program implementation and training. The qualitative data were intended to support, clarify and/or explain the quantitative results. Survey data included at least one teacher from each grade level

in the program from each study site, including three teachers from the elementary school, eight teachers from the middle school, and three teachers from the high school. The results were provided to the stakeholders.

The third step in the evaluation process was *providing*. Varying degrees of information and data from the Reading Plus program evaluation were provided to decision makers.

Research Setting

The research was conducted in three schools in the Moore County Schools district in North Carolina. The Local Education Agency (LEA) is located 60 miles south of Raleigh, North Carolina in the rural Sandhills region. In 2012, Moore County Schools had a student population of 12,463 students in 23 schools. Of this number, there were 5,573 elementary school students, 3,022 middle school students, and 3,868 high school students. The demographic makeup of students enrolled across the district were 66% white, 19% African American, 9% Hispanic, and 6% other races. The percentage of students in Moore County qualifying for free and reduced lunch was 46%.

This study explored the impact of the *Reading Plus* program on student reading achievement for the students who attended Cameron Elementary School, New Century Middle School and Pinecrest High School. Research involved 30 students and three teachers at Cameron Elementary School, 227 students and eight teachers at New Century Middle School, and 174 students and three teachers at Pinecrest High School. These schools were selected for this study at the request of Superintendent of Moore County Schools, Aaron Spence. They were selected because of their intense and continued involvement with the *Reading Plus* program (see Appendix D).

Study Participants

Teachers participated in the study. Participating teachers were those that had specifically implemented the program at one of the three studied schools. Student data originated from test results by students who participated in the *Reading Plus* Intervention program and whose enrollment resulted in data for at least one semester or one full year. Students who were not enrolled in the *Reading Plus* Intervention program were not included. Students who were in the program but did not yield data for one full semester or one full year of intervention were excluded. No student names were used and students were not identifiable by data.

Students at Cameron Elementary were selected for participation in the *Reading Plus* program using criteria that included the previous year's standardized reading test scores, M Class data which determined at-risk status, and the Reading Counts pretest that yielded calculated student Lexile levels. Through initial assessment at Cameron Elementary, M Class assessments were implemented in January 2012 and given to students twice, first as pretest and second as a posttest. Beginning in the fall of 2013, M Class assessments were given at the beginning of the year, at midyear, and at the end of the year. Students were deemed to be above, at, or below grade level based on these scores. Students who scored below grade level on M Class assessments received targeted interventions at least every ten days.

Elementary student data were analyzed and students were placed into the *Reading Plus* program by the team composed of the school principal, the district instructional coach, and the school instructional coach. The district coach was responsible for all district elementary schools and her primary responsibility was literacy and literacy intervention programs. The district coach had access to all school level data. The school instructional coach was also a new position and was responsible for promoting literacy at the school level, including assisting classroom teachers

with literacy implementation and interventions. The school instructional coach monitored all literacy interventions on the school level and offered suggestions to classroom teachers on additional interventions that could be put into place based on data and student performance. The criteria for inclusion in the *Reading Plus* program as determined by the school principal, the school instructional coach, and the district instructional coach required that students score in the high range of level two or the low range of level three in order to be included in the *Reading Plus* program.

Students at New Century Middle School were selected to participate in the *Reading Plus* program based upon the previous year's NC End-of-Grade (EOG) data. Students were included if they scored on the NC Reading EOG high level 1, level 2, or low level 3 (see Table 2). Lexile levels were included if they scored below grade level (see Table 3) and also received teacher recommendation based upon classroom observations.

Students at Pinecrest High School were selected based upon the previous year's NC End-of-Grade (EOG) data. The eighth-grade test scores of students entering the ninth grade were analyzed and students that scored at Level I or Level II were selected for inclusion into the *Reading Plus* program (see Table 2). The Scholastic Reading Inventory (SRI) was an assessment administered to students and a component of the Scholastic reading program adopted by Moore County Schools. The SRI measured student reading comprehension and assigned a Lexile score for each student based on performance on the assessment. In addition, student proficiency on North Carolina End-of-Grade standardized reading tests was determined using scale scores. Lexile scores were reported on the standardized test results (MetaMetrics, 2008). A score at Level three was considered a passing score or an indication of reading proficiency. For the 2011–

Table 2

Achievement Level Ranges for the North Carolina End-of-Grade Tests Reading Comprehension at Grades 3–8

Subject/Grade	Level I	Level II	Level III	Level IV	
Reading (Starting with the 2007–2008 school year)	3	≤ 330	331–337	338–349	≥ 350
	4	≤ 334	335–342	343–353	≥ 354
	5	≤ 340	341–348	349–360	≥ 361
	6	≤ 344	345–350	351–361	≥ 362
	7	≤ 347	348–355	356–362	≥ 363
8	≤ 349	350–357	358–369	≥ 370	

Note. HSP-C-018, October 2, 2008.

Table 3

Lexile Measures by Grade

Grade	Reader Measures, Mid-Year 25th–75th Percentile (IQR)
1	Up to 300L
2	140L to 500L
3	330L to 700L
4	445L to 810L
5	565L to 910L
6	665L to 1000L
7	735L to 1065L
8	805L to 1100L
9	855L to 1165L
10	905L to 1195L
11 and 12	940L to 1210L

Note. MetaMetrics (2013a).

2012 school year NCEOG achievement level ranges (NCDPI, 2008) were as follows in Table 2. Lexile levels as measured by the Scholastic Reading Inventory were as follows in Table 3.

School Demographics

The Moore County Schools (MCS) in North Carolina, a school system of 12,463 students (2012 data), is located approximately 50 miles southeast of Raleigh in the Sandhills region of North Carolina. The school system, divided into 23 schools, served grades Pre–K through 12. Within the 23 schools, 14 were elementary with a population of 5,573 students, five middle schools with a population of 3,022 students, and three high schools and one alternative school with a combined population of 3,868 students. Of these 12,491 students, 19% were African American, 9% Hispanic, 66% White, and 6% were categorized as Other. Forty-six percent of the system’s students (2012) qualified under federal guidelines for free or reduced lunch. The Moore County Schools system employs 1,002 certified staff with 46.7% holding master’s degrees or higher (Moore County Schools, 2013).

The elementary school included in the study was located in Cameron, North Carolina. There were 242 students enrolled at Cameron Elementary School in grades K–5. The demographic population at Cameron Elementary was 73.7% White, 10.3% African-American, 9.9% Hispanic, 2.5% American Indian, and 3.7% Multiracial. The Cameron Elementary School component of this study involved the analysis of data from fourth- and fifth-grade students who were enrolled in the *Reading Plus* reading intervention program over a nine-month period. The percentage of students who qualified for free and reduced lunch was identified as 65%. Free and reduced lunch status was the determining factor in schools designated as Title I by the United States Department of Education so Title I designated schools received additional federal funds that could be used for instructional purposes. Cameron Elementary School was classified as a

Title I school by Moore County Schools based on the percentage of free and reduced lunch students enrolled in the school, so federal Title I funds could have been used for supplemental or intervention programs.

The middle school used in this study was New Century Middle School (NCMS) also located in Cameron, North Carolina. Five hundred fifty students were enrolled at NCMS in grades six through eight. The demographic population at NCMS included 1.3% Asian, 11.8% Black, 5.1% Hispanic, 2.7% Multiracial, and 78.7% White. NCMS did not meet the free/reduced lunch criteria required for Title I designation; therefore, NCMS did not receive extra funding, programs, or teachers for academic support.

The high school setting in this study was Pinecrest High School located in Southern Pines, North Carolina, where 2,082 students were enrolled in grades 9-12. The demographic population at Pinecrest was 1.3% Asian, 24.2% Black, 6.6% Hispanic, 2.5% Multi-Racial, 1.1% American Indian and 64.2% White. Pinecrest High School did not did not qualify for Title I status and did not receive additional funding due to the socioeconomic status of the school.

Data released by the NCDPI for 2011–2012 indicated that students at or above proficient in Moore County were at the 74.7% level. At Cameron Elementary School, third-grade students scored 71.3% proficient in 2010–2011 and 70.4 % for 2011–2012. Both of these scores were below the district-wide average of 74.7 %. When 2011–2012 NC End-of-Grade Reading data were further reviewed, Cameron Elementary School revealed 80% proficiency among White students, 29.4% Black students, 35.7% Students with Disabilities, and 57.5% Economically Disadvantaged. At New Century Middle School, 2010–2011 data revealed student scores at or above proficient as 80.5%, as well as 2011–2012 reading proficiency for New Century at 77.8%. Further review of New Century Middle School data showed White students scored 82.5%

proficient, Black students 57.1 %, Students with Disabilities 46.7%, and Economically Disadvantaged 67.2%. At Pinecrest High School, reading proficiency based on North Carolina English I EOC was 89.7 in 2010–2011 and 89.6 % in 2011-12. Ninth-grade students at Pinecrest High School yielded proficiency data of White 95%, Black 74.6%, Students with Disabilities 34.1%, and Economically Disadvantaged 77.8%. Though achievement gaps among gender and race may have existed in these schools, for the purpose of this study, achievement gaps were not examined.

Data Collection

Assessment data was collected from 2012–2013 data files for 30 students enrolled in the Reading Plus program at Cameron Elementary, 227 students who enrolled in the Reading Plus program at New Century Middle School and 174 students enrolled at Pinecrest High School. These students had been enrolled in *Reading Plus* for at least one full semester of study or one full year of study, so both pretest and posttest data were available. In addition to the Reading Plus assessment data, NC End-of-Grade (NCEOG) Reading scores and Scholastic Reading Inventory (SRI) scores were collected for review and comparison. The Scholastic Reading Inventory was a computer-adaptive reading assessment program for students in grades K–12 that measured reading comprehension on the Lexile Framework for Reading (Scholastics, Inc., 2014). The Lexile Framework was a system for measuring students’ reading levels and matching readers to appropriate instructional level text. The Lexile Framework used a common metric to evaluate both reading ability and text difficulty. By placing both reader and text on the same scale, the Lexile Framework allowed educators to forecast the level of comprehension a student would experience with a particular text and to evaluate curriculum needs based on each student's ability to comprehend the materials. Data were analyzed for each student participating in

Reading Plus to determine the amount of growth from the beginning of the school year. The pretest scores from the Reading Counts test and the post-test reading tests were obtained and the growth or lack of growth for a particular student was determined based on student Lexile scores. As required by the Moore County Schools Internal Review Board (MCSIRB), all student data was and will remain confidential. Students enrolled for less than the nine-month school year were not included in the data analysis.

The qualitative portion of this study was based on the responses to a sixteen-item researcher-developed survey, *Reading Plus* Observations, which was sent to the teachers administering the *Reading Plus* program in the three schools where data were collected to evaluate their perceptions of the effectiveness of the Reading Plus program in their schools.

A pilot administration of the survey was administered to five teachers to establish construct validity. Open-ended, short answer responses were available for teachers to provide information to assist with the clarification of the questions.

Staff members who facilitated, monitored, or implemented the *Reading Plus* program were asked to volunteer to participate in the survey. The survey titled *Reading Plus* Observations was a sixteen-item questionnaire designed by the researchers and administered through a free online survey tool (Google forms; see Appendix E). The questionnaire was based upon the key characteristics, belief statements and the CCSS guidelines. It included an introduction, demographic, attitudinal, behavioral, short answer, and closing instructions. The scale type was a continuous scale (strongly agree to strongly disagree) and categorical scales that ranked items of importance (Creswell, 2013). The participants were assured that their comments were kept confidential and their participation was voluntary. The survey was distributed to a specific selection of 14 teachers via email communication in March 2014 and the participants were

requested to complete it within ten days. This selection of teachers included participating English Language Arts (grades 3–8) and English I (grade 9) teachers, teacher assistants, tutors, and teachers from other content areas that facilitated *Reading Plus*. The teachers were selected based upon their role with the students participating in the *Reading Plus* program. This survey was normed for use by the Moore County School District teachers by piloting the instrument.

All data collection instruments were in the participants' academic language. The research settings were Cameron Elementary, New Century Middle, and Pinecrest High schools within the public school system in Moore County. There was minimal risk to any participant and participants were in no foreseeable harm. Student data sets were collected and used. Student participants were not questioned or interviewed.

The researchers used student achievement data that was not personally identifiable by individual student names. All data collected from the county were housed on a flash drive that was accessible only to the researchers and the Director of Dissertation. The flash drive was locked in a secure file cabinet when not being used for research purposes. Names of participants were not used during any phase of the research. Unique identifiers were used to protect all participants. Individual students were not identified, interviewed, or questioned by the researchers. Student data collected from the district was housed on a disc that only the Director of Dissertation could access. Data will be kept for three years and the researcher will dispose of the data at the end of that period.

Students who were enrolled in the *Reading Plus* Intervention program with data for one full semester of study or one full year of study were included in the student data analysis group. Students who were not enrolled in the *Reading Plus* Intervention program were not included. Students who were in the program but did not yield data for one full semester and/or year of

intervention were excluded. The data collected were based upon the number of students who met the criteria of enrollment in the *Reading Plus* Intervention program.

Unless the Superintendent granted permission, the researchers did not name Moore County Schools in final reports. Informed consent by students was not necessary since students were not contacted or identified. The target date for Board presentation was set for April 2014.

Data Analysis

The assessment data were analyzed with regard to progress by grade level, gender, race, and students with disabilities. Forms of data included pre and post assessments designed by and required for the *Reading Plus* program, NC standardized testing End-of-Grade reading scores, and reading Lexile levels. SRI scores from the beginning and the end of the 2012–2013 school year were analyzed for the students enrolled in the *Reading Plus* program. Data were analyzed for outcomes and trends. This information may determine if student progress and growth could be attributed to their participation in *Reading Plus*.

The constant environmental factors were curriculum subject matter, student grade level and reading abilities, instructional strategies, teacher experience, and a teacher's attitude and abilities. Dependent environmental factors were the CCSS, class time length, and course length. The researchers noted the effects and environmental differences of the accessibility of the *Reading Plus* program, teacher facilitation, student motivation, and student attendance.

The qualitative data from the surveys were collected using an online survey tool (Google forms) using a Likert scale as well as open-ended responses. Results were presented in graphic form to assist with trends and patterns.

Cost-Benefit Analysis

In addition to extensive collection and analysis of academic data, preliminary information on the costs of the program will be reviewed. A limited cost-benefit analysis will be conducted to assist the LEA with decisions on cost efficiency and comparisons.

Summary

In summary, the purpose of this program evaluation was to determine the effectiveness of the *Reading Plus* intervention program at the elementary, middle, and high school levels, as well as for students with disabilities. Three schools were selected, each of which served students in need of reading intervention based on NC End-of-Grade test scores and Lexile scores. This study sought to provide a review of reading scores, Lexile levels, and teacher information regarding implementation of the program and fidelity to implementation. While quantitative data included students' reading scores, qualitative data—which were gleaned from surveys completed by teachers who facilitated the program—were necessary to support or explain the resulting scores. Because the district superintendent had requested evaluation of reading intervention programs, this program evaluation focused on the impact of *Reading Plus* on student reading achievement at grades 4–5, 6–8, and 9, as well as students with disabilities who were enrolled in the *Reading Plus* intervention program.

A program evaluation was determined to be the most appropriate design and included both qualitative and quantitative data. This evaluation followed a research design by Daniel Stufflebeam called Context-Input-Process-Product (CIPP), which targeted program improvement. The intended use of this model was to provide guidance to school officials for future decisions regarding the *Reading Plus* intervention program.

CHAPTER 4: RECOMMENDATIONS BASED UPON LITERATURE REVIEW, DATA COLLECTION, AND ANALYSIS

The purposes of product evaluation were to relate outcomes to objectives and to assess the overall worth of a procedure in terms of its effects. The Context-Input-Process-Product (CIPP) model was advantageous to the evaluator because it allowed the evaluator to think of evaluation as cyclical, rather than project based (see Appendix C). This model provided evaluator the flexibility to evaluate a program in various stages depending on the needs of the stakeholders (Alkin & Christie, 2004).

Although the context, input, and process of the *Reading Plus* program were critical depending on the stage of a program, administrators in the Moore County Schools wanted to know more about the product of the program. Specifically, administrators sought valid information regarding whether or not the program improved reading achievement for those students enrolled in the program based on student Lexile scores which were generated from the Scholastic Reading Inventory (SRI).

The *Reading Plus* program evaluation using the CIPP model consisted of three steps initially theorized by Stufflebeam and focused on the product of the targeted program. The first step was *delineating*, which involved assessment of the *Reading Plus* program based on program expectations by administrators in the Moore County Schools. Dr. Aaron Spence, Superintendent of Moore County Schools, expected reading intervention programs, including *Reading Plus*, to improve student reading achievement.

The second step in the evaluation process was *obtaining*, which resulted when product information was obtained through both interim and final measures of data from those students who were enrolled in the *Reading Plus* program and by analyzing responses of teachers to survey

questions. With regard to student products, Lexile scores were recorded at two benchmark periods. The first period was before students began the program at the beginning of the school year (August) and the second period was at the point of exit from the program at the end of the school year (June). With regard to the teachers' products, results were gleaned from surveys that were completed by classroom teachers who facilitated *Reading Plus*. A survey was used to gathered qualitative data of observable actions of teachers who facilitated the *Reading Plus* program. The survey results were intended to document the behavioral responses of students to the program as well as the professional opinions of the teachers regarding program implementation and training. The qualitative data were intended to support, clarify and/or explain the quantitative results. Survey data included at least one teacher from each grade level in the program from each study site, including three teachers from the elementary school, eight teachers from the middle school, and three teachers from the high school. The results were provided to the stakeholders.

The third step in the evaluation process was *providing*. Varying degrees of information and data from the *Reading Plus* program evaluation were provided to decision makers.

Delineating

The Moore County Schools expects reading intervention programs including *Reading Plus* to improve reading proficiency among the students served as evidenced by growth on the Scholastic Reading Inventory (SRI) assessment (K. Kennedy, personal communication, October 16, 2013). This is the assessment used by the Moore County Schools. Dr. Kathy Kennedy associate superintendent with the Moore County Schools stated that an intervention program should be “research based, implemented with fidelity and have the capability to target students’ particular needs. Dr. Kennedy also expects all intervention programs to be presented to her team

in the form of a program evaluation so that the program can be carefully reviewed before being implemented into the schools. Dr. Kennedy in her role as lead curriculum specialist for the school system has continually emphasized the five domains of reading and the importance of these domains. Language Arts teachers in the Moore County Schools are required to implement the five domains into their daily teaching practice. In Moore County this was called the literacy framework. Teachers taught a whole group lesson for thirty minutes and a small group lesson for sixty minutes. During both the whole group and small group lessons, teachers must teach the five domains of reading. Each child in the class must be taught in a small group session as well. The emphasis on the five domains of reading has increased expectations for intervention programs (K. Kennedy, personal communication, October 16, 2013). Dr. Kennedy shared in a personal communication her belief that for intervention programs to improve achievement they must consistently target the five domains of reading. These domains are vocabulary, comprehension, fluency, phonemic awareness and phonics. The district under Dr. Kennedy's leadership consistently evaluated all intervention programs. Evaluations were performed through data analysis, school improvement team meetings and personal meetings with school principals. The evaluations focused on Scholastic Reading Inventory Data and M Class assessment data for elementary students. Students that were being served in intervention programs were identified and their data was reviewed during school improvement meetings and also during personal meetings with curriculum specialists (K. Kennedy, personal communication, October 16, 2013). Trisha Cox was the district's lead instructional coach and part of her job description was to monitor progress of intervention programs, including *Reading Plus* and to assist school administrators with decisions on student placement into these programs. The regular meetings with Ms. Cox allowed school staff members the flexibility to remove students from specific

intervention programs if the student was not showing appropriate progress in the program. These meetings would include the teachers that were administering the *Reading Plus* program. The teachers were given the opportunity to share their observations with school officials as well as district officials. These meetings allowed administrators and teachers to evaluate the SRI data of those students that were enrolled in the *Reading Plus* program. Weekly *Reading Plus* data reports were emailed to the district's curriculum team as well (T. Cox, personal communication, March 13, 2014). These reports detailed student performance and usage. Below is a sample report that was sent to Cameron Elementary. The report showed several things that were critical to the success of the *Reading Plus* program. If the program was being implemented with fidelity there should not be any instances of insufficient use (T. Cox, personal communication, March 13, 2014). Students were to use the program as it was recommended in order to be successful in the program. Recommended use was four days a week for 30 to 40 minutes a session. If students were not using the program in this manner school administrators could quickly identify this by looking for blue in the graph below. Also, when reviewing the program, the report should have shown a majority of students showing either significant or expected progress. The report was very helpful in identifying whether or not a large group of students were making progress in the program. These students could have been identified individually and administrators would have attempted to determine why students were not making adequate progress. Figure 1 shows that all students enrolled in the program were making progress and that all students were spending the recommended amount of time on the program.

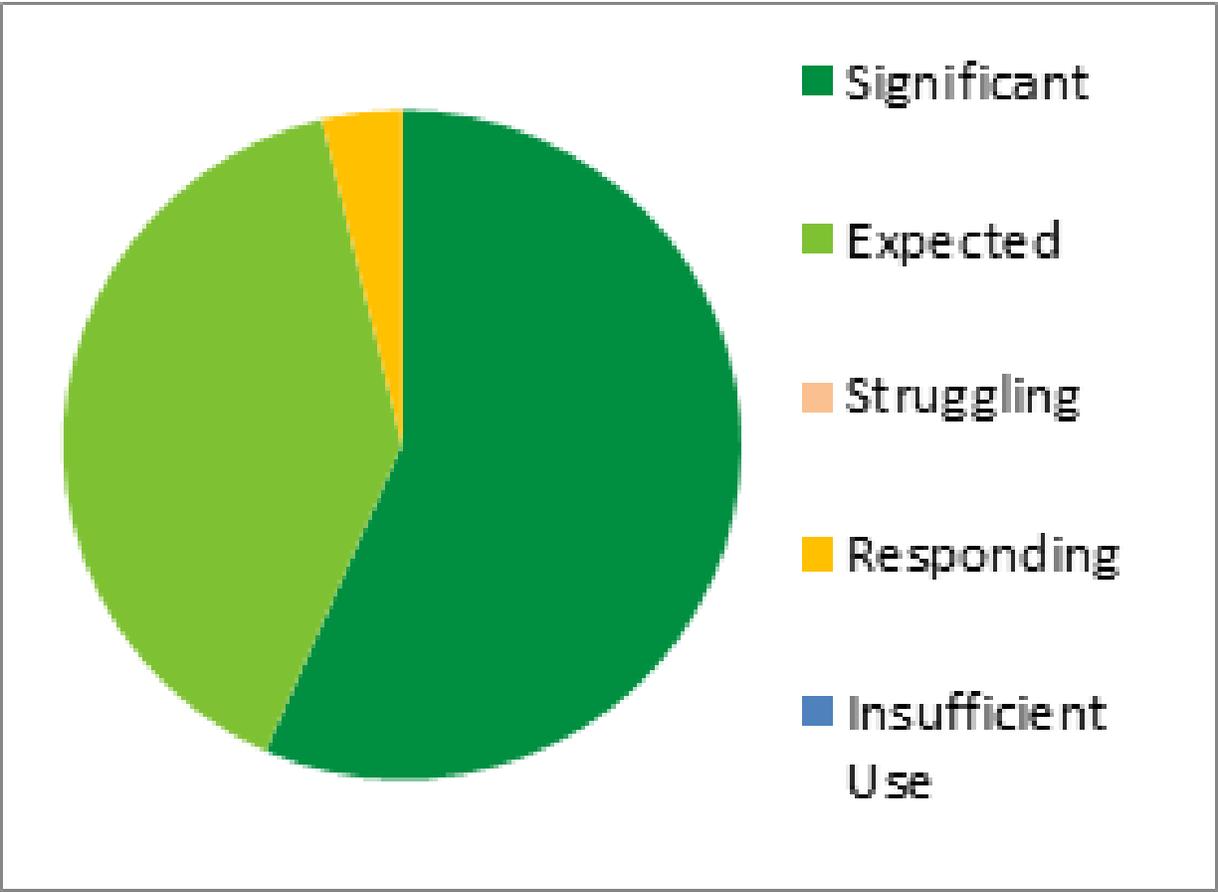


Figure 1. Reading Plus progress and usage.

Obtaining

The second step in the evaluation process was *obtaining*. Product information was obtained through both interim and final measures of data from elementary students in grades four and five that were enrolled in the *Reading Plus* program. Data were also obtained by analyzing responses of teachers to survey questions.

Student achievement was measured by using student Lexile levels as obtained through the Scholastic Reading Inventory. The Scholastic Reading Inventory was a computer-adaptive reading assessment program for students in grades K–12 that measured reading comprehension on the Lexile Framework for Reading (Scholastics, Inc., 2014). The Lexile Framework was a system for measuring students' reading levels and matching readers to appropriate instructional level text. The Lexile Framework used a common metric to evaluate both reading ability and text difficulty. By placing both reader and text on the same scale, the Lexile Framework allowed educators to forecast the level of comprehension a student would experience with a particular text and to evaluate curriculum needs based on each student's ability to comprehend the materials.

At Cameron Elementary data from 51 students were collected and analyzed. Each of the 51 students participated in the *Reading Plus* program for greater than 40 sessions. Each student was given a pretest and a posttest. The pretest was given to students at the beginning of the school year and the post test was given at the end of the school year. The student average on the pretest was 614.8 and the student average on the post test was 758. Average Lexile growth for this group of 51 students was 143.18. When further disaggregating student data, male students grew an average of 156.45 while female students grew an average of 119.14 for a difference of 37.31 Lexile levels.

Figure 2 shows student growth in Lexile levels. All students are represented by blue, boys are represented by purple and girls are represented by yellow. In the chart the growth number is determined by the difference in Lexile levels when comparing the beginning of the year pretest and the end of the year posttest.

It should be noted that the data for the female students was greatly affected by one individual student whose growth was -115 Lexile points. If this student was removed from the total female group the difference between boys and girls was reduced to 25.6 Lexile levels. Seven of the students in the *Reading Plus* program were African American. These students had an average Lexile growth of 112.86. The range of Lexile levels among African American students varied from -51 to 450.

Figure 3 also shows student growth in Lexile levels. All students are represented by red, and African American students are represented by blue. In the chart the growth number is determined by the difference in Lexile levels when comparing the beginning of the year pretest and the end of the year posttest.

The qualitative portion of this study was based on the responses to a sixteen-item researcher-developed survey, *Reading Plus* Observations, which was sent to the teachers administering the *Reading Plus* program in the three schools where data were collected to evaluate their perceptions of the effectiveness of the *Reading Plus* program in their schools.

A pilot administration of the survey was administered to five teachers to establish construct validity. Open-ended, short answer responses were available for teachers to provide information to assist with the clarification of the questions.

Staff members who facilitated, monitored, or implemented the *Reading Plus* program were asked to volunteer to participate in the survey. The survey titled *Reading Plus*

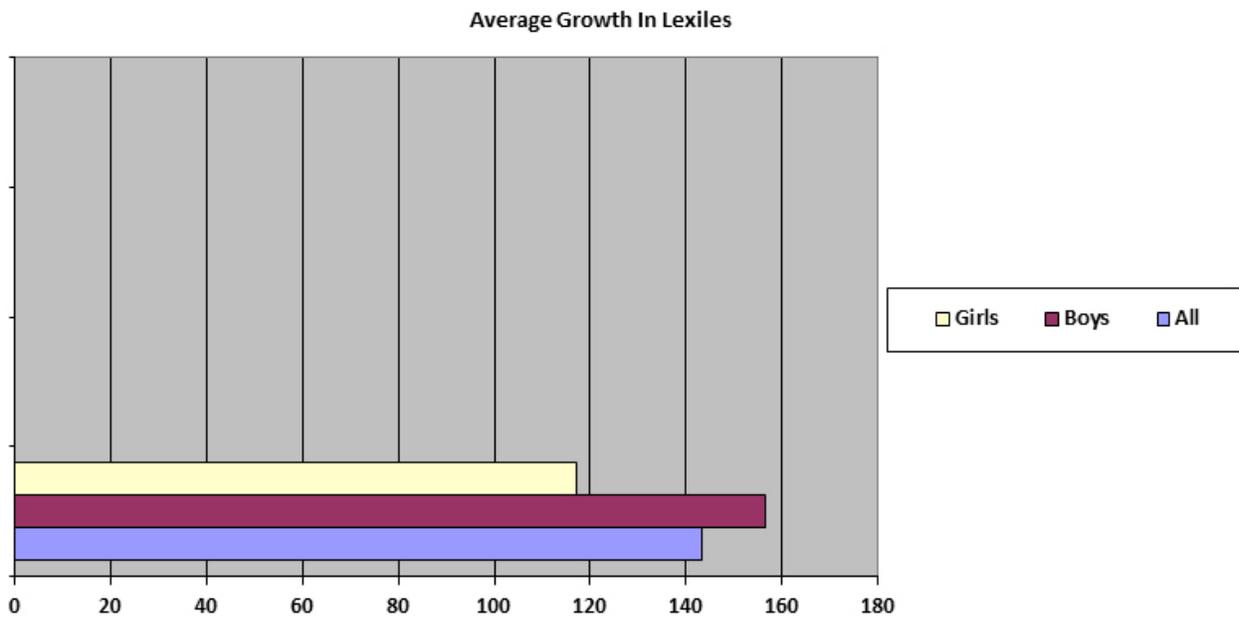


Figure 2. Student growth in Lexile Levels.

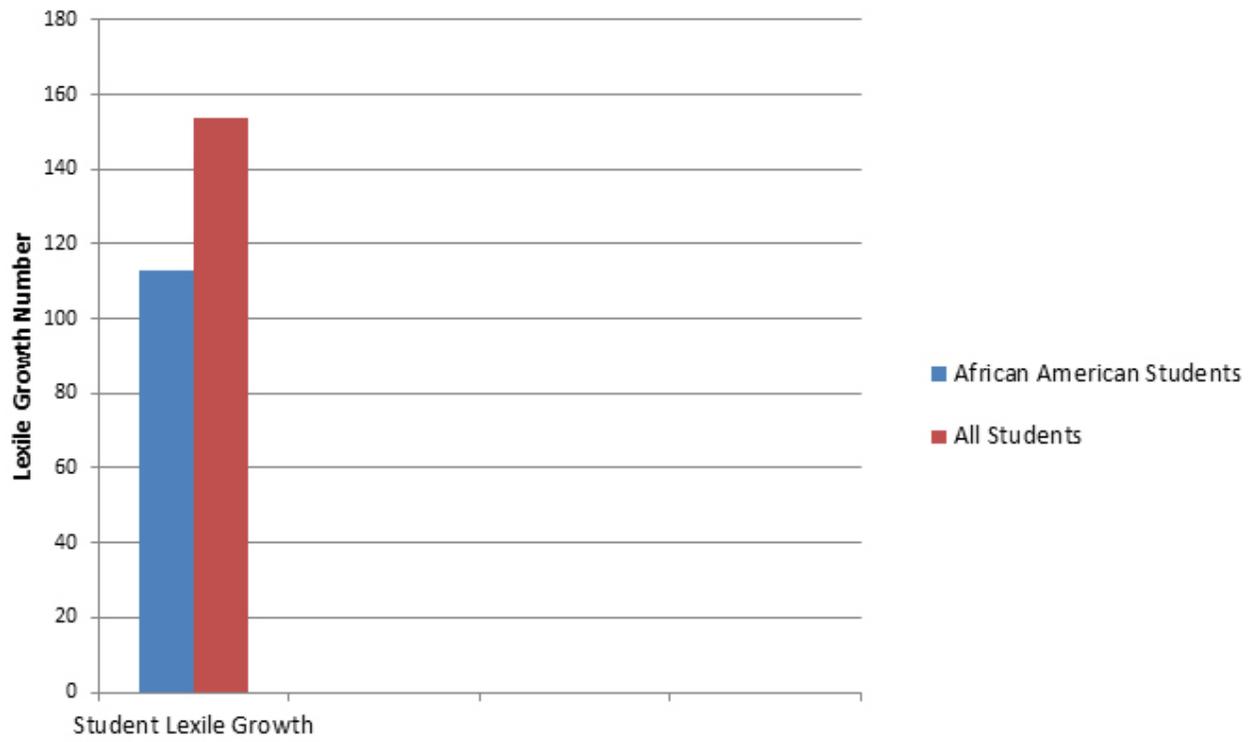


Figure 3. Lexile growth of all students vs. African American students.

Observations was a sixteen-item questionnaire designed by the researchers and administered through a free online survey tool (Google forms). The questionnaire was based upon the key characteristics, belief statements and the CCSS guidelines. It included an introduction, demographic, attitudinal, behavioral, short answer, and closing instructions. The scale type was a continuous scale (strongly agree to strongly disagree) and categorical scales that ranked items of importance (Creswell, 2013). The participants were assured that their comments were kept confidential and their participation was voluntary. The survey was distributed to a specific selection of 14 teachers via email communication in March 2014 and the participants were requested to complete it within ten days. This selection of teachers included participating English Language Arts (Grades 3–8) and English I (Grade 9) teachers, teacher assistants, tutors, and teachers from other content areas that facilitated *Reading Plus*. The teachers were selected based upon their role with the students participating in the *Reading Plus* program. This survey was normed for use by the Moore County School District teachers by piloting the instrument which included short answer. Ten of the 14 teachers (71%) responded to the survey.

All data collection instruments were in the participants' academic language. The research settings were Cameron Elementary, New Century Middle, and Pinecrest High schools within the public school system in Moore County. There was minimal risk to any participant and participants were in no foreseeable harm. Student data sets were collected and used. Student participants were not questioned or interviewed.

Teachers were asked to rate the *Reading Plus* program in the following categories as they related to student achievement. The categories were training and support, comprehension, fluency, vocabulary, phonemic awareness, phonics, and reading stamina. Teachers were also asked to comment on the program as it related to student positive non-verbal behavior, negative

non-verbal behavior and motivation strategies. Teachers were asked to use a scale of one to five with one being the lowest rating and five being the highest rating.

As the *Reading Plus* program began teachers were required to attend training offered by Taylor and associates. The survey results indicated that the teachers felt that the training was helpful in getting them started with the program. The average teacher response to training and support was 4.0. They also felt that support was strong in the area of program implementation. The average teacher response was 4.3 (see Figure 4). Greg Taylor, the local representative, was available to meet with the teachers that were facilitating the program. Mr. Taylor used a hands-on approach to show teachers how to assess students when beginning the program and also how to accurately monitor their progress as they moved through the program. Teachers were also shown how to run various reports within the *Reading Plus* program.

Comprehension

The survey also asked teachers to give feedback on specific parts of the domains of reading. Teachers felt that the program did a good job in improving student comprehension. With one being the lowest rating and five being the highest rating, the average teacher response was 3.5. Comprehension and vocabulary knowledge work together in the reader's mind to create meaning for himself/herself from the text. "Reading comprehension is the construction of the meaning of a written text through a reciprocal interchange of ideas between the reader and the message in a particular text" (Harris & Hodges, 1995, p. 39).

The National Reading Panel (NRP, 2000) explained comprehension as the moments when "a reader reads a text to understand what is read and to put this understanding to use" (p. 5). In addition, the panel noted that comprehension skills were active when the reader could learn, locate information, or even be entertained in order to gain meaningful memories of the

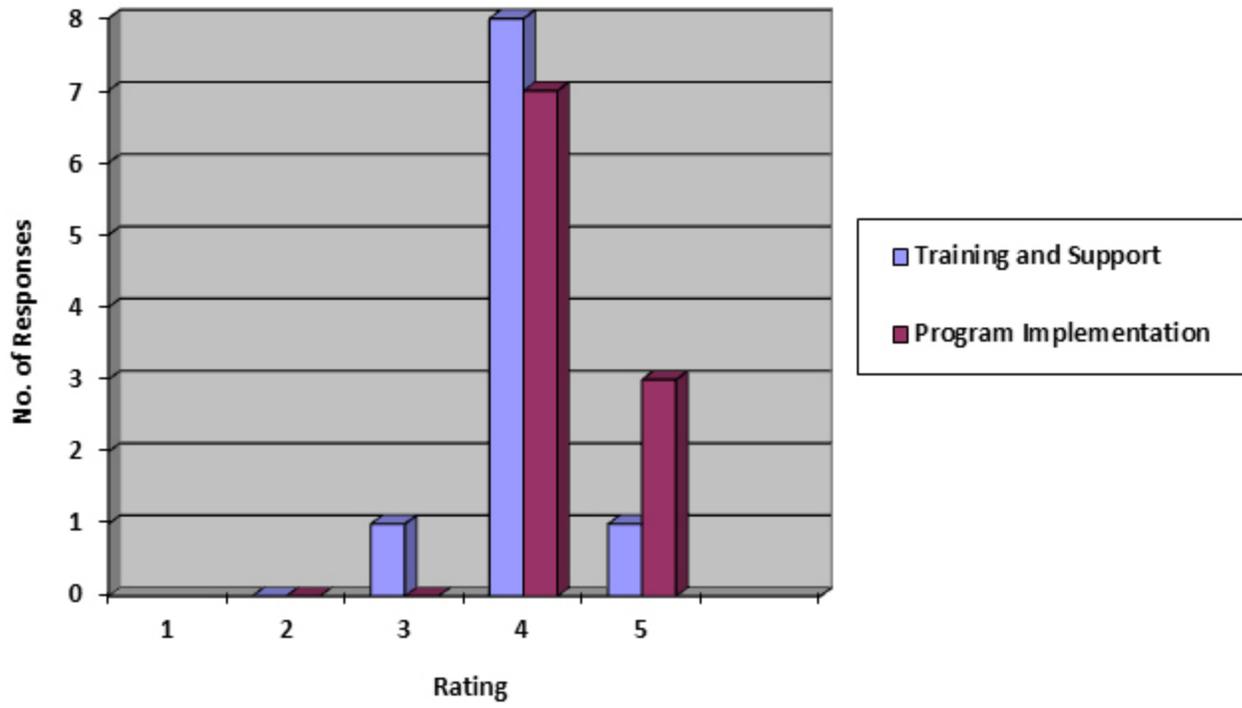


Figure 4. Teacher survey responses to training and support and program implementation.

reading text and then communicate that information to others (NRP, 2000). Further, comprehension strategies guide the student as he reads and writes so that he is able to understand the text and use the information effectively (NRP, 2000).

Teacher comments reflected the high ratings on the survey. One teacher commented that, “Students who worked diligently showed significant improvement . . . Comprehension improved in the areas of inference, main ideas, theme, point of view and tone.” Another teacher commented that, “It required them to learn words within the context of short paragraphs which required inference and lower level ideas.”

Fluency

Teachers also responded that the program exceeded expectations in improving student reading fluency. With one being the lowest rating and five being the highest rating, the average teacher survey response was 4.0. As earlier stated in this program evaluation the fluency skills of a reader may appear to be sufficient to others during the common practices of read-aloud opportunities within classroom settings. As teachers and fellow classmates listen to a classmate read aloud, everyone may be able to discern the smoothness of the voice or the difficulty of the pronunciations. Reading fluency is emphasized by the NRP (2000) with the statement: “[there is] a close relationship between fluency and reading comprehension. Students who are low in fluency may have difficulty getting the meaning of what they read” (NRP, 2000, p. 1). The NRP included speed, accuracy, strong word recognition skills and proper expression as skills that impacted fluency skills but noted that these components do not always lead to fluency. Fluency was critical so that readers could devote their attention to understanding the meaning of the content instead of identifying the words in print (Florida Center for Reading Research, 2006).

Teachers participating in the survey commented on the program's positive impact on student reading fluency. Comments included, "It (*Reading Plus*) required my students to read more quickly while simultaneously paying attention to the content. The speed progression was incremental, but over time significant." Also,

Reading Plus helped increase the fluency skills by letting the students decide when they were ready to move forward. If the program directed a struggle, it gave another choice to decrease the speed. Students were able to see for themselves how fast they could comfortably read while still understanding the material they read. It helped the students to understand the importance of rate and understanding.

Vocabulary

Teachers that responded to the survey also felt strongly that the *Reading Plus* program helped students with vocabulary. With one being the lowest rating and five being the highest rating, the average teacher response was 4.6. As stated earlier vocabulary is a critical component in teaching children to read.

As a learner begins to read, reading vocabulary encountered in texts was mapped onto the oral vocabulary the learner brings to the task. The reader learns to translate the (relatively) unfamiliar words in print into speech, with the expectation that the speech forms will be easier to comprehend. (NRP, 2000, p. 7)

With the importance of vocabulary for comprehension and the critical need for students that were not exposed to a rich vocabulary environment, it was imperative for early childhood educators to teach vocabulary words to students on a daily basis. Written responses that were submitted by surveyed teachers included "I especially noticed improvement in my students' use of context clues and prefix and suffix variations of base words." And "If implemented correctly,

teachers can use the appropriate grade level vocabulary words to improve vocabulary knowledge and words in context.”

Phonemic Awareness

Teachers rated the *Reading Plus* program’s impact on phonemic awareness lower. With one being the lowest rating and five being the highest rating, the average teacher response was 2.7. Phonemic awareness was also an integral component to teaching children to read and is taught with emphasis in Moore County. As mentioned earlier the NRP describes phonemic awareness and associated processes as an essential part of reading that assists readers with combinations of sounds that apply to corresponding letters in order to make words. Several teachers that participated in the survey chose not to comment about the *Reading Plus* programs impact on phonemic awareness. Those that did comment stated that they did not notice any impact and that this was not an area of weakness for their students.

Phonics

Phonics responses in the teacher survey were also lower than the responses for vocabulary and comprehension. With one being the lowest rating and five being the highest rating, the average teacher response was 2.3. This was the lowest average response in the survey. To review, the ability of the student to transfer the printed word into its spoken form enables the reader to “decode” the word. Decoding “involves looking at a word and connecting the letters and sounds and then blending those sounds together” (Honig et al., 2008, p. 8). The alphabetic principle was reinforced when students understand that “written letters represent spoken sounds” (Honig et al., 2008, p. 8). Phonics instruction helped beginning readers to understand that letters and sounds work together for reading and writing. Phonics instruction is a basic reading skill that is taught in the primary grades in Moore County. Phonics instruction is taught primarily in

Kindergarten and First Grades. Teachers that shared comments on the survey stated that, “This is a difficult area to measure. Much individual help was necessary to help students with pronunciation of new vocabulary.”

Reading Stamina

Reading stamina is an important skill that becomes magnified with the numerous standardized tests that students must take. Surveyed teachers were also asked to rate the *Reading Plus* programs impact on reading stamina. The average surveyed teacher response was 4.4. Teachers commented that “students were able to read and complete assignments on multiple text selections in a class period” and “Reading stamina is one of the most difficult skills to develop for my struggling readers. I saw improvement in at least two thirds of my students as shown in the length of time on the program and the length of books they chose and read for independent reading.” Figure 5 shows the teacher responses to the five domains of reading.

Providing

Effective Implementation

The disaggregation of the *Reading Plus* data clearly shows that the program was effective at Cameron Elementary School. The average growth as measured by student Lexile scores was 143.18. One of the key factors in positive student growth was that the teachers facilitating the program were trained and prepared to administer the program. The expectations of the program were high and these expectations were emphasized to the teachers. Although there was little face to face training before beginning the *Reading Plus* program, teachers used the online tutorial which included a series of videos that focused on how to get started using the program. These videos included such subject areas as student assessment and selection, amount of recommended time students should spend weekly on the program as well as best practices in evaluating student

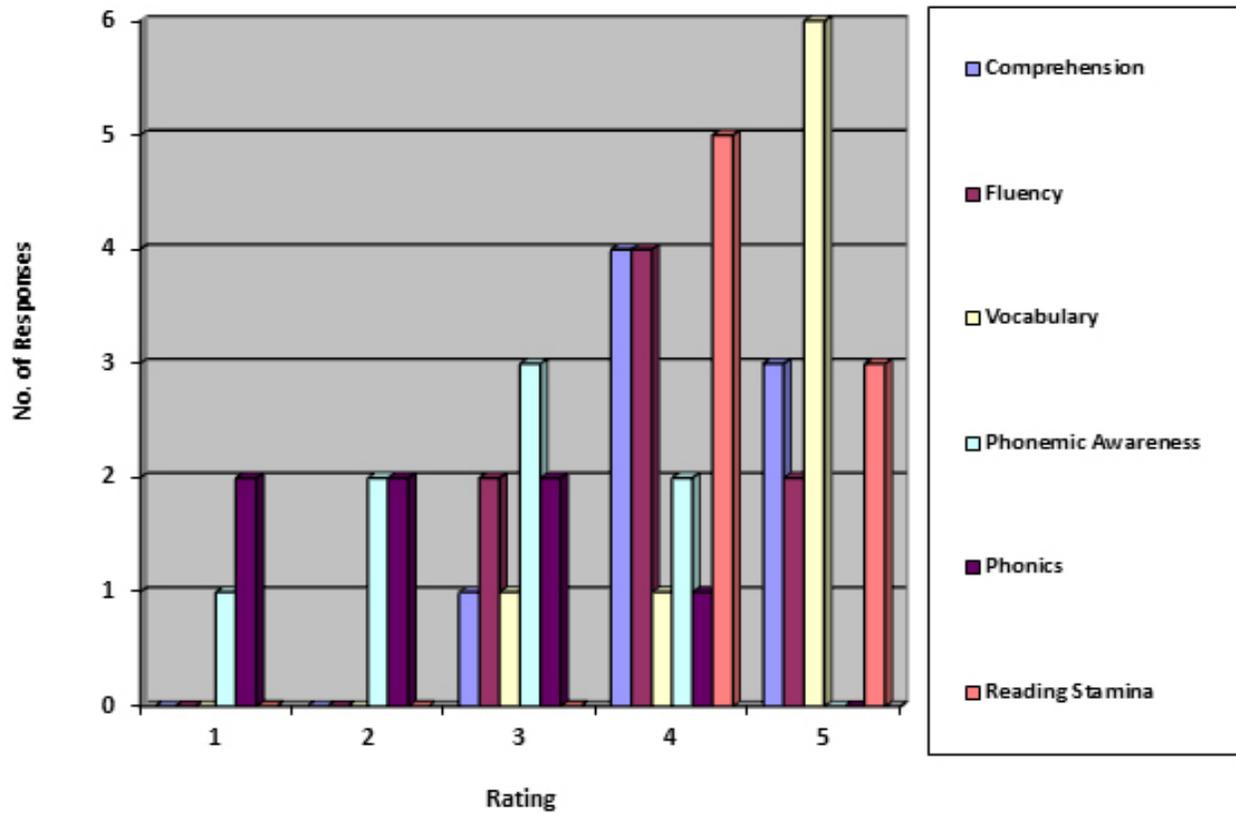


Figure 5. Teacher survey responses to the five domains of reading.

performance as they progressed through the program. After completing the online tutorials and the initial student assessment process, Greg Taylor of Taylor and Associates personally visited the school on three different occasions to meet with the teachers. He answered questions, and demonstrated effective ways to analyze student performance. Teachers were shown how to pull data from the *Reading Plus* program and which graphs and charts to use when questions arose about students. One of the most important developments that occurred as a result of the face to face training was that teachers and administration understood the importance of delivering the program with fidelity (J. MacPherson, personal communication, March 19, 2013). After the face-to-face visits, class schedules were changed to allow for specific targeted intervention times to be built into the daily schedule. These times allowed for a 45-minute block of time at the end of every day that was designed specifically for academic interventions including *Reading Plus*. With the schedule build, students that were identified for inclusion into the *Reading Plus* program were guaranteed to be active users of the program every afternoon for at least thirty five minutes (J. MacPherson, personal communication, March 19, 2013). Student participation fulfilled district expectations on fidelity and students demonstrated substantial growth in their overall reading abilities.

Student motivation was also critical in the successful implementation of the program. Student motivation means different things to different age groups, but at the elementary level it is critical in maintaining student focus as well as encouraging students to keep giving their best effort when working on *Reading Plus* (J. MacPherson, personal communication, March 19, 2013). At Cameron Elementary a *Reading Plus* rewards board was created in a main hallway. At various intervals during the *Reading Plus* program students gain a reading level. It is called *leveling up* in the program, but the administrating teachers used this as an opportunity to

celebrate the hard work of the students. The *Reading Plus* program allows teachers to print certificates of achievement. The teachers would print these certificates and put them on the rewards board so that everyone could see them (J. MacPherson, personal communication, March 19, 2013). When students increased a level, their name would also be announced on the intercom system at the end of the week and the student would come to the office on Friday afternoons to receive a small award. Students were very excited to visit the office and were proud to get a pencil, or a set of stickers. Once a month teachers would have *Reading Plus* celebrations as well. Snacks or baked goods would be brought in for the *Reading Plus* students so that they could celebrate their achievements. Students would become very excited about the celebration days and would really focus so that they could participate in the celebrations (J. MacPherson, personal communication, March 19, 2013). Students who were not a part of the *Reading Plus* program would want to join the program so that they could take part in the celebrations.

Motivation became an important part of the overall academic program at Cameron Elementary. The successes in using motivational strategies with the *Reading Plus* students carried over into other literacy activities. The importance of continually monitoring the data progress of the *Reading Plus* students led to staff members creating a process in which individual goal setting reading conferences would be held with all students. These conferences were held three times per year. Using student Lexile levels goals were set for students during the initial beginning of year conference. At the two following conferences reading growth would be charted and recorded and incentives would be provided to students that were making successful progress towards the completion of the established goal. Staff members found that student performance improved because students realized that multiple adults were paying attention to their reading habits (J. MacPherson, personal communication, March 19, 2013).

Data analysis also showed that boys showed more Lexile growth than girls as measured by the SRI. Boys grew an average of 156.45 Lexile levels while girls grew an average of 119.14 Lexile levels. Cameron Elementary was a rural school in central North Carolina. The town of Cameron had some antique shops and a convenience store. When comparing the growth of the boys versus the growth of the girls one would need to consider the community. One of the most popular activities for the boys at Cameron Elementary School was video games. The boys were continually sharing stories about the games that they play. They used gaming systems and also played games on hand held devices such as tablets or a parents' phone. The *Reading Plus* program was a web based computer program and users of the program needed to possess some technological skills to progress through the program. The boys in the program entered with more technological skills than the girls. They were familiar with how to manage a game or computer system. The boys in this individual school more quickly adapted to the program requirements. The *Reading Plus* program required coordination of hand and eye as well. When determining reading pace and fluency the program required students to click quickly at times to meet the expectations of the program. As a group this cohort of boys was more technologically savvy than the girls and it is likely that this may have contributed to the higher growth scores that were demonstrated.

Teacher survey responses provided insight into the administration of the program. Teachers were asked to respond to survey questions and used categorical scales that ranked items of importance. A response of one meant that a teacher strongly disagreed and a response of five meant a teacher strongly agreed. Teachers were asked how they felt about the training that they received prior to implementation of the program and also about the ongoing support that they received while administering the program. The response given was relatively high with an

average response of 4.3. The teachers at Cameron Elementary were very comfortable with the *Reading Plus* program from the beginning. An important part of this can be attributed to Greg Taylor making personal visits to the school on three different occasions and also being very diligent in returning phone calls and making time to answer teacher questions personally. Before beginning the program teachers were provided effective training. This training that was valuable and ongoing helped teachers develop confidence in their abilities to administer the program. From the very beginning teachers would share with administration the importance of incorporating rewards and incentives into the program. This led to the creation of celebrations and also led to the purchase of items that could be used to reward students for progress made. The training sessions also placed a large emphasis on the importance of program fidelity. Teachers knew from the beginning that for the program to be successful they would need to see students at least four days a week for thirty to forty minutes. Program fidelity was especially important because this was also one of the district expectations for an intervention program. Teachers were very receptive to a new daily schedule that included daily time for intervention programs including *Reading Plus*. Due to teacher communication with parents, the amount of early releases decreased as well. Teachers let parents know the importance of their child being in the program every day. This communication reduced the occurrences of students in the *Reading Plus* program being signed out early by their parents.

The Moore County School district placed a great emphasis on the five domains of reading as do many national reading organizations. Teachers were asked to share their thoughts on the effectiveness of the *Reading Plus* program on the teacher survey. Survey responses indicated that teachers administering the program felt that the program did a good job on three of the five domains and not as good a job on two others. Teachers felt that the *Reading Plus* program was

effective in addressing student areas of weakness in the domains of comprehension, vocabulary and fluency. They felt that it wasn't as effective in the domains of phonics and phonemic awareness. Teacher responses were consistent with data observations made as students progressed through the program. Students that demonstrated struggles in the *Reading Plus* program or students that could make no significant gains were readers that had consistently struggled and that were performing well below grade level. In several instances these students had large gaps in the areas of phonics and phonemic awareness. My recommendation to the district would be that students reading below a second-grade level not be placed in *Reading Plus*. A more suitable program for these struggling readers would potentially be the System 44 program by Scholastic. This program focuses more on phonics and phonemic awareness. It helps students with sounds and blends and provides individualized face-to-face instruction as a part of its daily implementation. Older readers that struggled with sounds and the blending of sounds would have struggled in the *Reading Plus* program as well.

Unexpected Outcomes

An unexpected outcome due to the implementation with fidelity of the *Reading Plus* program was that Cameron Elementary School's student growth scores in math increased. In fourth- and fifth-grade math instruction, there were no changes made in the instructional program from the previous year. The teachers taught the same curriculum and they followed the same district pacing guide. The pacing guide instructs teachers on when to teach required curricular objectives. Even though no changes were made to the overall math instructional program and no new intervention programs were implemented. Students in fourth and fifth grades demonstrated higher growth than the previous year as determined by the state of North Carolina's EVAAS program. A conclusion is that due to the fact that students showed higher sustained growth in

reading as measured by their Lexile levels they also demonstrated higher growth in math. Math growth is determined by student proficiency levels on the North Carolina End of Grade math test. Many students struggle on this test because many of the test questions are word problems, meaning that students need to be grade level readers to understand what the problem is asking. Students that are struggling readers have problems with the math test as well because they cannot comprehend what the question is asking or they simply do not possess the fluency skills required to complete the math test in the allotted amount of time. Students reading on grade level have a better chance at being successful on the math test. Because of the *Reading Plus* program 4th and 5th grade math students demonstrated higher math growth because their reading abilities improved greatly during the course of the school year.

Reading Plus was part of a large literacy initiative at Cameron Elementary. *Reading Plus* helped developing readers build confidence in their reading skills. This added confidence encouraged these students to read more and also read books that were appropriately leveled for them. The school implemented reading incentives. Students would be rewarded for achieving goals of words read. The school implemented a “one book one school program” in which every family received a copy of the same book. Families would read the book together and students would discuss the book at school the next day. This program was a huge success in part because of the increased confidence in reading ability.

The increased confidence in overall reading ability had a large impact on the positive culture of the school. A feeling of accomplishment was shared by both students and staff members and these feelings permeated into the overall building atmosphere. More than one teacher commented on the gains in student reading abilities and how these gains were impacting student achievement. The culture of the school became one centered around literacy and reading.

Discussions in PLC meetings revolved around ways to improve student literacy. Celebrations were planned to reward and motivate students. Students began to understand that reading was important. *Reading Plus* student achievements were celebrated. School-wide celebrations included dances, and campus wide “trains” in which students and teachers would walk through the entire building singing and dancing. Staff members would read book selections on the intercom in the mornings. Students would share book reviews on the intercom. In very kid-friendly language they would share their favorite books and why they liked the book. With district support literacy interventions were planned that targeted all students and focused on maximizing opportunities for face to face instruction.

Cost-Benefit

The Moore County School district considered costs of intervention programs as well as the effectiveness of these programs. It was important for the programs that were being implemented to be affordable as well as effective in increasing student reading proficiency and achievement (K. Kennedy, personal communication, October 16, 2013). The *Reading Plus* intervention program was implemented in various schools and not district wide, therefore individual school principals would communicate with Greg Taylor, the *Reading Plus* representative, in program pricing. The cost of the *Reading Plus* program at Cameron Elementary was \$2750.00 for one year for 100 student seats. This price was for 100 students at any one time, so theoretically more than 100 students could be served.

There were several other reading intervention programs that were being implemented in the Moore County Schools. One of these programs was Leveled Literacy Intervention (LLI). The cost of this program was \$4750.00 for one kit and \$750.00 for an assessment system that was required for each kit for a total of \$5,500. LLI was facilitated by a certified teacher and

served small groups of students numbering four to six during a forty-five minute session. At Cameron Elementary the maximum number of students served during a school day was 30 (J. MacPherson, personal communication, March 19, 2013).

Also in place at Cameron Elementary was System 44. System 44 was a program that focused on student phonics and phonemic awareness. This program was web based and utilized three student groups. The students being served would rotate between face to face instruction, computer work and independent silent reading. The cost of this program was \$2,950 at Cameron Elementary and served 35 students (J. MacPherson, personal communication, March 19, 2013).

In analyzing the costs of the programs in place at Cameron Elementary, the cost benefit of the *Reading Plus* Program was very beneficial. Students that participated in the *Reading Plus* program with fidelity showed positive reading growth. “Growth scores for students in other reading programs did not show the same amount of growth that the students in the *Reading Plus* program showed” (J. MacPherson, personal communication, March 19, 2013). While you can never put a dollar amount on the importance of student proficiency and growth, the Moore County Schools would be wise to continue the implementation of the *Reading Plus* program as it proved effective in improving student academic achievement in reading in grades four and five.

Recommendations

- Carefully monitor student placement at the individual school level. The program was more effective for those students who had deficiencies in comprehension, vocabulary and fluency.
- Provide teachers with adequate training and support. Proper training allowed teachers to feel confident in their delivery of the program and in analyzing student progress and data.

- Do not place students that need remediation in phonics and/or phonemic awareness in the program.
- The program must be implemented with fidelity to be successful. Students should be in the program at least forty minutes per session four times per week. Students who did not spend the recommended time in the program showed less progress than students who used the program four times a week for forty minutes.
- Use the program to supplement not supplant literacy instruction. Quality literacy instruction was an essential component to improving student reading achievement.
- Develop a school level plan to motivate participating students. Students at Cameron Elementary responded favorably to incentives and rewards.
- Offer *Reading Plus* during a targeted intervention time built into the daily schedule. A designated time for Reading Plus every day prevented staff members from replacing it with other literacy activities.

Summary

This program evaluation attempted to answer the stated research question. To what extent if any did the *Reading Plus* program impact student academic achievement in reading for those students enrolled in the program in grades four and five based on the student Lexile scores generated from the Scholastic Reading Inventory (SRI)? This evaluation has emphasized the importance of literacy and reading achievement to district administrators in the Moore County school district. Administrators in Moore County including Superintendent Aaron Spence wanted to know if intervention programs including *Reading Plus* were making a difference in improving academic achievement. SRI results showed that the *Reading Plus* program increased student reading levels as measured by Lexile levels. It is recommended to the Moore County Schools

that the *Reading Plus* program has shown to be an effective intervention program which has had a positive impact on student reading achievement when the program is implemented with fidelity. When a program is implemented with fidelity it is implemented as recommended by the designers of the program. When a program is not implemented with fidelity, it is not implemented as recommended by the designers of the program. Other factors that must be considered are that staff members implementing and facilitating the program must have adequate training and support. Staff members facilitating the program should have open and frequent communication with a student's regular classroom teacher if the facilitator doesn't teach the student. Regular communication is essential to maintain vigilance in identifying areas in which additional interventions are necessary. Students that are placed in the program must be carefully selected. The *Reading Plus* program is more effective for those students who have deficiencies in comprehension, vocabulary and fluency and less effective for those students that have deficiencies in phonics and phonemic awareness. Students who require remediation in phonics and phonemic awareness would be better served by different interventions that placed more emphasis on sounds and word blends and that offered one-on-one, face-to-face instruction. The cost-benefit of the Reading Plus program was very beneficial. An added benefit of the program was the fact that the program emphasized the connection between eye-movements and reading skills. The program was less expensive than other programs in use and students showed positive reading growth. This program should be offered to students during a specially designed intervention time that is built into a school's daily schedule. By building the time into the schedule the program may be more likely implemented with fidelity. School personnel should regularly assess *Reading Plus* data. Regular assessment of data will help with fidelity and also with student progression. The *Reading Plus* program should serve to supplement instruction not

supplant it. Students who showed significant Lexile level gains were also receiving quality literacy instruction. This instruction focused on the five domains of literacy and that were a part of a dedicated ninety-minute block of literacy. For the *Reading Plus* program to be successful, students must be motivated and this may require incentives for the students. Success is also reliant on constant qualified supervision. Although classified personnel including teacher assistants could administer the program, it is recommended that licensed teachers administer the program. Ideally program administrators should have training in literacy and/or reading. With proper implementation and administration with fidelity, the *Reading Plus* program can positively impact overall student academic achievement in reading in Grades 4 and 5.

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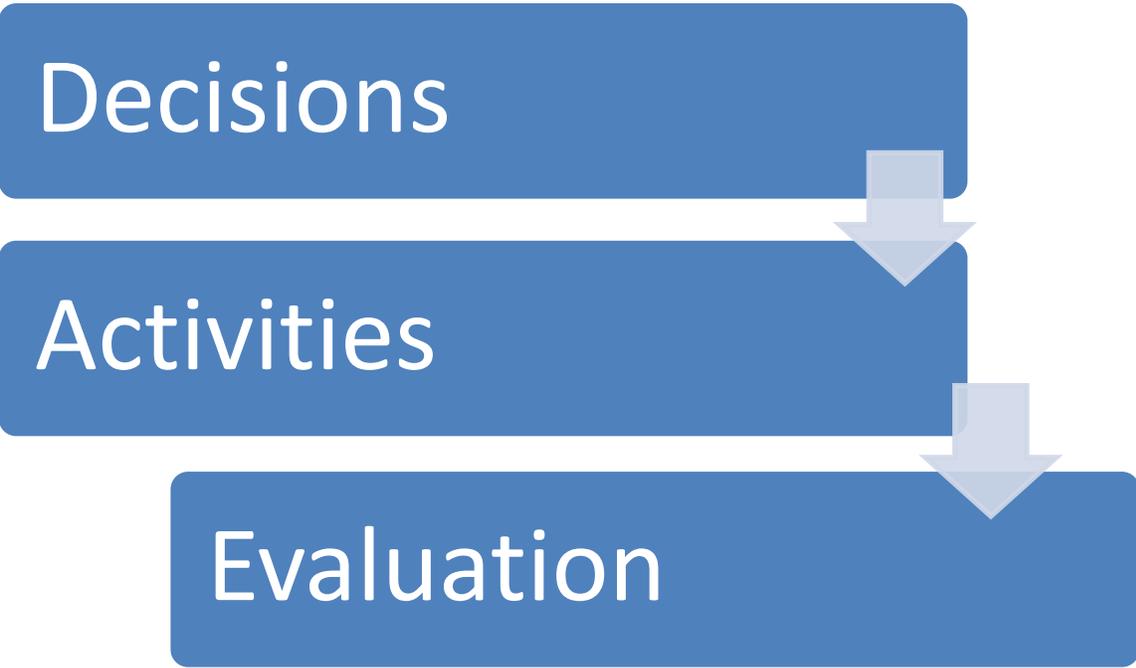
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APPENDIX A: CONTEXT-INPUT-PROCESS-PRODUCT (CIPP) DECISION MODEL



APPENDIX B: PROGRAM EVALUATION CYCLE

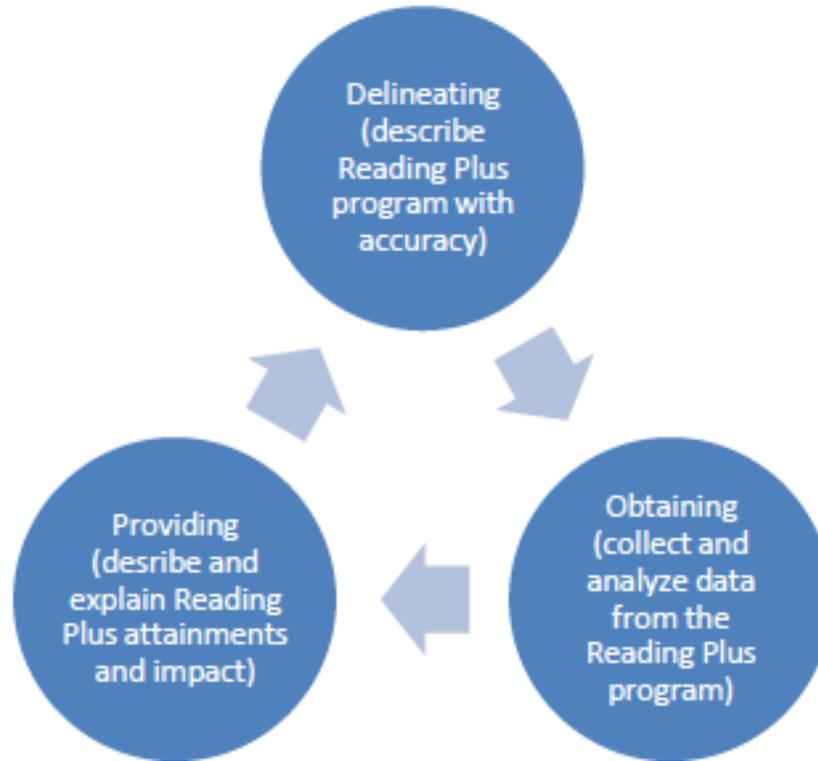
Delineating

Obtaining

Providing



**APPENDIX C: CIPP RELATIONSHIP OF EVALUATION TO
DECISION-MAKING**



APPENDIX D: SUPERINTENDENT'S REQUEST FOR PROGRAM EVALUATION



MOORE COUNTY SCHOOLS
Growing to Greatness

January 30, 2014

Dr. William A. Rouse, Chairperson
East Carolina University
Department of Educational Leadership
College of Education- 210 Ragsdale Building
Mailstop: 515
Greenville, NC 27858

Dear Dr. Rouse:

I am writing in support of Robin Calcutt, Dale Buie, Joel County and Emilie Simeon to complete a program review of the "Reading Plus Program" from the elementary, middle, high school and of students with disabilities perspectives for their dissertation project. While several schools in our system have purchased the Reading Plus Program, I am requesting that they use data from Cameron Elementary School, New Century Middle School and Pinecrest High School because these schools have consistently implemented the program and have also collected data for school use. They will work in a "problem of practice" method so that their research centers on an issue relevant to the work here in Moore County Schools. They are excited, as I am, that their study will benefit our own students and school system.

I would also be honored to serve on their dissertation committee. I understand that I will need to be approved by the university to serve in this capacity. I look forward to receiving future information on this process. If you have any questions, please feel free to contact me at 910-947-2976 or email at aspence@ncmcs.org.

Sincerely,

A handwritten signature in black ink, appearing to read 'A. Spence', with a long horizontal flourish extending to the right.

Aaron C. Spence, Ed.D.
Superintendent of Schools

ACS: cbm

APPENDIX E: TEACHER SURVEY QUESTIONS

1. Did you receive adequate training and support on the implementation of the *Reading Plus* program?
2. Did you implement the Reading Plus program with fidelity according to the *Reading Plus* implementation guide?
3. Based upon your observations, did the *Reading Plus* Intervention Program impact the students' comprehension skills?
4. Based upon your observations, how did the *Reading Plus* Intervention Program impact the students' comprehension skills?
5. Based upon your observations, did the *Reading Plus* Intervention Program impact the students' fluency skills?
6. Based upon your observations, how did the *Reading Plus* Intervention Program impact the students' fluency skills?
7. Based upon your observations, how did the *Reading Plus* Intervention Program impact the students' vocabulary skills?
8. Based upon your observations, did the *Reading Plus* Intervention Program impact the students' phonemic awareness skills?
9. Based upon your observations, how did the *Reading Plus* Intervention Program impact the students' phonemic awareness skills?
10. Based upon your observations, did the *Reading Plus* Intervention Program impact the students' phonics skills?
11. Based upon your observations, how did the *Reading Plus* Intervention Program impact the students' phonics skills?

12. Based upon your observations, did the *Reading Plus* Intervention Program impact students' reading stamina?
13. Based upon your observations, how did the *Reading Plus* Intervention Program impact students' reading stamina?
14. List any positive non-verbal behaviors that you observed in students as they used the *Reading Plus* program.
15. List any negative non-verbal behaviors that you observed in students as they used the *Reading Plus* program.
16. As a *Reading Plus* facilitator, what motivation strategies did you use with students participating in the *Reading Plus* program.

APPENDIX F: INSTITUTIONAL REVIEW BOARD APPROVAL LETTER



EAST CAROLINA UNIVERSITY
**University & Medical Center Institutional
Review Board Office**
4N-70 Brody Medical Sciences Building· Mail Stop
682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** ·
www.ecu.edu/irb

Notification of Exempt Certification

From: Social/Behavioral IRB
To: [Dale Buie](#)
CC: [Jim McDowelle](#)
Date: 6/2/2014
[UMCIRB 14-000488](#)
Re: Program Evaluation of Reading Plus: Study of Reading Achievement For Elementary Students in Moore County Schools

I am pleased to inform you that your research submission has been certified as exempt on 6/2/2014 . This study is eligible for Exempt Certification under category #1 - 4 .

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The UMCIRB office will hold your exemption application for a period of five years from the date of this letter. If you wish to continue this protocol beyond this period, you will need to submit an Exemption Certification request at least 30 days before the end of the five year period.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418